

Project No. 8001

Date 11/22/80

Hole No. W. Willow #7

AMMERALDA RESOURCES

Completion Report

Company Exxon Coal Res., USA, Inc. Lease
Location NE, SE, SW, SW Sec. 3 Twshp. 4S Range 98W
State Colorado County Rio Blanco Surface Owner Johnson

Elevation KB: 7770' GR: Spud Date see back Completed see back

T.D. 1123.3 Air To Mud To Hole Size 6"(0-23") 4 3/4"(23-470.0)

Bits 2 Drilled 0.0' to 470.0' C.P. Logs Run: Hole Deviation ()
Spinner () Radioactive tracer ()
E-Log (X) Acoustic ()
Temp. () Gamma Ray (X)
Density (X) Neutron ()
Caliper (X) Seis Viewer ()
Other SP

Lost Circulation @ 470.0-615.0'

Water Invasion: Depth to Remarks

Gas Invasion: Depth to Remarks

H2O Tests: Recovery () Quality () Samples () Pressure Transducer () Spinner ()
Flowmeter () Other

Tops

Table with 4 columns: Name, Depth (From, To), Thickness, Remarks. Rows include Tgrp, "A" Groove, Mah. Zn., "B" Groove, R6, Total Depth.

General Hole Conditions: Hole iation Other

Casing Record: Depth 0-23' Size 6" Depth 0-470' Size 4 3/4" Depth Size

Contractor Himes Drlg. Co. Driller Galen Homedew

Samples & Core Description by Hartley & McMullin Report by Hartley

Attachments:

Sample Description	<u>X</u>	E-Log	<u>X</u>	Geograph	<u>X</u>
Core Description	<u>X</u>	Gamma Ray	<u>X</u>	Core Run Record	<u>X</u>
Rock Mechanic Record	<u> </u>	Density Log	<u>X</u>	Photo Record	<u>X</u>
Daily Water Reports	<u>X</u>	Temp. Log	<u> </u>	Sample Receipt	<u> </u>
Gas Sample Record	<u> </u>	Caliper Log	<u>X</u>	Radioactive	<u> </u>
Hydrologic Record	<u>X</u>	Acoustic Log	<u> </u>	Tracer Survey	<u> </u>
Daily Drilling Reports	<u>X</u>	Other <u>X</u> Log <u>SP</u>	<u> </u>	Other:	<u> </u>
Prognosis sheet	<u>X</u>	Log	<u> </u>	<u> </u>	<u> </u>
				<u> </u>	<u> </u>
				<u> </u>	<u> </u>

Remarks:

Move-in date (Rotary Rig)-----9/24/80
Spud date (Rotary Rig)-----9/30/80
Move-in date (core rig)-----Note: surface hole rotary drilled with core rig.
Spud date (core rig)-----10/05/80
Completion date T.D. (core rig)-----11/22/80
Log date-----11/22/80
Rig down - Move off-----11/25/80

SAMPLE/CORE DESCRIPTION

Hole No. West Willow #7
 Location NE, SE, SW, SW Sec 3 T4S R98W
 County and State Rio Blanco County, Colorado
 Elev. KB 7770 TD 1123.3
 Spud 9/30/80 Compl. 11/22/80
 Examined by Hartley & McMullin

From	To	
0	0.5	Topsoil, dark brown, organic, silty to sandy, A & B horizon.
0.5	5.0	Sandstone and siltstone, intermixed, light gray to buff with abundant light orange brown oxidized staining, very fair to fair grain, calcareous, abundant weathering, fairly unconsolidated, moderately friable to slightly hard, C horizon.
5	60	Sandstone, 50%, light orange brown to buff, very fine to fine grain, massive, poor to moderately sorted, fairly friable to slightly brittle, calcareous, salt and pepper, oxidized staining common; 40% siltstone, light brownish gray to buff, massive, brittle, calcareous; 10% marlstone, from 20'-30', light to medium gray, brittle to hard; dark brownish black slightly oxidized FeO blebs common.
60	70	Sandstone, light orange brown to buff, very fine to fine grain, poor to moderately sorted, micaceous, salt & pepper, very poorly consolidated, calcareous, friable, abundant orange brown oxidized staining, trace buff massive Marlstone.
70	90	Sandstone, 75% light orange brown to buff, very fine grain, poor to moderately sorted, very poorly consolidated, very friable, very silty, calcareous, moderately oxidized staining; 25% siltstone, light to brownish gray, massive, brittle, calcareous.
90	110	Sandstone, light orange brown to buff, very fine to fine grain, poor to moderately sorted, micaceous, slight to moderate salt & pepper, very poorly consolidated, friable, calcareous, abundant orange brown oxidized staining.
110	140	Siltstone, 75% light brownish gray, massive, brittle, very calcareous, siltstone 25%, light gray, very fine grain, fairly friable, poorly sorted, massive, calcareous, salt & pepper, micaceous, trace carbonaceous flakes, from 130-140 20% medium to dark gray brown orange carbonaceous siltstone, fairly soft to slightly brittle, massive.
140	160	Siltstone, medium to dark gray brown, carbonaceous, fairly soft to slightly brittle, massive.
160	180	Siltstone 50%, sandstone 50%; medium to dark brownish gray, very fine to fine grain, massive, poorly sorted, micaceous, silty, calcareous, moderate to well consolidated, brittle, abundant dull

