

LITHOLOGIC DESCRIPTION OF DRILL HOLE CE-707

Located 1004' FSL and 1065' FEL Sec. 32, T15S, R99W
 Rio Blanco County, Colorado
 Ground Elevation 7182', Kelly Bushing 7192'

| From | To | Description |
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| 0' | 5' | Marlstone, light brown to buff, slightly varved, some lean oil shale. |
| 5' | 10' | Marlstone, light brown to buff, oil shale medium brown (lean). |
| 10' | 15' | As above. |
| 15' | 20' | Marlstone, light gray to buff; rare oil shale medium brown. |
| 20' | 25' | Marlstone, light brown to buff, siltstone light brown calcareous, some medium brown oil shale, some light brown shale. |
| 25' | 30' | As above. |
| 30' | 35' | As above. |
| 35' | 40' | As above. |
| 40' | 45' | Marlstone, light brown to gray. |
| 45' | 50' | As above. |
| 50' | 55' | Oil shale, dark brown varved, thin bedded. |
| 55' | 60' | Marlstone, gray, oil shale, medium brown. |
| 60' | 65' | As above. |
| 65' | 70' | Siltstone, light gray, rare light brown oil shale. |
| 70' | 75' | As above. |
| 75' | 80' | Oil shale, dark brown, varved, thin bedded, rare light gray marlstone. |

Core Description

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| Core #1 | 83.1'-95.1' | Cored 12.0' | Recovered 11.4' |
| 83.1' | 91.7' | Oil shale, varved dark green to medium green, (paper shale type), analcitized tuff blebs throughout unit, with thin irregularly bedded analcitized tuffs at 84.0', 84.4', 89.9'. Paper shale partings (very thin) are tuff (light brown). | |
| 91.7' | 94.5' | Oil shale, varved dark green to medium green brown (paper shale type), varves have lensing structure (eye-like); irregularly bedded analcitized tuffs at 92.3', 93.6'; paper shale partings (very thin) are tuff (light brown). | |

| From | To | Description |
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| 94.5' | 95.1' | Missing |
| Core #2 | | 95.1'-109.0' Cored 14.8' Recovered 12.6' |
| 95.1' | 101.0' | Oil shale, varved dark brown to medium brown, with some eye-like lensing, marly; blebs of tuff partially analcitized; also thin tuff lenses; paper shale partings; disseminated pyrite scattered throughout; thin calcite fracture parting at 99'; pyrite crystals on fracture surface at 98.6' and 99'; section from 98.2'-100.3' is badly fractured. |
| 101.0' | 107.7' | Oil shale, varved dark brown to medium gray brown, marly; numerous thin lenses of tuff give a thin banded appearance; paper shale partings; some thin tuff lenses are analcitized. |
| 107.7' | 109.9' | Missing |
| Core #3 | | 109.9'-128.5' Cored 18.6' Recovered 18.6' |
| 109.9' | 112.6' | Marlstone, varved medium to light brown, with some dark brown oil shale, and some buff tuff; numerous thin lenses of tuff; eye-like structures; scattered blebs of tuff, some analcitized; some tuff lenses analcitized; calcite crystal 1/2" thick at 111.2'. |
| 112.6' | 114.15' | Oil shale, varved dark to medium brown to medium brown and buff, marly; eye-like structures, also some truncating of varves (miniature faults); thin lenses of tuff, some analcitized; calcite lense 1/4" thick at 114.15'; unit is banded with zones of disturbed irregular bedding with numerous tuffs and zones of more regular bedding. |
| 114.15' | 125.5' | Marlstone, varved medium to light brown to buff, banded with zones of disturbed and irregular bedding; eye-like structures appear in bands; numerous thin lenses of tuff, about 10% are analcitized; small blebs of tuff; thin lenses of pyrite scattered throughout, also some disseminated pyrite crystals; thin lenses of calcite 1/8" thick at 118.05'-118.1'; calcite blebs 1/4" thick at 124.3', 1" thick at 124.8'; fracture infill between 124.3' and 124.8'; high angle fractures throughout entire unit. |

| From | To | Description |
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| 125.5' | 126.7' | Oil shale, dark brown, varved; lenses of tuff 1/4" thick at 126.4'; analcitized lenses 1/8" thick at 126.45', 126.5' and 126.55'; zone of very thin interbedded oil shale and tuff 1" thick at 126.6'. |
| 126.7' | 128.5' | Marlstone, medium brown, varved; numerous blebs of tuff, some partially analcitized; thin lenses of tuff throughout, 1/4" thick at 127.8' analcitized; zones of irregular bedding with eye-like structures. |
| Core #4 | 128.5'-158.4' | Cored 29.9' Recovered 17.6' |
| 128.5' | 134.6' | Marlstone, varved medium brown to light brown; with dark brown oil shale lenses; numerous thin lenses of tuff (light brown to buff); overall interbedding of tuff and oil shale and marlstone, more marly over the unit; blebs of tuff, mostly analcitized, throughout the unit; tuff lenses 1/2" thick at 128.85'; oil shale zone 131.2'-131.8'. |
| 134.6' | 136.0' | Oil shale, dark brown, varved; thin lenses of tuff scattered throughout; blebs of tuff common; claystone 1/2" thick at 134.95'. |
| 136.0' | 146.1' | Marlstone, medium brown, varved with thin oil shale and tuff interbedding; tuff lenses throughout, tuff lenses 1" thick at 137.5', 1/4" thick at 137.6', 1/2" thick at 139.4', 1/2" thick at 139.8'; disseminated pyrite throughout; calcite crystal infill in high angle fractures from 137.5'-138.7'; eye-like structures in zones of more oil shale; oil shale zones 143.2'-143.5' and 145.8'-146.1'. |
| 146.1' | 158.4' | Missing |
| Core #5 | 158.4'-169.9' | Cored 11.5' Recovered 11.5' |
| 158.4' | 169.9' | Sandstone, fine to very fine grain, marly, medium brown; some interbedded zones of marlstone and tuff; disseminated pyrite throughout; also pyrite nodules throughout unit; upper section with high angle fractures with a black brown oil residue along fractures; oil residue in lower section from 167.2'-169.9' on vertical fractures, lower section badly fractured and broken; |

