

Geologic Log
Cliff 9-1
DD

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7/22/90

Begin (begin at 481.5')

481.5 - 484.0 thin, laminated shale, light olive gray 5Y 6/1

484.0 - 490.1 laminated shale, light olive gray 5Y 5/2
with minor tuff seams at 488.0 and 488.9 (both black bitumens)

490.1 - 490.7 — tuff zone, orange-tan color, slightly
contorted boundaries, beds light colored bitumens

490.7 - 491.5 — laminated shale, light olive gray 5Y 5/2
begin

491.5 - 497.4 — same as above 5Y 5/2 shale (one thin
0.1 tuff seam at 493.2)

497.4 - 497.9 — tight brownish tan colored tuff zone

497.9 - 499.3 — light olive gray shale 5Y 5/2

499.3 - 501.2 light olive brown (5Y 5/6) shale

501.2 - 501.5 — mod. olive brown shale 5Y 4/4

end of run

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501.5-511.5 - competent, thinly laminated shale,
end of run light olive gray 5Y 5/2 with tuff

still low grade seams at 504.2-504.25

505.6-505.8

507.5-507.55

508.85-508.9

511.3-511.35

515-514.9 still competent, thinly laminated shale 5Y 5/2 shale
Thin tuff seam 512.9-513.0

514.9-515.2 like above only slightly more tannish color, still
call it 5Y 5/2 though

519.2-520.8 light olive brown (5Y 5/6) shale - low grade

520.8-521.5 med grade shale 10YR 4/2 (dk yellowish brown)
end of run with thin tuff seam at 520.95 & 521.3

521.5-523.3 - gray to light tan tuff bed with contorted bedding
no bitumens - at least not oozing, Few pyrite
grains,
(upper very
bed?)

523.3-531.5 - competent shale unit - basically light olive gray 5Y 5/2
end of run low grade with few thin intervals showing slightly higher grade

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531.5 - 537.6 - Competent, thinly laminated shale 5Y 5/2
(light olive gray)

537.6 - 541.5 - competent, thinly laminated shale, brownish
low grade oil shale color; dark brownish yellow 10YR 4/2
end of run

541.5 - 542.8 - competent, med grade oil shale
olive gray color 5Y 4/1

542.8 - 547.1 light olive gray oil shale 5Y 5/2
low grade

547.1 - 547.6 - med grade oil shale 5Y 4/1

547.6 - 549.8 - light olive gray oil shale 5Y 5/2

549.8 - 550.5 - med grade oil shale 5Y 4/1

550.5 - 551.5 - ~~med~~ olive gray shale 5Y 3/2
end of run (low grade)

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551.5-552.7 - light olive gray, low grade 5Y5Z

552.7-556.7 - tanish gray shale (yellowish gray 5Y7/2), low
grade shale.
- white ~~to~~ ^{tuff} ~~habite~~ bleb at 554.15
white tuff bleb at 556.1

556.7-561.5 greenish gray (5GY 6/1), low
end of run grade, competent, shale

561.5-563.0 - change in color, med grade shale

563.0-564.0 - high grade oil shale, banded, olive black 5Y2/1

564.0-567.3 low to med grade oil shale, brownish gray 5YR 4/1
to light olive gray 5Y 5/2
with tuff zone at 564.85-564.95

567.3-567.8 - med grade shale, grayish brown 5YR 3/2

567.8-568.05 - a 0.25 brown tuff ~~bed~~

568.05-568.4 - high grade oil shale, dusky brown 5YR 2/2

568.4-568.6 - brownish gray tuff, produces gas

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568.6 - 569.2 - high grade shale, 5YR 2/2

569.2 - 570.8 - med grade shale, tan to brown 10YR 4/2

570.8 - 571.5 - high grade shale, dusky brown 5YR 2/2
end of run

571.5 - 571.7 - same as above

571.7 - 572.5 - med grade shale, dusky brown 10YR 4/2

572.5 - 576.1 - brownish gray to light olive gray 5Y 5/2, low
grade shale

576.1 - 581.5 - low grade shale, greenish gray 5G 4/1
end of run with buff zone 578.2 - 578.6 (light gray to
med gray with some contorted bedding & contacts)

581.5 - 582.5 - low grade shale, yellowish gray 5Y 7/2

582.5 - 583.7 - high grade shale, brownish black 5YR 2/1

583.7 - 585.0 - med grade shale, light olive gray 5Y 5/2

585.0 - 587.1 - low grade med olive brown 5Y 4/4

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587.1 - 589.1 - med to high grade shale, grayish brown 5YR 3/2