From	To	
		black carbonaceous flakes.
180	210	Siltstone, medium brownish gray, massive, brittle, slightly carbonaceous, calcareous, from 190-210 30% light gray massive siltstone, well consolidated, fairly hard to slightly brittle, calcareous.
210	310	Siltstone, 50% medium to dark brownish gray, massive, brittle, calcareous, slightly carbonaceous; 25% siltstone to light gray, hard, slightly brittle, calcareous, abundant carbonaceous flakes; Sandstone 25%, light to medium gray, very fine grain, poor to moderately sorted, slight salt and pepper, slightly micaceous, fairly hard, slightly brittle, abundant carbonaceous flakes, moderate- well consolidated, very calcareous; from 240-250 trace light orange brown slightly oxidized Sandstone stringers, trace light brownish gray massive marlstone with trace even bedding; from 250-280 10% dark gray brown to black very carbonaceous siltstone; trace few scattered dark green gray pyrite blebs and inclusions.
310	320	Sandstone 75%, light gray brown, very fine to fine grain, poorly sorted, poorly consolidated, friable, calcareous, trace carbonaceous flakes, siltstone 25% medium brownish gray, massive, hard, brittle, calcareous, abundant carbonaceous flakes.
320	360	Siltstone and Sandstone intermixed; Siltstone, medium brownish gray, massive, fairly hard and slightly brittle, calcareous, abundant black carbonaceous flakes, Sandstone, light to medium brownish gray, very fine grain, poor to moderately sorted, fairly hard, slightly brittle, calcareous, micaceous, slightly salt and pepper, trace organic carbonaceous flakes; 10% light brown calcareous claystone; from 340-360 trace buff marlstone with even bedding; from 340-350 trace dark green gray pyrite inclusions.
360	390	Sandstone, 30% medium brownish gray, fine grain, massive, poorly sorted, poor to moderately consolidated, slightly friable, slightly brittle, calcareous, slightly micaceous; siltstone 30%, medium brownish gray, massive, fairly hard, slightly brittle, calcareous, trace organic and carbonaceous streaks, Marlstone 30% medium brownish gray, even bedding, fairly hard, blocky, trace organic and carbonaceous streaks.
390	430	Siltstone with interbedded Marlstone, medium brownish gray, massive, fairly hard, slightly brittle, calcareous; Marlstone medium gray brown, even and irregular bedding, trace carbonaceous streaks and flakes; few scattered thin beds of light gray brown to buff even to irregular bedded Marlstone; from 420-430 trace dark black carbonaceous shale.
430	470	Siltstone, Sandstone and Marlstone intermixed, Siltstone, light to medium brownish gray, massive, moderately hard, moderately brittle, fairly calcareous; Sandstone, light brownish gray, very fine to fine grain, massive, poor to moderately consolidated, slight to moderately friable, fairly calcareous, slightly micaceous, slight salt and pepper; Marlstone, light gray brown to buff, light brown, and medium brownish gray, massive

From	To	
		with even and irregular bedding, slightly fissile to blocky, trace scattered black carbonaceous shale stringers, trace dark gray to black carbonaceous flakes and streaks, from 460-470 trace dark greenish black pyrite inclusions.
	470.0	Core - point
470.0	488.0	Siltstone, light to medium brownish gray, massive with wavy and irregular bedding, poor to fair competence, fairly brittle, hard, slightly calcareous, slightly argillaceous; few scattered dark brown oil shale streaks and stringers; several scattered slightly calcareous, light brown to white tuffaceous blebs, streaks, stringers and bands; dark greenish gray pyrite blebs common; trace gilsonite streaks; 1.0 core loss from 474.0-475.0; 2.20 core loss from 480.0-482.2; .20 asphaltic tuff at 483.8 with heavy asphalt and gilsonite; from 485.2-488.0 several scattered light brown to buff marlstone bands and lamina with even, looped and irregular bedding, .30 dark gray brown, slightly carbonaceous, siltstone bed at 486.55; from 487.6-488.0 fine grain, light brown to buff, massive sandstone bed with abundant gilsonite flakes.
488.0	491.7	Oil Shale, medium to dark olive brown, irregular with even and wavy bedding, poor to fair competence, low to medium grade; from 489.4-489.95 medium gray brown massive to irregular siltstone bed with abundant dark brown asphaltic streaks, dark green gray pyrite blebs and streaks and white calcite sealed fractures; from 490.4-491.7 abundant light gray to buff granular tuffaceous blebs and stringers; abundant solution fractures from 490.4-491.2; few scattered fractures with calcite, pyrite and asphalt.
491.7	495.9	Siltstone, medium brownish gray, massive with abundant offset bedding and trace irregular bedding, poor competence, fairly brittle, hard; moderately calcareous; pyrite blebs common; several scattered zones of solution fractures with asphalt and calcite from 491.7-492.6 zone of abundant light brown to buff tuffaceous bands and stringers with pinpoint asphaltic blebs; few scattered light gray to white granular analcitized tuffaceous streaks and stringers; from 495.1-495.9 light gray brown to buff marly siltstone bed with abundant fractures with asphalt coating.
495.9	509.3	Oil Shale, light olive brown with light gray brown, even with offset bedding and brecciated and recemented from 501.5-503.4, very poor to poor competence, very low grade; .40 light brownish gray siltstone bed at 497.6 with abundant irregular granular tuffaceous stringers and abundant asphaltic blebs; abundant scattered fractures with asphalt, calcite and trace pyrite; several scattered light brown to white irregular granular tuffaceous streaks and stringers, some with asphalt; several scattered solution fracture zones with calcite, pyrite and asphalt; .40 core loss from 496.3-496.7; .10 light brownish gray massive sandstone band at 504.0; .20 core loss from 504.8-505.0; several thin scattered solution breccia zones; several scattered zones with abundant pyrite blebs; gradational contact.

From	To	
509.3	515.8	Oil Shale, very marly, light gray brown, even with abundant offset bedding and trace streaked and irregular bedding, very poor to poor competence, very low grade; solution fractures with calcite, pyrite and collapsed leached nahcolite common; several scattered fractures with calcite and asphalt; from 512.4-512.8 medium brownish gray calcareous massive siltstone bed.
515.8	547.2	Siltstone with several interbedded marlstone bands and beds, light to medium brownish gray, massive with trace even bedding, poor to fair competence, brittle, very calcareous, fairly hard, slightly sandy; several scattered fractures with asphalt, pyrite and calcite; several scattered solution fracture zones; several scattered irregular dark greenish gray streaks and blebs; few scattered silty oil shale streaks, stringers, bands and beds from 523.6-524.5; few scattered light brownish gray to buff stringers and bands; abundant dark brown oil shale streaks and stringers from 529.4-538.7; pinpoint pyrite blebs common from 519.6-546.7; from 543.85-545.0 light olive brown, very low grade, slightly marly, oil shale bed with .10 siltstone band at 544.5.
547.2	561.6	Siltstone, medium brownish gray, massive with trace irregular and streaked bedding, poor to fair competence from 547.2-551.4, good competence from 551.4-557.2, fair competence from 557.2-561.6; slightly calcareous, slightly argillaceous, brittle, hard; small pyrite blebs and streaks common; several scattered fractures with pyrite, calcite and asphalt; .40 buff marlstone band at 559.95.
561.6	564.7	Siltstone with interbedded oil shale, siltstone, medium brownish gray, massive with trace irregular and streaked bedding, slightly calcareous, argillaceous, several scattered pyrite blebs and streaks; .30 zone of abundant asphaltic streaks at 562.6; oil shale light olive brown, even with irregular and looped bedding, very low to low grade; overall: poor to fair competence; .30 zone with abundant white and light brown granular tuff streaks and stringers at 563.8.
564.7	569.8	Oil Shale, light and medium olive brown, banded, even bedding, fair to good competence, low grade; few scattered fractures with calcite and asphalt; from 567.2-568.0 abundant medium brownish gray massive siltstone stringers and bands; from 568.4-569.4 light gray brown siltstone bed with abundant dark brown oil shale streaks and stringers.
569.8	573.0	Siltstone, light to medium brownish gray, massive with irregular bedding, fair to good competence; very calcareous, brittle, hard; abundant scattered dark brown oil shale streaks and stringers; pinpoint pyrite blebs common; .30 zone of abundant light blue gray and brown analcitized tuff streaks at 571.95.
573.0	579.7	Oil Shale with interbedded siltstone; Oil Shale, light olive brown, medium olive brown and medium to dark olive brown, even with trace irregular bedding; very low grade from 573.0-575.0; medium to high grade from 578.0-579.1; Siltstone, light to medium brownish gray