| From | To | Description |
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| | | many fossil fragments which have been carbonized at 163.95', 164.4', 169.5'; several other small fossils scattered throughout unit; black brown oil residue on most fractures, appears coal-like at 160.3'. |
| Core #6 | | 169.9'-176.3' Cored 6.4' Recovered 5.6' |
| 169.9' | 175.6' | Sandstone, very fine grained, light brown with some darker brown carbonaceous marbeling as above unit 158.4'-169.9'. Vertical fractures and broken near top and bottom. |
| 175.6' | 176.3' | Missing |
| Core #7 | | 176.3'-190.2' Cored 13.9' Recovered 12.0' |
| 176.3' | 188.3' | Sandstone, medium to very fine grained, gray to brown with carbonaceous marbeling throughout unit; pyrite nodules abundant; broken core near middle of unit, bottom of unit also badly broken. |
| 188.3' | 190.2' | Missing |
| Core #8 | | 190.2'-206.1' Cored 15.9' Recovered 8.9' |
| 190.2' | 192.7' | Sandstone, very fine grained, light gray brown, carbonaceous marbeling, fossil plant material, pyrite nodules. |
| 192.7' | 198.4' | Marlstone (lean oil shale), varved medium green to dark green, lensing of varves, blebs of tuff, thin beds of analcitized tuff throughout unit. |
| 198.4' | 199.1' | Tuff, very friable, dry earthy resemblance, light brown to buff in color. |
| 199.1' | 206.1' | Missing |
| Core #9 | | 206.1'-223.6' Cored 17.5' Recovered 16.7' |
| 206.1' | 213.3' | Marlstone, light gray brown, blebby with light brown tuff and claystone, irregularly bedded analcitized tuffs at 208.4', 208.6', 209.1', 209.2', 209.3'; marbeling of carbonaceous material, lensing varved, pyrite abundant. |
| 213.3' | 214.6' | Oil shale, varved dark brown to medium brown, analcitized tuff at 214.4', some lensing of varves. |

| From | To | Description |
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| 214.6' | 216.2' | Sandstone, very fine grained, light gray brown, carbonaceous fragments, pyrite nodules. |
| 216.2' | 222.3' | Marlstone, varved light gray brown to medium green, blebby with light brown tuffs and claystone, carbonaceous marbeling only locally, pyrite present. |
| 222.3' | 222.8' | Oil shale, varved medium brown to dark brown, blebby with light brown tuff and/or claystone. |
| 222.8' | 223.6' | Missing |
| Core #10 | 223.6'-232.1' | Cored 8.5' Recovered 8.5' |
| 223.6' | 232.1' | Marlstone, varved gray brown to medium green, blebby with light brown tuff and/or claystone; irregular thin bedded analcitized tuff at 223.9', 225.3', 226.2', 227.3'; unit is badly fractured and broken at 227.0', 229.5', 231.0'-232.1'. |
| Core #11 | 232.1'-257.1' | Cored 25.0' Recovered 5.8' |
| 232.1' | 237.9' | Sandstone, very fine grain, slightly calcareous, gray brown; some small fossil fragments, carbonized. |
| 237.9' | 257.1' | Missing |
| Core #12 | 257.1'-287.1' | Cored 30.0' Recovered 6.0' |
| 257.1' | 259.2' | Marlstone, medium brown, slight varving; calcite lenses 1/8" thick at 257.6' and 257.7'; other thin calcite infills, some gray mudstone. |
| 259.2' | 260.1' | Mudstone, gray to gray brown, some interbedded marlstone, brown; very irregular bedding; possibly fault zone; blebs of tuff. |
| 260.1' | 263.1' | Mudstone, gray, some fragments of marlstone and brown claystone; breccia zone, possible fault zone; deposit of white soft crystalline material along fracture (gypsum), badly fractured, some swelling of clays at 262.3'; some interbedded sandstone, very fine grain, gray. |
| 263.1' | 287.1' | Missing |

| From | To | Description |
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| Core #13 | 287.1'-300.0' | Cored 12.9' Recovered 12.9' |
| 287.1' | 290.2' | Claystone, gray, soft, silty to sandy in places; with interbedded brown claystone 3" thick at 287.6'; nodules of brown claystone scattered throughout the claystone matrix; also some tuff blebs 1" thick at 290.0'. analcitized. |
| 290.2' | 300.0' | Oil shale, varved medium to dark brown, marly; numerous thin lenses of tuff, some analcitized, 1/2" thick at 292.9' and 1/2" thick at 292.95'; tuff bed from 293.7'-294.3' analcitized; numerous tuff blebs, about 50% are analcitized; thin interbedded marlstone 1/4" thick at 293.2'; lenses of dolomite 1/4" thick at 297.2', 1/4" thick at 297.35', 1" thick at 297.6'; some high angle fractures; lower section from 298.5'-300.0' badly broken. |
| Core #14 | 300.0'-308.5' | Cored 8.5' Recovered 8.5' |
| 300.0' | 303.4' | Oil shale, varved medium to dark brown, marly; lenses of thin tuff, some analcitized, 1" thick at 301.9'; blebs of tuff, some analcitized; irregular bedding with eye-like structures. |
| 303.4' | 308.5' | Marlstone, medium brown, varved, with dark brown oil shale, lenses of analcitized tuff 1.5" thick at 304.05', 1/2" thick at 306.1', 1/2" thick at 306.2'; analcitized blebs of tuff in a zone from 306.8'-308.2'; high angle fractures in a zone from 305.0'-308.5'; some irregular bedding with eye-like structures. |
| Core #15 | 308.5'-324.0' | Cored 15.5' Recovered 15.5' |
| 308.5' | 312.6' | Oil shale, varved medium to dark brown, marly; thin lenses of tuff interbedded with oil shale; analcitized tuff lenses 1" thick at 311.8', 1.5" thick at 312.0' and 3/4" thick at 312.5'; numerous blebs of tuff throughout, many partially analcitized; oil shale irregularly bedded around many tuff blebs, with some eye-like structures. |
| 312.6' | 315.3' | Marlstone, medium brown, varved, with dark |