589.1 - 591.0 - med grade shale, dk yellowish brown 10YR 4/2
end of run to light olive gray 5Y 5/2

591.0 - 593.5 - high grade oil shale, dark colors, olive
end of run gray 5Y 4/1 to olive black 5Y 2/1

593.5 - 594.6 - same as above

594.6 - 594.9 - med grade shale 10YR 4/2

594.9 - 596.1 - high grade shale, olive black 5Y 2/1

596.1 - 596.35 - yellowish brown tuff zone, contorted, light gray blebs
~~1~~

596.35 - 598.4 - med ~~to high grade~~ ^{grade} oil shale, fairly consistent throughout
interval, competent 5Y 5/2

598.4 - 600.2 - high grade oil shale, olive gray 5Y 3/2

600.2 - 603.7 - med grade oil shale, dk yellowish brown 10YR 4/2
end of run

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603.7-605.4 low to med grade, tan to olive tan (5Y 7/2) shale

605.4-606.2 - med grade oil shale 10YR 4/2

606.2-607.3 - rich oil shale, dark greenish gray 5GY 4/1

607.3-608.7 - med grade shale, dusky yellow 5Y 6/4

608.7-609.4 - rich oil shale, olive gray 5Y 3/2

609.4-611.7 - low to med grade shale 5Y 7/2 (yellowish gray)

611.7-613.5 - rich oil shale, mostly olive gray 5Y 3/2
end of run with thin buff seam at 613.1

613.5-613.65 - same as above

613.65-618.0 - low to med grade oil shale, buff to light brown in color 10YR 6/2

618.0-619.2 - med grade oil shale, brown 10YR 4/2

619.2-623.5 - low to med grade shale 10YR 6/2 to 10YR 4/2
end of run

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623.5 - 628.3 - uniform, competent shale, low to med grade oil shale 10YR 4/2

628.3 - 629.1 - med to high grade shale, dusky brown 5YR 2/2

629.1 - 633.5 - low grade oil shale, med gray to tan in color; call it yellowish gray 5Y 7/2 to light olive gray 5Y 5/2
end of run

633.5 - 634.5 - med grade oil shale 10YR 4/2

634.5 - 635.0 - grayish shale, low grade, 5Y 6/1

635.0 - 635.4 - brown & gray tuff, produces gas, no visible bitumen

635.4 - 636.1 - low grade, grayish shale 5Y 6/1

636.1 - 637.7 - med to high grade shale, variable lamina thickness dark yellow brown 10YR 4/2

one 0.1 tuff seam (brown) at 636.5 - black bitumen

637.7 - 639.7 - thickly laminated shale, gray to brown lamina 5Y 6/1
low grade

639.7 - 641.3 - med to high grade shale with, 10YR 4/2

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646.3-647.5 - med grade shale 10YR 6/2

647.5-648.5 - low grade, light olive gray 5Y 6/1
end of run

648.5-649.2 - Same as above

649.2-650.0 - low grade shale, light olive gray 5Y 5/2

650.0-650.8 - med to high grade shale, light to dk yellowish brown 10YR 4/1

650.8-651.5 - tan to brown to gray contorted tuff zone,
produces a little gas

651.5-652.0 - med to high grade oil shale, dk yellowish brown 10YR 4/2
651.9-652.95 thin tuff

652.0-653.5 - low grade shale, interbedded light brown and gray, 10YR 6/2 to 5Y 7/2
2nd of run

(Bottom)
M2
Top 6-6000

653.5-655.2 - Same as above

655.2-659.6 - gray & olive gray, low grade shales 5Y 6/1

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659.6 - 660.2 - grayish brown, low grade shale,
cell. it light olive gray 5Y 6/1 to 5Y 4/1

660.2 - 660.4 - tuff seam with pyrite crystals

660.4 - 663.5 - coarsely laminated, gray to buff brown (10YR 6/2)
end of run laminae, low grade shale

663.5 - 666.8 - same as above
brown tuff zone with tubular 664.5 - 665.8

666.8 - 667.9 - laminated, gray shale with slight buff tone

667.9 - 668.9 - coarsely laminated gray to buff brown, low
grade shale

668.9 - 669.4 - brown tuff zone, distorted, oozes between

669.4 - 669.8 - coarsely laminated gray to buff brown,
low grade shale

669 - 673.5 - very low grade shale, blueish gray
end of run color, med light gray N6, very competent unit

T.D. 7
stopped hole
7/24/90

left hole open
cap