From	To	
		massive with trace irregular bedding, very calcareous, brittle, hard; overall: fair competence, several scattered fractures with calcite and asphalt.
579.7	583.6	Oil Shale, light olive brown, even bedding, good competence, very low to low grade; trace gilsonite, trace scattered light blue gray analcitized tuff blebs; few scattered dark gray pyrite streaks and lamina; slightly marly.
583.6	585.5	Oil Shale, medium to dark olive brown, even with streaked and irregular bedding, good competence, medium to high grade.
585.5	598.0	Oil Shale, light olive brown, even bedding, fair competence, low grade; slightly silty, several scattered fractures and partings with calcite; trace gilsonite; few scattered light blue gray analcitized tuff blebs and streaks; dark brown irregular tuff streaks and stringers at 592.0 and 592.3.
598.0	600.5	Oil Shale, medium olive brown, even with trace irregular bedding, fair to good competence, low to medium grade; light brown marlstone stringer at 600.2; from 599.3-600.5 several fractures with calcite; gradational contact.
600.5	604.9	Oil Shale, light olive brown with medium olive brown banding, even with trace irregular and looped bedding, fair competence, low grade; few scattered fractures with calcite and trace asphalt; light brown calcite stringer at 604.6.
604.9	610.0	Oil Shale, medium olive brown, even with trace irregular bedding, fair competence, medium grade; from 606.7-608.3 several scattered light brown and light brownish gray asphalt and analcitized tuff stringers; gradational contact.
610.0	618.3	Oil Shale, light to medium olive brown, even with trace irregular bedding, fair to good competence, medium grade; few scattered fractures and partings with calcite and asphalt; few scattered thin solution fracture zones with calcite; light gray analcitized tuff streaks at 617.95; trace streaked bedding; light brown asphaltic tuff streak at 616.1 and 616.2; gradational contact.
618.3	625.6	Oil Shale, light olive brown with medium olive brown, even bedding, poor to fair competence, low to medium grade; fractures with calcite common; several scattered light blue gray analcitized tuff blebs, streaks and stringers; trace streaked and offset bedding; few scattered medium to dark brown asphaltic tuff blebs and stringers; from 624.5-625.6 medium olive brown medium grade oil shale; 0.30 core loss from 624.7-625.0.
625.6	633.4	Oil Shale, light to medium gray brown, even bedding, good competence, low grade; small light brown marly blebs and streaks common; abundant scattered light blue gray analcitized tuff streaks and lamina; trace gilsonite; dark brown granular asphaltic tuff stringers at 629.5 and 632.5; several scattered dark gray pyrite tuff streaks and stringers.

From	To	
633.4	636.4	Oil Shale, light to medium olive brown, even bedding, fair to good competence, low to medium grade; abundant light brown small marly blebs; several scattered thin light brown granular tuff stringers and lamina; slightly granular texture due to abundant disseminated tuff material; gradational contact.
636.4	642.75	Oil Shale, light to medium olive brown, even bedding, poor to fair competence, low grade; slightly granular texture due to abundant disseminated tuff material; light brownish gray, very calcareous, massive siltstone bands and beds .25 at 639.1, .30 at 639.5, from 639.85-640.65, .20 at 641.1 and .05 at 642.0; trace scattered medium brown asphaltic tuff blebs and streaks; abundant pinpoint pyrite blebs associated with siltstone; several scattered calcite sealed fractures with trace asphalt; trace gilsonite; few scattered dark gray pyrite streaks; trace looped bedding.
642.75	647.9	Oil Shale, light olive brown with medium to dark olive brown banding, even with trace looped bedding, good competence, low to medium grade; abundant thin light brown granular tuff streaks and stringers; .20 medium brownish gray, massive, very calcareous siltstone band at 643.75; few scattered calcareous stringers; light to medium orange brown, granular, slightly oxidized, tuff stringers at 646.3; light brownish gray tuff stringer at 646.55.
647.9	649.5	Oil Shale, medium to dark olive brown, even bedding, good competence, medium to high grade; thin light brown granular tuff lamina and streaks common; medium brown and white slightly oxidized, tuff stringer at 648.5 and 649.45; trace scattered pyrite streaks; gradational contact.
649.5	657.7	Oil Shale, light olive brown to light to medium gray brown, even with looped and irregular bedding, fair competence, very low to low grade; thin light brown tuff streaks, stringers, and lamina common; several scattered zones with dark gray pyrite streaks; several scattered fractures and partings with calcite and trace pyrite and asphalt; from 654.3-656.2 medium olive brown, medium grade oil shale with even bedding; several scattered asphalt tuff stringers and streaks, light to medium orange brown, slightly oxidized, tuff streaks and stringers at 650.95; .10 zone at 655.1 and .10 zone at 656.25; few scattered calcite stringers; gradational contact.
657.7	659.9	Oil Shale, light gray brown to buff, even bedding, poor competence, very low grade; marly; pyrite streaks and lamina common; fractures with calcite and pyrite common.
659.9	662.6	Oil Shale, light to medium olive brown, even bedding, poor competence, low to medium grade; several scattered fractures with calcite and trace asphalt; from 661.4-662.6 medium to dark olive brown, medium grade oil shale with even bedding; gilsonite streaks at 661.95; .10 zone with several light to medium brown asphaltic tuff stringers at 661.8.