| From | To | Description |
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| | | brown oil shale; blebs of tuff; vertical fractures. |
| 315.3' | 318.5' | Oil shale, varved dark brown to medium brown, marly; numerous thin blebs of tuff, thicker blebs analcitized at 317.8', 318.45'. |
| 318.5' | 324.0' | Marlstone, varved medium brown to dark brown, with oil shale, banded with more marly unvarved zones at 318.8' and 319.15'; numerous blebs of tuff, some analcitized; lenses of tuff mostly very thin, thicker one 1" to 1.25" thick at 320.45'; calcite lenses 1/4" thick at 320.35', 1/2" thick at 320.5', 1/2" thick at 320.75', 1/4" thick at 321.2', and 1" thick at 322.8'; from 322.2'-324.0' badly fractured and broken; some black brown tar-like material on some fracture surfaces. |
| Core #16 | 324.0'-341.8' | Cored 17.8' Recovered 14.3' |
| 324.0' | 325.5' | Marlstone, varved medium green to medium brown, blebby with light brown to buff tuff and/or claystone. |
| 325.5' | 326.2' | Oil shale, varved dark brown to medium green brown, lensing of varves causes eye-like appearance. |
| 326.2' | 328.6' | Marlstone, varved medium green to light brown, blebby with tuff and/or claystone; bleb at 327.0' is medium grain tuff with residue hydrocarbon. |
| 328.6' | 333.5' | Sandstone, very fine grain, rusty maroon in color, massive, with some interbedding of irregularly bedded marlstone; pyrite associated with contact between sandstone and marlstone and disseminated throughout unit; broken; high permeability; carbonaceous fragments throughout unit. |
| 333.5' | 338.3' | Marlstone, varved medium green to light brown, blebby with claystone or tuff; unit is badly fractured and broken. |
| 338.3' | 341.8' | Missing |
| Core #17 | 341.8'-359.2' | Cored 17.4' Recovered 18.0', 0.6' from previous lost core from Core #16. |
| 341.8' | 345.8' | Marlstone, varved medium green to light brown, blebby with analcitized tuff and light brown tuffs and claystone; thin irregular beds of |

| From | To | Description |
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| 345.8' | 351.7' | very fine grain sandstone (light brown). Sandstone, very fine grain, medium gray brown, with carbonaceous fragments throughout unit. Unit fractured and water wet. |
| 351.7' | 352.3' | Marlstone, varved medium green to light brown, blebby, irregularly bedded analcitized tuff at 352.0'. |
| 352.3' | 355.0' | Tuff, analcitized, gray to medium brown, interbedding of irregularly bedded marlstone, light brown, carbonaceous marbeling; some solution around analcitized areas. |
| 355.0' | 359.2' | Oil shale, marly, varved medium brown to dark brown, irregularly bedded analcitized tuffs only locally; slightly blebby with claystone and/or tuff (light brown). |
| Core #18 | 359.2'-375.8' | Cored 16.6' Recovered 16.6' |
| 359.2' | 362.2' | Oil shale, medium to dark brown, marly, some fine veinlets of calcite, also disseminated calcite with some local solution cavities (very small). |
| 362.2' | 367.0' | Oil shale, varved dark green brown to medium green brown, blebs of medium brown tuff rare; lensing of varves; calcite veinlet and infill at 367.0'. |
| 367.0' | 371.7' | Marlstone, medium brown, slightly varved, bottom of unit badly fractured and broken. Calcite veinlets near top of unit. |
| 371.7' | 375.8' | Oil shale, marly, varved medium green brown to medium brown; bottom of unit is fractured with white earthy material on fracture surfaces; blebs of analcitized tuff at 373.8' and 373.9', slight dark brown hydrocarbon staining on fracture surfaces. |
| Core #19 | 375.8'-406.1' | Cored 30.3' Recovered 30.0' |
| 375.8' | 381.7' | Oil shale, marly to dolomitic, varved medium brown to light brown, interbedded with thin marlstone, lensing of varves common. |
| 381.7' | 392.3' | Oil shale, marly to dolomitic, varved medium brown to dark brown; occasional small blebs of light brown tuff; lensing of varves with some irregular bedding at the change in colors. |
| 392.3' | 394.6' | Oil shale, dolomitic to marly, varved dark |

| From | To | Description |
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| 394.6' | 404.4' | brown, lensing of varves; unit appears to be of relatively low density. Oil shale, marly, interbedded with thin bedded marlstone (light brown); blebby with tuff (light brown); blebs of analcitized tuff at 400.6', 402.6', 404.3'; fractures are present but sealed with calcite and competent. |
| 404.4' | 405.85' | Oil shale, dolomitic, varved dark brown, some lensing of varves with bleb of analcitized tuff at 405.2'; unit has low relative density. |
| 405.85' | 406.1' | Missing |
| Core #20 | 406.1'-415.8' | Cored 9.7' Recovered 8.3' |
| 406.1' | 410.75' | Oil shale, dark brown, varved medium brown, marly; banded with medium brown and light brown units; lense of analcitized tuff 1/2" thick at 408.9', blebs of tuff 1/4" thick at 409.55'. |
| 410.75' | 414.4' | Dolomite, varved medium to light brown, with some dark brown oil shale; some thin lenses of analcitized tuff; badly fractured and broken. |
| 414.4' | 415.8' | Missing |
| Core #21 | 415.8'-427.0' | Cored 11.2' Recovered 8.2' |
| 415.8' | 417.8' | Dolomite, medium brown, interbedded with oil shale, varved dark brown to medium brown; irregular and slumped bedding; zones of dolomite crystals; blebs and thin lenses of pyrite; some interbedded tuffs partially analcitized; vuggy dolomite with dolomite crystals in vugs from 417.7'-417.85'. |
| 417.8' | 420.0' | Dolomite, medium to light brown to light gray, some varving; numerous thin lenses of pyrite, some blebs of pyrite; brown in upper zone, gray in lower 1.4'; almost a claystone in lower gray section (A Groove). |
| 420.0' | 422.2' | Dolomite, gray, interbedded with gray claystone; mostly broken; some thin pyrite lenses; some thin lenses of analcitized tuff; some fossil fragments. |
| 422.2' | 424.0' | Oil shale, medium brown, varved dark brown, slightly dolomitic; numerous thin lenses of pyrite from 422.2'-422.65'; thin lenses of analcitized tuff from 422.7'-423.2'; badly |

| From | To | Description |
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| 424.0' | 427.0' | fractured along high angle fractures; bottom 6" badly broken. Missing |
| Core #22 | 427.0'-450.2' | Cored 23.2' Recovered 22.7' |
| 427.0' | 429.2' | Oil shale, varved dark to medium brown, dolomitic; banded with medium to light brown marlstone; lenses of tuff analcitized 1/4" thick at 428.65', 428.75' and 428.85'; scattered blebs of tuff; some irregular bedding with eye-like structures, some fractures, some disseminated pyrite. |
| 429.2' | 433.5' | Marlstone, medium brown, varved, interbedded with oil shale, dark brown, dolomitic; banded; numerous lenses of tuff analcitized; most numerous tuff lenses from 432.0'-432.5'; irregular bedding with some eye-like structures; oil-like residue on some fracture surfaces; high angle and vertical fractures; small fossil 1/8" long on fracture face at 430.7'. |
| 433.5' | 434.2' | Tuff, analcitized, with interbedded oil shale, dark brown, irregular bedding; disseminated pyrite. |
| 434.2' | 436.8' | Oil shale, medium brown, varved, with some dark brown oil shale; fractured, vertical and high angle fractures; thin lenses of tuff, some blebs of tuff; calcite infill in fractures at 436.0' and 436.3'; disseminated pyrite at 434.5'. |
| 436.8' | 439.0' | Oil shale, dark brown, varved, dolomitic; lenses of analcitized tuff, 1/8" thick at 437.45', 1/4" thick at 437.6', 1" thick at 437.7'. |
| 439.0' | 448.9' | Oil shale, dark to medium brown, varved, interbedded marlstone, light to medium brown; a few blebs of tuff; a zone of fractures with calcite infill and some pyrite; lenses of tuff 1" thick at 440.3'; calcite lense 1/4" thick at 440.5'; blebs of tuff analcitized 1/4" thick at 448.65'. |
| 448.9' | 449.4' | Tuff, analcitized, fractured and badly broken, some calcite crystals on edges. (Mahogany Marker) |
| 449.4' | 449.7' | Oil shale, varved medium to dark brown, thin lenses of tuff, analcitized. |
| 449.7' | 450.2' | Missing |

| From | To | Description |
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| Core #23 | 450.2'-472.3' | Cored 22.1' Recovered 19.5' |
| 450.2' | 453.0' | Oil shale, marly, varved medium brown to light brown, interbedded with thin light brown marlstone. Blebs of tuff rare, upper part of unit broken and fractured. |
| 453.0' | 460.4' | Oil shale, dolomitic to marly, varved dark brown to medium green brown, some irregular beds of analcitized tuff; large bed of analcitized tuff at 458.2', with tuff beds at 457.6', 459.3'. |
| 460.4' | 467.6' | Oil shale, dolomitic to marly, varved dark brown to medium brown (some almost black) with low relative density; lensing and truncating of varves with some entrilitic structure; thin irregular bed of analcitized tuff at 465.3'. |
| 467.6' | 469.6' | Oil shale, marly, varved dark green brown to medium green brown, lensing of varves with thin irregular beds and blebs of analcitized tuff, some truncating of varves, also slump (enterolithic) structures. |
| 469.6' | 472.3' | Missing |
| Core #24 | 472.3'-502.2' | Cored 29.9' Recovered 29.9' |
| 472.3' | 481.3' | Oil shale, dolomitic to marly, varved medium green brown to dark brown, lensing of varves, slump (enterolithic) structures prevalent near middle of unit; fractured and broken at 473.5', blebby throughout unit. |
| 481.3' | 486.6' | Oil shale, marly, varved dark green brown to medium brown, small blebs of tuff with very thin wedges of gilsonite rare. Lower part of unit is fractured and broken. Calcite lining on fracture surfaces. |
| 486.6' | 489.6' | Marlstone, medium brown, interbedded with oil shale varved medium brown; unit has small veinlets of calcite and is fractured and broken. |
| 489.6' | 490.7' | Oil shale, varved dark brown to medium brown, dolomitic; three thin irregularly bedded tuffs (analcitized) occur at 490.3', 490.4', 490.6'. |
| 490.7' | 492.7' | Oil shale, varved medium brown, marly, badly broken and fractured. |