From	To	
662.6	683.2	Oil Shale, light olive brown to light gray brown, even bedding, fair to good competence, low grade; dark gray pyrite streaks and lamina common; several scattered light brown tuff streaks and lamina from 663.2-663.5; light blue gray analcitized tuff stringer at 666.8; light and dark brown asphaltic tuff stringer at 667.3; from 668.3-671.4 abundant light brown and light blue gray tuff blebs, streaks, stringers and lamina; gilsonite streaks at 669.5; 0.20 core loss from 671.1-671.3; from 676.0-677.1 medium olive brown, medium grade oil shale with faint streaked and irregular bedding; few scattered dark brown asphaltic blebs; medium brown and white slightly asphaltic tuff stringers at 679.0 and .10 band at 679.4; several scattered light blue gray and brown tuff streaks and stringers; .10 dark brown to black high grade oil shale band at 682.8.
683.2	684.3	Oil Shale, dark olive brown to black, even with trace streaked bedding, poor competence, high grade; fairly tough, elastic, fairly low density; few scattered partings and fractures with calcite.
684.3	697.2	Oil Shale, light olive brown, even bedding, good competence, low grade; few scattered partings and fractures with calcite and pyrite; few scattered asphaltic tuff blebs and streaks; few scattered light blue gray analcitized tuff blebs and streaks dark brown to black, high grade oil shale .20 band at 690.5 and bed from 691.35-691.9 with even and streaked bedding; from 692.5-696.1 abundant light brown to buff marly stringers and abundant pyrite streaks and lamina; .40 band of dark olive brown medium to high grade oil shale at 696.1 with even and faint streaked bedding; .10 band of medium brown asphaltic tuff at 697.1.
697.2	711.95	Oil Shale, light olive brown, even with trace wavy and irregular bedding, good competence, low grade; few scattered fractures and partings with calcite and trace asphalt, pyrite and gilsonite; from 697.2-698.0, dark olive brown medium to high grade oil shale with even and irregular with trace looped bedding, light blue gray analcitized tuff blebs at 697.9 and 701.5; abundant dark gray pyrite streaks and abundant buff marly stringers from 701.4-711.95; several scattered gray and brown, analcitized and asphaltic tuff blebs and streaks; several scattered dark brown asphalt and analcitized tuff stringers and bands some with pyrite.
711.95	714.1	Oil Shale, dark olive brown with light olive brown banding, irregular, even and faint streaked bedding, excellent competence, high grade; .10 dark brown asphaltic tuff band at 713.7 and .025 stringer at 713.6.
714.1	716.4	Oil Shale, light to medium olive brown, even bedding, fair to good competence, low grade; several scattered dark gray analcitized tuff streaks and blebs some with pyrite.

From	To	
716.4	717.6	Marlstone, light brown to buff, even with trace offset bedding, poor competence, several scattered medium to dark brown oil shale lamina; trace scattered dark gray pyrite streaks and lamina .10 light brown slightly asphaltic analcitized tuff band at 717.1 with some pyrite and trace collapsed leached nahcolite; .10 zone with abundant light brown analcitized tuff lamina at 717.4.
717.6	720.9	Oil Shale, medium olive brown, even with trace faint streaked and irregular bedding, fair to good competence, medium grade; few scattered fractures with calcite, asphalt and collapsed leached nahcolite; few scattered small blue gray analcitized tuff blebs; trace scattered solution fractures with calcite; gradational contact.
720.9	726.5	Oil Shale, light to medium olive brown, even with faint streaked bedding, fair to good competence, low to medium grade; several scattered light brown and light blue gray analcitized tuff streaks and stringers; trace pyrite streaks; from 724.3-725.0, numerous dark brown asphaltic tuff stringers; trace gilsonite streaks; gradational contact.
726.5	731.1	Oil Shale, light olive brown to tan, even with trace irregular bedding, fair competence, very low grade; slightly marly; .20 light blue gray to brown, analcitized tuff band at 727.85, trace gilsonite; several scattered dark gray pyrite streaks and lamina; light brown hard analcitized-tuff stringer at 730.55; gradational contact.
731.1	736.8	Oil Shale, medium olive brown, even with trace faint streaked bedding, fair competence, low to medium grade; several scattered fractures and partings with calcite and asphalt; from 732.7-733.5 numerous light to medium brown asphaltic analcitized tuff stringer; several scattered pyrite streaks from 734.4-736.0; few scattered white and light brown, analcitized and asphaltic tuff blebs and streaks.
736.8	753.2	Oil Shale, light to medium olive brown, even bedding, fair competence from 736.8-745.0, poor competence from 745.0-753.2, low to medium grade; from 745.0-753.2 several scattered fractures and partings with calcite, asphalt and trace kaolinite; several scattered light to medium brown and light blue gray, asphaltic analcitized tuff streaks, blebs and stringers, some pyrite mineralization associated with tuffs; few scattered pyrite streaks; trace gilsonite streaks; .25 medium brown granular texture, analcitized tuff band at 745.15; trace pyrite lamina; from 752.2-752.6 abundant pinpoint pyrite and pyrite streaks; gradational contact.
753.2	756.3	Oil Shale, medium olive brown to medium gray brown, irregular bedding, excellent competence; low to medium grade; gradational contact.
756.3	760.5	Oil Shale, light olive brown with medium olive brown, even with trace irregular bedding, fair to good competence, low grade; several scattered dark gray pyrite streaks and lamina; .10 dark brown asphaltic tuff band at 758.0; few scattered dark green gray metallic pyrite blebs; trace solution fractures with calcite and asphalt.

From	To	
760.5	763.1	Oil Shale, medium to dark olive brown, even with irregular bedding, poor to fair competence, medium to high grade; few scattered fractures and partings with calcite and kaolinite; leached nahcolite vugs with contorted bedding and asphalt and kaolinite at 761.8; 0.50 core loss from 761.8-762.3.
763.1	771.4	Oil Shale, light olive brown, even with faint streaked and irregular bedding, poor to fair competence, low grade; several scattered solution fractures and partings with calcite and asphalt; several scattered medium brown asphaltic analcitized tuff blebs and streaks; trace pyrite associated with tuffs; few scattered dark gray pyrite streaks from 769.5-770.6 medium olive brown, low to medium grade oil shale with even and trace wavy bedding from 771.1 to 771.4, abundant medium brown and light blue gray analcitized and asphaltic tuff streaks and stringers.
771.4	773.7	Tuff, light to medium brown, wavy bedding, fair competence; slightly asphaltic with trace kerogen; analcitized, several scattered white calcite blebs; several scattered dark gray pyrite streaks; trace small leached vugs replaced with calcite and asphalt; light olive brown, low grade oil shale band .25 at 773.0; trace solution fracture at 773.6.
773.7	777.4	Oil Shale, light to medium olive brown, even with trace faint streaked bedding, fair to good competence, low grade; few scattered fractures with calcite; several scattered white calcite tuff streaks and stringers from 775.2-775.6 and 776.0-776.1.
777.4	778.5	Oil Shale, medium olive brown, even to irregular bedding, fair competence, medium grade; few 45° fractures with calcite.
778.5	786.7	Oil Shale, light olive brown to medium brown, even with looped and irregular bedding, poor to fair competence, low to medium grade; several scattered fractures with calcite; trace gilsonite streaks; .05 blue gray, irregular bedded, asphalt, analcitized tuff band at 782.5; few scattered light green gray pyrite and asphaltic analcitized tuff blebs and streaks; asphalt and pyrite partly collapsed leached nahcolite vug .30 at 784.5; .20 core loss from 784.8-785.0; 0.40 core loss from 785.0-785.4; 0.20 core loss from 785.7-785.9 from 785.4-786.7 medium olive brown, medium grade oil shale with even bedding and abundant evidence collapsed leached nahcolite.
786.7	793.9	Oil Shale, light olive brown, even with trace irregular bedding, poor to fair competence, low grade; several scattered fractures and solution fracture zones with calcite and collapsed leached nahcolite; 0.30 core loss from 787.9-788.2; 0.40 core loss from 789.3-789.7; few scattered faint dark gray pyrite streaks; light brown and medium gray brown granular analcitized tuff stringer at 791.1; light brown to white analcitized tuff blebs at 793.05 and 793.8.
793.9	798.5	Oil Shale, light to medium olive brown, even with trace irregular bedding, fair to good competence, low to medium grade; few scattered fractures and partings with calcite and trace asphalt; from 794.8-795.0 several dark brown asphalt and analcitized tuff blebs; gradational contact.