| From | To | Description |
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| 492.7' | 496.7' | Oil shale, marly, varved dark brown, dull waxy lustre, blebby with tuff and claystone, evidence of large solution cavity at 496.0'. |
| 496.7' | 502.2' | Oil shale, marly, varved dark green brown to light brown, lensing of varves creating eye-like structures, some varves truncated; blebs of analcitized tuff rare; calcite veinlets and infill at 499.0'. |
| Core #25 | 502.2'-509.4' | Cored 7.2' Recovered 7.2' |
| 502.2' | 509.4' | Oil shale, marly, varved medium brown to medium green brown, blebby with tuff or claystone; vertically fractured and badly broken; calcite and dark brown ferruginous material on fracture surfaces. |
| Core #26 | 509.4'-513.4' | Cored 4.0' Recovered 4.0' |
| 509.4' | 513.4' | Oil shale, varved dark brown to medium brown, marly, interbedded with light brown marlstone; unit is badly fractured and broken; some fracture surfaces have dark hydrocarbon staining; vuggy zone at 513.3'. |
| Core #27 | 513.4'-528.1' | Cored 14.7' Recovered 12.4' |
| 513.4' | 513.9' | Marlstone, medium brown, very thin streaks and also disseminated pyrite. |
| 513.9' | 525.0' | Oil shale, marly, varved dark brown to medium brown, analcitized tuffs at 514.4', 515.5', 516.2', 518.0', 523.5'; unit is fractured and broken with pyrite and dark hydrocarbon linings on some fractures; irregular bedding is exhibited near bottom of unit. |
| 525.0' | 525.6' | Oil shale and siltstone, medium brown; badly broken; small gravel size pieces; order cannot be ascertained. |
| 525.6' | 528.1' | Missing |
| Core #28 | 528.1'-543.1' | Cored 15.0' Recovered 14.1' |
| 528.1' | 529.0' | Oil shale, varved dark green brown to medium brown, some evidence of solution. |
| 529.0' | 530.0' | Marlstone, light gray brown, tuffaceous, dark brown carbonaceous marbeling. |
| 530.0' | 535.0' | Oil shale, varved dark green brown to medium |

| From | To | Description |
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| | | brown, marly; blebby with large blebs of brown tuff; deformation locally around blebs; lower part of unit has enterolithic structure as well as some solution around areas of calcite infill; calcite infill appears to be in zones affected by slump (calcite filling void spaces). |
| 535.0' | 536.6' | Marlstone, gray brown, bentonitic, badly broken with small gravel size pieces. |
| 536.6' | 542.2' | Oil shale, medium brown, marly, interbedded with brown marlstone; tuff zone at 539.0', with some associated irregular bedding; elongated segregated crystals of calcite at 542.0'. |
| 542.2' | 543.1' | Missing |
| Core #29 | | 543.1'-553.0' Cored 9.9' Recovered 7.6' |
| 543.1' | 546.8' | Oil shale, varved dark green brown to medium brown, marly; four zones of small segregated crystals of calcite throughout unit. Some disseminated pyrite. |
| 546.8' | 550.9' | Oil shale, marlstone, mudstone, gray brown, badly broken and fractured. Marlstone chunk heavily mineralized by calcite crystals up to 1" in diameter, possible fault plane evidence; bentonitic mudstone appears to have been at bottom of unit although exact position is hard to ascertain. "B Groove" |
| 550.9' | 553.0' | Missing |
| Core #30 | | 553.0'-559.7' Cored 6.7' Recovered 6.2' |
| 553.0' | 559.3' | Dolomite, light gray brown, elongated segregated crystals of calcite near top of unit; solution of these segregated crystals of calcite gives vuggy effect; unit is slightly varved and has layers and veins of pyrite throughout; crimson colored film on most fracture surfaces; unit is badly broken and fractured. |
| 559.3' | 559.7' | Missing |
| Core #31 | | 559.7'-579.7' Cored 20.0' Recovered 15.5' |
| 559.7' | 561.6' | Dolomite, light to medium brown; segregated crystals of calcite in lenses and blebs; on |

| From | To | Description |
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| | | core surface calcite solution creates vugs; disseminated pyrite throughout unit; some banding of dolomite with more clay, light brown and vuggy; some blebs of gilsonite 1/8" thick at 560.65', 1/8" thick at 560.85'; flakes of black brown gilsonite-like material on many fracture surfaces and on some bedding planes; 561.6' apparent bottom of "B Groove". |
| 561.6' | 562.0' | Oil shale, dark brown, varved, dolomitic; very irregularly bedded, with slump features and some folds in the bedding; large solution cavity 1" thick at 561.8', partially filled with oil-like residue, black brown (possibly gilsonite). |
| 562.0' | 564.0' | Oil shale, varved dark to medium brown, marly; banded with interbedded marlstone, medium brown; segregated crystals of calcite on bedding plane and on some fracture surfaces at 563.1'; scattered blebs of tuff; lense of tuff 1" thick at 563.8' partially analcitized. |
| 564.0' | 565.25' | Oil shale, dark brown, varved, dolomitic; some lenses of tuff 1/8" thick; disseminated pyrite throughout section. |
| 565.25' | 566.0' | Oil shale, medium brown, varved, interbedded with marlstone, light brown; very irregular bedding with slump structures, some truncated beds; very thin lenses of analcitized tuff. |
| 566.0' | 568.65' | Oil shale, dark brown, varved, marly; lenses of tuff analcitized 1" thick at 566.3', 1/2" thick at 566.35', 1/2" thick at 566.7', 1/4" thick at 567.15', 1/2" thick at 567.25', 1/4" thick bleb at 567.85'; numerous thin blebs of tuff; zone of irregular bedding of oil shale; claystone and tuff 1" thick at 566.8', appears as a knot-hole on core surface; similar feature from 567.2'-567.35', appearance of rotting wood. |
| 568.65' | 575.0' | Oil shale, varved medium to dark brown, banded with interbedded marlstone, light to medium brown; lenses of tuff 2.5" thick at 568.9', 1" thick at 571.1', 1" thick at 571.7', all analcitized; lenses of tuff 2.5" thick at 569.7'; numerous thin blebs of tuff scattered throughout unit; bottom 1.8' badly broken, some high angle to vertical fractures from 571.0'-572.0'. |
| 575.0' | 579.7' | Missing |