From	To	
798.5	799.5	Oil Shale, light olive brown, even with trace looped bedding, fair to good competence, low grade; .05 zone with abundant dark brown asphalt and white analcitized tuff streaks and blebs at 798.15; white calcite stringer at 799.1; gradational contact.
799.5	803.4	Oil Shale, light olive brown to tan, even bedding, very poor to poor competence, very low grade; slightly marly; abundant scattered solution fractures with calcite and offset bedding; abundant scattered dark gray pyrite streaks and lamina; trace looped bedding.
803.4	806.5	Oil Shale, light to medium olive brown, even with trace looped bedding, fair competence, medium grade; few scattered fractures and partings with calcite; few scattered dark brown asphaltic tuff blebs; gradational contact.
806.5	816.1	Oil Shale, light olive brown, even with trace irregular and looped bedding, good competence, low grade; few scattered dark gray pyrite blebs, streaks and lamina; trace scattered small light blue gray to white analcitized tuff blebs; from 809.75-811.1 medium to dark olive brown, medium to high grade oil shale with even bedding, slightly marly from 811.9-816.1; gradational contact.
816.1	825.0	Oil Shale, light olive brown to light gray brown, even with looped and irregular bedding, fair to good competence, very low grade; marly several scattered dark gray pyrite analcitized tuff streaks and stringers; from 819.3-820.3 medium to dark gray brown medium to high grade oil shale with even and looped bedding; abundant buff marlstone bands from 822.0-823.1; from 823.3-824.0, medium to dark olive brown, medium to high grade oil shale with numerous thin light brown tuff lamina; light to medium brown asphaltic analcitized tuff bleb at 824.0.
825.0	835.8	Marlstone, light gray brown to buff with tan banding, even bedding, very poor to poor competence with numerous planar partings; trace kerogen; abundant dark gray pyrite lamina and streaks; .30 zone with several light brown, argillaceous silty marlstone bands and stringers at 827.8; dark brown irregular asphaltic streaks and stringers from 827.8-828.1; abundant evidence collapsed leached nahcolite from 829.1-829.6; .20 light brown to tan marly breccia at 830.0; 0.80 core loss from 834.2-835.0.
835.8	837.9	Oil Shale, light olive brown to tan, even with contorted and abundant offset bedding, poor competence, very low grade; slightly marly; several scattered collapsed leached nahcolite vugs; few scattered buff marlstone stringers; trace thin white analcitized tuff streaks and stringers.
837.9	839.4	Oil Shale, medium olive brown with dark brown to black banding, streaked and even bedding, poor to fair competence, medium grade; numerous scattered light brown granular tuff blebs and streaks.

From	To	
839.4	843.9	Oil Shale and marlstone, interbedded; overall poor to fair competence, very low grade; oil shale, medium olive brown to medium gray brown, even with trace looped bedding; Marlstone, light brown to light gray brown, even bedding; several scattered solution fractures and planar partings; abundant scattered pyrite blebs, streaks and lamina; .40 medium brown, granular analcitized asphaltic tuff bed at 840.3 and .20 band at 843.55; abundant scattered asphaltic tuff stringer and bands.
843.9	844.7	Oil Shale, medium to dark olive brown, even with trace looped and wavy bedding, poor competence, medium to high grade; few scattered asphaltic tuff streaks and blebs; pyrite stringer at 844.7.
844.7	846.6	Oil Shale, light olive brown, even with trace looped and wavy bedding, fair competence, low grade; several scattered analcitized tuff blebs and stringers, some with associated pyrite and asphalt; .20 zone of abundant irregular asphalt and calcite streaks at 845.9; poker chip partings from 846.2-846.6.
846.6	856.9	Oil Shale, light to medium olive brown with medium gray brown, even with trace looped and irregular bedding, fair to good competence, low grade; few scattered dark brown asphaltic stringers; 0.30 core loss from 849.6-849.9; abundant evidence collapsed leached nahcolite with calcite, pyrite and asphalt from 849.5-850.6; abundant light brown to buff marly stringer from 855.0-856.9; trace gilsonite.
856.9	861.5	Oil Shale, marly, light olive brown to light gray brown with buff banding, even bedding, fair to good competence, very low grade; abundant scattered dark gray pyrite lamina and streaks; .40 dark blue gray analcitized tuff from 857.4-857.8 with sharp irregular upper contact and sharp planar lower contact, massive bedding and some asphalt mineralization; trace scattered light blue gray to white analcitized tuff blebs.
861.5	867.0	Oil Shale, light olive brown with medium olive brown, even with irregular and trace streaked bedding; good competence, low to medium grade; from 861.5-862.5 dark olive brown to black, high grade oil shale with several scattered thin light brown to white tuff lamina; from 862.5-863.05 abundant irregular dark brown and dark greenish gray asphalt and pyrite streaks; abundant small calcite blebs .20 at 862.4; several scattered asphalt blebs and streaks from 862.2-867.0; 0.20 core loss from 862.0-862.2.
867.0	876.1	Oil Shale, dark olive brown to dark gray brown, even with looped and trace irregular bedding, poor to fair competence, medium to high grade; from 867.9-870.7 several scattered light brown to buff bands and stringers; .10 zone of light brown granular analcitized tuff stringer at 867.2; trace scattered pyrite and asphalt streak; .30 zone with several small vug replaced with calcite at 872.05; .10 asphaltic tuff bleb with associated contorted bedding at 874.6.