| From | To | Description |
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| Core #32 | 579.7'-596.2' | Cored 16.5' Recovered 15.5' |
| 579.7' | 583.65' | Oil shale, varved medium brown to dark brown, banded with light brown marlstone; lense of tuff 1/4" thick at 580.0', partially analcitized; tuff lense 1/2" thick at 580.3', 1" thick at 581.8', 1/4" thick at 583.6'; high angle fractures. |
| 583.65' | 585.25' | Oil shale, dark brown, varved, dolomitic; banded with some interbedded marlstone, medium to light brown; 1/4" thick blebs of tuff at 584.6', 1/4" thick lenses of tuff at 584.9'; lenses of analcitized tuff 1" thick at 584.9', 1.5" thick at 2" thick at 585.1'. |
| 585.25' | 587.8' | Oil shale, medium brown to green in upper 6", varved with thin dark brown, banded with more marly units of light brown. |
| 587.8' | 588.65' | Oil shale, dark brown, varved, dolomitic in upper 4", more marly toward bottom; 1/4" thick tuff lenses at 588.55'; blebs of analcitized tuff 1/2" thick at 588.6'. |
| 588.65' | 590.5' | Oil shale, varved dark brown to medium brown, dolomitic to 589.5', more marly toward bottom; lenses of tuff 1/4" thick at 588.7', 1/4" thick at 588.9', 1/4" thick at 589.0'; blebs of analcitized tuff at 590.5'. |
| 590.5' | 591.9' | Oil shale, medium brown, varved dark brown, banded light brown in more marly zones; high angle to vertical fractures. |
| 591.9' | 595.2' | Oil shale, dark brown, varved, marly; thin blebs of tuff; cavities 1.25" wide at 592.6' with white crystalline material (possible nahcolite?); other solution cavities 1" wide at 593.1', 593.6', and 594.2' with no crystalline material; section is badly broken and fractured in places around cavities. |
| 595.2' | 596.2' | Missing |
| Core #33 | 596.2'-604.0' | Cored 7.8' Recovered 7.8' |
| 596.2' | 602.0' | Oil shale, varved dark to medium brown, banded medium to light brown more marly zones; banded zones of very good oil shale from 596.2'-597.0'; blebs of tuff scattered throughout; very thin lenses of analcitized |

| From | To | Description |
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| 602.0' | 604.0' | tuff throughout; lense of tuff 1/2" to 1" thick at 598.9'; badly fractured and broken with vertical and high angle fractures; irregular bedding and slumping at 598.9' and 600.75', around some cavities; some vugs. Oil shale, dark brown, varved, some banding, medium brown, in bottom 5", marly; blebs of tuff 1/4" thick at 603.35' and 603.45'; vugs at 602.2' and 602.4'; high angle fractures; section from 602.9'-603.2' badly broken. |
| Core #34 | 604.0'-613.3' | Cored 9.3' Recovered 6.0' |
| 604.0' | 610.0' | Oil shale, varved dark brown to medium brown with some green, banded medium to light brown to green brown; some irregular bedding with eye-like structures; blebs of tuff from 607.0'-607.8'; lenses of tuff, analcitized, 1" thick at 607.9' and 608.5'; section from 608.75'-610.0' badly broken and fractured; appears to be interbedded oil shale, dark brown, and more marly, medium brown; upper section with some high angle fractures; thin lenses of tuff; some vugs. |
| 610.0' | 613.3' | Missing |
| Core #35 | 613.3'-622.0' | Cored 8.7' Recovered 8.2' |
| 613.3' | 615.05' | Oil shale, dark brown, irregularly varved; blebs of tuff scattered throughout; dolomitic becoming more marly toward bottom; high angle fractures with calcite crystals on fracture surfaces; irregular bedding and slumping at 614.85' with some truncated beds; lense of tuff analcitized, 1" thick at 615.0'; some oil-like residue on fracture at 615.0'. |
| 615.05' | 621.5' | Oil shale, varved medium to dark brown, marly; banded with a zone of better dark brown oil shale from 617.6'-618.8'; in this zone pyrite crystals are abundant on fracture surfaces; also zone is highly fractured, vertically and at high angles; thin lenses of analcitized tuff throughout entire section; entire section fractured with some fracture cavities; calcite on most fracture surfaces. |
| 621.5' | 622.0' | Missing |

| From | To | Description |
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| Core #36 | | 622.0'-638.1' Cored 16.1' Recovered 14.7' |
| 622.0' | 623.05' | Oil shale, varved medium to dark brown, marly; blebs of analcitized tuff 1/4" thick at 622.35', 1/4" thick at 622.75'; some irregular bedding with eye-like structures. |
| 623.05' | 624.1' | Oil shale, dark brown, varved, dolomitic; banded in bottom 5" with more marly medium brown oil shale; blebs of analcitized tuff 1/4" thick at 623.1', 1/2" thick at 623.7'; lense of analcitized tuff 1/2" thick at 623.15'. |
| 624.1' | 627.0' | Oil shale, medium brown, varved, dolomitic; banded almost light brown toward bottom, becoming more dolomitic; disseminated pyrite on fracture surfaces; also numerous blebs and lenses of pyrite crystals; badly fractured with vertical and horizontal fractures, numerous fracture cavities. |
| 627.0' | 629.0' | Oil shale, varved dark to medium brown, banded medium brown upper 1'; lenses of tuff scattered throughout; very irregular bedding with eye-like structures; slumping and truncated beds evident; tuff lense 2" thick at 627.05' with some thin interbedded oil shale, vuggy on core surface; disseminated pyrite crystals on fracture surfaces, also some pyrite crystal aggregates; solution cavities 2" thick at 627.8', 1" thick at 628.0'; section badly fractured; some thin gilsonite blebs and some fossil plants. |
| 629.0' | 633.65' | Oil shale, varved dark to medium brown, more medium to light brown dolomitic from 630.2'-630.8'; blebs of tuff, analcitized, 1/8" thick at 630.3', 1/8" thick at 630.45', 630.85', 631.1'; lense of tuff 1/2" thick at 631.6'; some irregular bedding with eye-like structures; disseminated pyrite on fracture surfaces; also numerous thin blebs and lenses of pyrite; some fossil plants, carbonized; section badly fractured with vertical to high angle fractures. |
| 633.65' | 636.7' | Oil shale, medium brown, varved, dolomitic; interbedded claystone, light brown, very dolomitic; disseminated pyrite and some pyrite blebs and lenses; section badly fractured with both vertical and high angle |