From	To	
876.1	877.9	Oil Shale, light to medium olive brown, even with trace looped, wavy and irregular bedding, fair to good competence, low to medium grade; trace tuff blebs some pyrite.
877.9	879.4	Oil Shale, dark olive brown with light to medium olive brown, streaked and even bedding with trace irregular bedding, poor competence, medium to high grade; .10 zone of abundant dark brown asphaltic streaks and blebs at 878.4; several scattered fractures with calcite, kaolinite and asphalt; dark brown asphaltic streaks at 878.8 and 878.9.
879.4	886.6	Oil Shale, light and medium olive brown, banded, irregular with even and trace streaked bedding, poor competence from 879.4-882.8, good to excellent from 882.8-886.6; medium grade from 880.2-881.9 numerous medium gray, slightly argillaceous, very calcareous, irregular siltstone stringers and bands; trace dark brown asphaltic blebs and streaks.
886.6	889.3	Oil Shale, dark mahogany brown with light to medium olive brown banding, irregular with streaked and trace even bedding, fair to good competence, high grade; trace contorted bedding.
889.3	891.7	Oil Shale, light olive brown, even with trace irregular bedding, fair to good competence, low grade; several scattered thin dark gray pyrite streaks and lamina.
891.7	892.9	Oil Shale, medium to dark mahogany brown, even, streaked and irregular bedding, good competence, high grade; few scattered dark brown asphaltic streaks and blebs.
892.9	895.8	Oil Shale, light brown to tan with light to medium olive brown, even with trace streaked bedding, fair to good competence, very low to low grade, slightly marly; from 894.7-895.0 dark olive brown high oil shale band with streaked bedding; gradational contact.
895.8	896.7	Oil Shale, light olive brown with medium to dark olive brown banding, even, streaked and irregular bedding, fair to good competence, low to medium grade.
896.7	897.7	Oil Shale, dark mahogany brown, even with trace looped bedding, very poor to poor competence, very high grade; fairly tough, fairly elastic, very low density; abundant collapsed leached nahcolite; .10 zone of abundant light brown granular analcitized tuff streaks and stringers at 897.3.
897.7	900.5	Oil Shale, light to medium olive brown with tan banding, even bedding, poor to fair competence, low grade; slightly marly; few scattered dark gray pyrite streaks and lamina; .10 asphaltic blebs at 900.2
900.5	904.3	Oil Shale, medium olive brown, streaked bedding, fair to good competence, medium to high grade; several scattered asphaltic tuff blebs, abundant scattered light brown analcitized tuff blebs and streaks.

From	To	
904.3	906.9	Oil Shale, medium olive brown, even with abundant offset and trace looped bedding, poor competence, medium grade; abundant solution fractures and solution breccia with calcite and collapsed leached nahcolite from 904.3-908.0.
906.9	908.6	Oil Shale, medium to dark olive brown, streaked bedding, fair competence, high grade; numerous scattered asphaltic tuff streaks and blebs; trace gilsonite.
908.6	912.3	Oil Shale, medium olive brown, brecciated and recemented with even and contorted bedding, very poor competence, medium grade; abundant solution breccia and solution fractures with collapsed leached nahcolite, calcite, asphalt and trace pyrite.
912.3	914.9	Oil Shale, light to medium olive brown, even with trace irregular bedding, poor competence, low grade; few scattered solution fractures and thin solution breccia zones with calcite; few scattered pyrite streaks and lamina; gradational contact.
914.9	917.0	Oil Shale, light to medium olive brown, even bedding, poor to fair competence, low to medium grade; few scattered asphaltic blebs; trace gilsonite.
917.0	923.8	Oil Shale, light olive brown, even with trace faint streaked and irregular bedding, poor competence, very low grade; several scattered solution fractures and partings with collapsed leached nahcolite and calcite; 0.5 core loss from 920.5-921.0; trace asphaltic blebs; trace white calcite tuff blebs; slightly marly with abundant pyrite streaks and lamina from 921.6-923.8; .30 light gray, argillaceous silty tuff band at 922.3 with abundant small vugs; trace gilsonite.
923.8	932.7	Oil Shale, light olive brown with medium olive brown and dark olive brown, even with trace offset and irregular bedding, poor competence, low grade; medium to dark olive brown, medium grade oil shale beds from 923.9-925.1 and 927.7-928.4; numerous light brown thin tuff streaks and lamina from 923.9-924.6 and from 927.7-928.2; from 930.4-932.1 abundant collapsed leached nahcolite with trace kaolinite, calcite and pyrite; light gray brown to buff, marly very low grade oil shale bed from 931.2-932.1; several scattered solution fractures and partings with calcite, asphalt and pyrite.
932.7	935.6	Oil Shale, dark olive brown, irregular and even bedding, poor to fair competence, high grade; from 933.3-933.7 several scattered asphaltic tuff stringers and blebs; from 934.6-935.0 light to medium brown, slightly argillaceous, asphaltic tuff band; few scattered solution fractures and collapsed leached nahcolite zones; gradational contact.
935.6	941.9	Oil Shale, light to medium olive brown, even and irregular bedding, poor to fair competence, low to medium grade; from 936.7-938.6 abundant tan marly blebs; few scattered gilsonite streaks; few scattered solution fracture zones and partings with collapsed leached nahcolite and calcite; several scattered asphaltic blebs and stringers; from 939.5-940.5 abundant white calcareous blebs; gradational contact.

From	To	
941.9	945.6	Oil Shale, light to medium olive brown and light gray brown, even with abundant offset bedding, very poor to poor competence, low grade; light gray brown, very low grade, slightly marly, oil shale beds from 941.9-942.7 and 943.6-944.0; abundant collapsed leached nahcolite and solution fracture zones with calcite; pinpoint calcite zone .30 at 943.6; 0.7 core loss from 944.3-945.0; pinpoint calcite zone .30 at 945.3; gradational contact.
945.6	961.2	Marlstone, light brownish gray, even, brecciated and recemented, and offset bedding, very poor to poor competence; trace kerogen; brecciated and recemented zones with abundant pyrite, calcite and collapsed leached nahcolite from 951.5-953.0, 949.7-950.1, 955.0-955.3 and 956.0-956.1; abundant scattered planar partings and solution fracture zones with pyrite, calcite, and collapsed leached nahcolite; from 946.0-947.4 numerous pinpoint calcareous blebs; 1.0 core loss from 954.0-955.0; few scattered asphalt and pyrite blebs; few fractures sealed with pyrite from 956.3-959.3; abundant pyrite stringer and lamina from 955.6-959.3; several scattered light olive brown oil shale stringers from 959.0-959.9; light brown argillaceous granular tuff band .20 at 961.0.
961.2	962.0	Oil Shale, medium to dark olive brown, streaked and even bedding, fair competence, high grade; numerous thin tan marly streaks and stringers.
962.0	966.4	Marlstone, light brownish gray, even with abundant offset bedding, very poor to poor competence, trace kerogen; few scattered solution fracture zones with collapsed leached nahcolite and pyrite; pinpoint pyrite blebs common from 963.3-964.5; 0.70 core loss from 962.6-963.3; .30 core loss from 965.0-965.3; few scattered medium olive brown oil shale stringers; gradational contact.
966.4	980.9	Oil Shale, marly, light brownish gray to gray brown, even bedding, very poor to poor competence, very low grade; planar "poker chip" partings common; trace streaked bedding; from 967.4-968.0 leached nahcolite bed with abundant oil shale fragments and warped bedding, remnant nahcolite structure with abundant oil shale fragments; light orange brown, asphaltic tuff with abundant pinpoint pyrite .20 band at 969.1, .15 at 969.6, stringer at 970.5, .20 at 970.9 and .25 irregular band at 973.5; abundant solution fractures and brecciated and recemented zones from 973.4-974.9; .40 zone of abundant dark brown to black irregular asphaltic streaks and stringers at 976.6; grades to Marlstone from 972.4-975.2, 976.2-978.0, and 980.0-980.9; dawsonite, calcite, some pyrite, and some asphalt common on partings and fractures.
980.9	983.8	Oil Shale, medium olive brown to medium gray brown, even bedding, poor to fair competence, low to medium grade; trace gilsonite; from 982.0-982.25 several light orange brown slightly asphaltic tuff stringer and blebs; gradational contact.
983.8	985.3	Oil Shale, marly, light brownish gray to light gray brown, even bedding, fair competence, very low grade; light gray analcitized tuff stringer at 983.8.

From	To	
985.3	990.2	Oil Shale, medium gray brown, even with irregular bedding, poor competence, medium grade; several scattered fractures, partings and solution fractures with dawsonite, calcite, collapsed leached nahcolite and trace pyrite and asphalt; trace streaked bedding; dark gray pyrite tuff .30 at 989.1.
990.2	993.9	Marlstone, light brownish gray to buff, even bedding, poor competence, trace kerogen; trace gilsonite streaks; few scattered thin dark gray pyrite streaks and stringers; few scattered solution fractures and partings with collapsed leached nahcolite, pyrite, dawsonite, and calcite; "poker chip" partings from 993.0-993.8; .20 leached nahcolite band with abundant remnant nahcolite structure and oil shale fragments at 993.4.
993.9	995.2	Oil Shale, dark olive brown, even with wavy bedding, poor competence, medium to high grade; dark gray pyrite tuff stringer at 994.4; few scattered tan marly stringers; trace streaked bedding; gradational contact; 0.20 core loss from 994.8-995.0.
995.2	998.4	Oil Shale, very marly, light brownish gray and light gray brown, faintly banded, even with trace streaked and irregular bedding, poor competence, very low grade; several scattered fractures, partings with calcite, dawsonite and collapsed leached nahcolite.
998.4	1000.0	Oil Shale, medium olive brown, even with wavy bedding, poor competence, medium grade; few scattered asphaltic blebs and streaks; several partings with asphalt; .10 irregular tuff stringer at 999.5.
1000.0	1003.9	Marlstone, light brownish gray to buff, even bedding, very poor competence, trace kerogen; poker chip partings, solution fractures common with dawsonite, calcite and slicks; several scattered pyrite streaks.
1003.9	1006.15	Oil Shale, dark mahogany brown to black, even with streaked bedding, very poor to poor competence, high grade; light brown, brittle, pyrite, Marlstone from 1004.6-1005.0; .30 core loss from 1004.3-1004.6; .15 light gray brown marly oil shale band at 1005.6.
1006.15	1010.5	Oil Shale, light to medium olive brown, even bedding, poor competence, low grade; several scattered solution fractures and partings with pyrite, asphalt and collapsed leached nahcolite; abundant pyrite streaks and lamina; trace gilsonite streaks.
1010.5	1012.7	Marlstone with interbedded oil shale, light brownish gray to tan with medium olive brown bands, even with trace streaked and looped bedding, very poor to poor competence; very low grade; numerous partings and few fractures with pyrite, dawsonite, collapsed leached nahcolite and trace asphalt; gradational contact.
1012.7	1015.3	Oil Shale, dark olive brown to black with medium olive brown, even bedding, very poor competence, high to very high grade; low density; fairly elastic; from 1013.9-1014.3 abundant collapsed leached nahcolite; several fractures, solution fracture and partings with asphalt and pyrite; gradational contact.

From	To	
1015.3	1018.7	Marlstone, light brownish gray to tan, even with abundant offset bedding, very poor to poor competence, trace kerogen; "poker chip" partings with pyrite common; several scattered solution fractures with collapsed leached nahcolite and pyrite; pyrite streaks and lamina common.
1018.7	1022.7	Oil Shale, light olive brown with light gray brown, even with irregular and wavy bedding, poor competence, very low to low grade; slightly marly in parts; from 1018.7-1019.7 abundant leached nahcolite vugs and collapsed leached nahcolite with pyrite and asphalt; buff marlstone stringer at 1022.1; from 1022.3-1022.7 dark olive brown, medium to high grade oil shale with numerous thin light brown tuff lamina.
1022.7	1026.6	Marlstone, light gray with light brownish gray and tan, even bedding, poor competence, trace kerogen; pyrite lamina and pyrite mineralization on fractures common; planar partings with pyrite common; dark gray pyrite stringer at 1023.8.
1026.6	1029.7	Oil Shale, dark olive brown, even and streaked with irregular bedding, fair competence, high grade; light brown to white tuff streaks and blebs common; .25 light brownish gray marlstone band at 1027.5.
1029.7	1031.45	Oil Shale, light to medium gray brown, even with abundant offset bedding, poor competence, low grade; dark gray irregular pyrite and asphalt stringers at 1030.6; abundant pyrite lamina and blebs.
1031.45	1032.4	Marlstone, light brownish gray to buff, even with trace offset and irregular bedding, fair competence, trace kerogen; few scattered pyrite streaks and lamina.
1032.4	1034.6	Oil Shale, dark olive brown, streaked and irregular with trace wavy bedding, poor to fair competence, very high grade; fairly low density, abundant scattered light brown and blue gray analcitized tuff blebs and streaks, from 1033.6-1034.5 abundant dark brown asphaltic stringers, blebs and lamina; from 1034.0-1034.4 dark brown asphaltic tuff band.
1034.6	1036.5	Oil Shale, medium olive brown, even with trace irregular bedding, poor competence, medium grade; few scattered asphaltic tuff stringers.
1036.5	1038.05	Marlstone, light brown to tan and light brownish gray, even with abundant offset bedding, very poor competence, abundant solution fractures with pyrite, collapsed leached nahcolite and kaolinite; several scattered pyrite streaks, blebs and stringers.
1038.05	1044.25	Oil Shale, dark mahogany brown to black, streaked bedding, poor to fair competence, very high grade; very low density; very elastic; light brown marlstone and tuff blebs and streaks common; few scattered light olive brown to tan marly bands and stringers; trace gilsonite; several scattered asphaltic tuff stringers; black irregular asphalt stringer with gilsonite at 1049.0; several scattered fractures, solution fractures and partings with finely disseminated pyrite and asphalt.