| From | To | Description |
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| 636.7' | 638.1' | fractures, also some fracturing along bedding planes; some smooth fracture surfaces. Missing |
| Core #37 | | 638.1'-649.4' Cored 11.3' Recovered 9.4' |
| 638.1' | 639.25' | Oil shale, varved medium to dark brown, dolomitic; some irregular bedding; a little disseminated pyrite. |
| 639.25' | 641.2' | Oil shale, dark brown, varved, dolomitic; interbedded with medium brown to light brown more marly oil shale; blebs of analcitized tuff; irregular bedding with some eye-like structures; slumping and twisting evident in upper 5"; disseminated pyrite crystals throughout. |
| 641.2' | 641.75' | Oil shale, varved dark to medium brown, dolomitic, banded with interbedded claystone, light brown; irregular bedding with some eye-like structures. |
| 641.75' | 643.8' | Marlstone, medium brown, slightly varved, interbedded thin dark brown oil shale; badly fractured and broken; thin lenses of analcitized tuff; some disseminated pyrite crystals. |
| 643.8' | 645.95' | Oil shale, dark brown, varved; irregularly bedded with some eye-like structures and some truncated beds. |
| 645.95' | 647.5' | Marlstone, medium brown, slightly varved, with some interbedded oil shale; some interbedded claystone at 647.0'; lense of analcitized tuff 1/4" thick at 646.95'; badly fractured and broken. |
| 647.5' | 649.4' | Missing |
| Core #38 | | 649.4'-663.6' Cored 14.2' Recovered 10.5' |
| 649.4' | 653.4' | Oil shale, medium brown, dolomitic, dull waxy lustre; interbedded slightly calcareous claystones rare; blebby with claystone; bleb of analcitized tuff at 653.1'. |
| 653.4' | 657.0' | Oil shale, varved medium brown to light brown, dolomitic; badly fractured and broken; pyrite crystals on fracture surfaces; crimson colored film on fracture surfaces; evidence of solution. |
| 657.0' | 660.0' | Dolomite, medium brown to gray brown, slightly varved; pyrite mineralization along bedding |

| From | To | Description |
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| 660.0' | 663.6' | planes; bottom of unit fractured and broken. Missing |
| Core #39 | | 663.6'-668.8' Cored 5.2' Recovered 4.5' |
| 663.6' | 664.7' | Oil shale, varved medium brown, dolomitic; some lensing and truncating of varves. |
| 664.7' | 668.1' | Siltstone, gray, badly broken and fractured, pyrite abundant, crimson film on fracture surfaces. |
| 668.1' | 668.8' | Missing |
| Core #40 | | 668.8'-681.8' Cored 13.0' Recovered 12.6' |
| 668.8' | 672.0' | Oil shale, dolomitic, medium brown, slightly varved, dull waxy lustre; blebby with clay- stone and rare pyrite; some solution with bladed clays filling cavities at 671.4', 671.7'. |
| 672.0' | 672.4' | Oil shale, varved medium brown to light brown, some lensing of varves. |
| 672.4' | 676.5' | Marlstone, slightly varved, medium brown, small vertical fractures (probably were filled with calcite). |
| 676.5' | 681.3' | Oil shale, varved medium brown, dolomitic to marly; zones of segregated elongated crystals of calcite at 679.5', 680.1', 680.7', and 681.1'. |
| 681.3' | 681.8' | Missing |
| Core #41 | | 681.8'-716.1' Cored 34.3' Recovered 34.3' |
| 681.8' | 689.7' | Oil shale, varved medium brown to light brown, dolomitic; interbedded with thin, irregularly bedded dolomite and claystone; oil shale is characterized by elongated segregated crys- tals of calcite; irregular bedding and solu- tion cavities characterize claystones and dolomites; some areas have enterolithic struc- ture. |
| 689.7' | 694.5' | Oil shale, dolomitic, varved dark green brown to medium green brown; upper part of unit has irregularly bedded tuffs at 690.6', and some blebs; lower part of unit has some segregated crystals of calcite along with larger calcite in cavities and vugs. |
| 694.5' | 696.1' | Siltstone, gray, badly fractured and broken, |