From	To	
1044.25	1046.5	Oil Shale, light olive brown, even with trace irregular and looped bedding, very poor to poor competence, very low grade; slightly marly; light gray brown marlstone band .40 at 1044.6; .10 zone of abundant pinpoint calcite at 1045.0; several scattered thin buff marlstone stringer and lamina.
1046.5	1048.4	Oil Shale, dark gray brown, even bedding, poor to fair competence, medium grade; several partings with pyrite.
1048.4	1050.1	Marlstone, light brown to light gray brown, even with abundant offset bedding, very poor competence; abundant partings and solution fractures with pyrite; pinpoint pyrite blebs common.
1050.1	1052.5	Oil Shale, light to medium brownish gray with light olive brown, even bedding, poor to fair competence, low to medium grade; slightly argillaceous; abundant planar partings and several scattered solution fractures with pyrite and collapsed leached nahcolite; pyrite streaks and lamina common; from 1052.0-1052.5 grades to light olive brown oil shale.
1052.5	1057.8	Marlstone, light brownish gray with light brown to buff, even with abundant offset bedding, very poor competence; solution fractures and "poker chip" partings with pyrite and collapsed leached nahcolite common; pyrite streaks and lamina common; pinpoint pyrite common; .30 core loss from 1054.1-1054.4.
1057.8	1060.9	Oil Shale, medium to dark gray brown with dark brown to black, even and irregular with streaked bedding, very high grade from 1057.8-1058.9; medium to high grade from 1058.9-1060.9; .25 zone with abundant asphalt stringer and leached nahcolite vugs at 1058.6; dark brown and dark gray asphalt and pyrite stringer at 1059.7; trace leached nahcolite vug with pyrite.
1060.9	1062.6	Marlstone, light brown to tan with buff, even bedding, poor competence, trace kerogen; pinpoint pyrite and pyrite streaks and lamina common; .15 zone with abundant pinpoint calcite at 1061.7; gradational contact.
1062.6	1074.0	Oil Shale, medium gray brown to medium olive brown with greenish gray cast, even bedding, very poor to poor competence, low grade; slightly argillaceous and slightly marly in parts; solution fractures and partings common with collapsed leached nahcolite, pyrite, calcite and asphalt; several scattered tan to buff marlstone stringers and bands; pinpoint pyrite and pyrite streaks and lamina common; from 1068.9-1070.15 and 1071.1-1071.4 pinpoint calcite common; offset bedding common; .40 core loss from 1064.0-1064.4; light brown to buff marlstone bed from 1072.15-1072.8.
1074.0	1080.15	Oil Shale, medium to dark gray brown, light to medium gray brown and medium olive brown, even with trace offset and contorted bedding, fair competence, medium grade; slightly argillaceous, pinpoint calcite common from 1076.0-1078.0; .20 zone at 1078.4 with abundant collapsed leached nahcolite, pyrite streaks and contorted and offset bedding; from 1079.0-1080.15 abundant irregular calcite replaced vugs.

From	To	
1080.15	1083.3	Marlstone, light brownish gray, even with abundant offset bedding, very poor competence, solution fractures with collapsed leached nahcolite and pyrite common; few scattered pinpoint calcite zones; from 1083.5-1083.3 several medium brown low grade oil shale stringers; from 1082.5-1082.8 abundant irregular calcite and pyrite replaced vugs; gradational contact disseminated pyrite common.
1083.3	1085.5	Oil Shale, medium gray brown with light to medium brown, even with trace irregular bedding, poor to fair competence, low grade; slightly argillaceous; from 1083.3-1084.0 and from 1085.3-1085.5 abundant irregular calcite and pyrite replaced vugs; pinpoint pyrite common.
1085.5	1088.9	Marlstone, light gray to light brownish gray, even to nearly massive with abundant offset bedding, very poor competence, trace kerogen; few scattered thin brecciated and recemented zones; pinpoint pyrite common; abundant solution fractures with collapsed leached nahcolite and pyrite; abundant scattered irregular white calcareous streaks and stringers; gradational contact.
1088.9	1092.3	Oil Shale, marly, light olive brown to tan with light to medium gray brown, abundant offset with even and trace streaked bedding, very poor to poor competence, very low grade; abundant leached nahcolite vugs some with pyrite; pinpoint pyrite and pyrite streaks common; gradational contact.
1092.3	1094.8	Oil Shale, medium gray brown, even with irregular bedding, poor competence, low to medium grade; slightly argillaceous from 1092.3-1093.3; several scattered pyrite streaks and blebs; few scattered asphaltic blebs; .075 light orange brown, brecciated band possibly tuff.
1094.8	1105.4	Marlstone, light gray with light brownish gray, even and abundant offset bedding, very poor competence; solution fractures and poker chip partings with collapsed leached nahcolite, pyrite and kaolinite common; very argillaceous; grades to slightly moderate calcite, bentonitic shale, from 1101.5-1103.8 very soft and crumbly with abundant pinpoint calcite and pyrite blebs and streaks, abundant leached nahcolite vugs replaced with calcite and pyrite; pyrite lamina and pinpoint pyrite common; few scattered solution breccia zones; very low to barren zones from 1097.5-1098.15; .20 at 1099.4; and 1104.0-1105.4.
1105.4	1107.6	Oil Shale, argillaceous; medium to dark gray brown, even bedding, poor competence, low grade; light brown to light brownish tuff streaks and blebs common; abundant planar and irregular partings.
1107.6	1123.3	Marlstone, light gray to light brownish gray, even bedding with abundant offset; very poor competence; pinpoint pyrite, disseminated pyrite, pyrite lamina and pyrite streaks; solution fractures and "poker chip" partings with collapsed leached nahcolite and pyrite common; pinpoint calcite and irregular calcite filled vugs common; from 1110.2-1112.3 and from 1120.5-1122.4 very low grade to barren, argillaceous oil shale; 0.90 core loss from 1122.4-1123.3.
	1123.3	Total Depth