| From | To | Description |
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| 696.1' | 705.9' | pyrite abundant. Oil shale, marlstone, siltstone, brown to gray, some crimson film on fractures and bedding planes; some siltstones are quite tuffaceous (analcitized); pyrite disseminated and along bedding planes. |
| 705.9' | 716.1' | Oil shale, dolomitic, varved, gray brown to medium green brown; pyrite blebs and pyrite along bedding planes; zones of tuffaceous siltstone at 711.5', 714.0'; unit is badly fractured and broken at 713.0'-714.0'; soft gray earthy material on fracture surfaces. |
| Core #42 | 716.1'-740.2' | Cored 24.1' Recovered 23.3' |
| 716.1' | 739.3' | Sandstone, siltstone, shale, marlstone, rare oil shale; entire unit gray to brown; badly broken and fractured; some vugs and solution cavities present in more competent zones; crimson film on bedding planes and fracture surfaces. Siltstones are tuffaceous with possible slight analcitization; pyrite abundant along bedding planes and fractures. |
| 739.3' | 740.2' | Missing |
| Core #43 | 740.2'-767.1' | Cored 26.9' Recovered 22.2' |
| 740.2' | 763.1' | Sandstone, siltstone, shale, marlstone, rare oil shale as above unit 716.1'-739.3'; some gypsum crystals on fracture surfaces; enterolithic structure along with massive bedding characterize the coarser clastics. |
| 763.1' | 767.1' | Missing |
| Core #44 | 767.1'-807.4' | Cored 40.3' Recovered 41.2' 0.9' recovered from last core |
| 767.1' | 768.4' | Oil shale, dolomitic, dull waxy lustre, medium brown, blebby with claystone and pyrite. |
| 768.4' | 776.0' | Siltstone, gray to light brown, semifriable; fossil-carbonaceous fragments abundant; some areas vuggy; irregular bedding common; some blebs of analcitized tuff. |
| 776.0' | 778.4' | Mudstone, dark brown, kerogenetic; disseminated calcite throughout unit; material has hacky type of fracture. |

| From | To | Description |
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| 778.4' | 786.9' | Siltstone, interbedded with claystone; unit is gray to brown; enterolithic structures common; carbonaceous fragments common with siltstone; some slight solution cavities throughout unit. |
| 786.9' | 790.4' | Oil shale, dolomitic, varved, dark brown to medium brown; solution cavities common (large). |
| 790.4' | 792.9' | Siltstone, gray, slightly varved; solution cavities; pyrite. |
| 792.9' | 795.6' | Oil shale, dark brown; solution cavities as large as grapefruit; probably contained nahcolite; small solution cavities have residual bladed clays; black blebs (darker oil shale) exist in lower portion of unit. |
| 795.6' | 796.5' | Siltstone, gray, slightly varved; pyrite along bedding planes. |
| 796.5' | 801.2' | Oil shale, dolomitic, varved, dark brown to medium brown; blebs of tuff throughout unit appear to be stained with oil; some analcitized tuffs are not stained. |
| 801.2' | 802.0' | Siltstone, dark brown, porous, vuggy; vugs filled with granular type carbonate. |
| 802.0' | 805.0' | Mudstone, gray brown, banded, clay layers throughout unit; most of unit is badly fractured and broken. |
| 805.0' | 807.4' | Oil shale, dolomitic, dark brown, dull waxy lustre; blebby with claystone and pyrite; some darker streaks within unit appear to be richer oil shale. |
| Core #45 | 807.4'-826.6' | Cored 19.2' Recovered 12.7' |
| 807.4' | 814.6' | Oil shale, dolomitic, medium to dark brown, dull waxy lustre; blebby with claystone, pyrite, analcitized tuff, and white carbonate (slow effervescence); some solution cavities at 809.0', 811.1', 812.0'. |
| 814.6' | 820.0' | Oil shale, dolomitic, varved medium brown; interbedded with light brown mudstone; some irregularly bedded tuffs; large solution cavities at 815.0' with residual bladed clay; lower part of unit has pyrite laminations; bottom of unit is badly broken. |
| 820.0' | 826.6' | Missing |
| Core #46 | 826.6'-853.7' | Cored 27.1' Recovered 26.7' |
| 826.6' | 833.4' | Oil shale, varved medium to medium dark brown, |

| From | To | Description |
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| | | more varving evident below 828.5'; numerous blebs of tuff, most are analcitized; some lenses of tuff analcitized, 1/8" thick at 829.5', 1/4" thick at 830.1' and 830.15'; partly analcitized 1/2" thick at 831.25', 832.0' and 832.2'; some disseminated pyrite crystals; some thin interbedded light brown claystone down to 828.5'; this section fractured with high angle fractures with smooth soapy fracture surfaces and a thin coating of white clay; solution cavities with residual clay blade structures at 822.1', at 830.3' with a white pink crystal, probably dolomite; cavity 2" wide at 831.05'. |
| 833.4' | 837.4' | Oil shale, dark brown, varved unevenly, somewhat irregular; dolomitic, with banded medium brown oil shale, slightly more marly; some zones of irregular bedding with some slumping evident; numerous blebs of analcitized tuff; some thin blebs of gilsonite or possible carbonized fossil plant material; down to 834.0' high angle fractures evident with smooth soapy surfaces and white clay on fracture surfaces. |
| 837.4' | 838.7' | Oil shale, varved medium brown to green, dolomitic; interbedded with claystone, light brown, and tuff; irregular bedding down to 837.75' with large eye-like structures; from 837.75'-838.2' interbedded oil shale and partially analcitized tuff, about 75% tuff; thick bleb 3/4" thick of analcitized tuff at 837.55'. |
| 838.7' | 843.3' | Oil shale, medium brown, slightly varved; numerous thin blebs of tuff; thick lenses of analcitized tuff and pyrite 3/4" thick at 839.45', 839.8' and 839.9', 1/2" thick at 840.2', 840.75', 3/4" at 841.3', 1" thick at 843.2'; pyrite formed in blade-like structures around edge of lenses; at 840.75' pyrite in star burst; unit is fractured with high angle fractures with smooth soapy fracture surfaces with white clay on surfaces. |
| 843.3' | 847.0' | Oil shale, varved dark to medium brown, dolomitic, medium brown more marly; irregular bedding with swirls and large eye-like structures; lenses of analcitized tuff 3/4" thick at 843.9', 1/2" thick at 846.3'; zones of |

| From | To | Description |
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| | | interbedded tuff, oil shale and claystone with some pyrite 1" thick at 844.6', 3/4" thick at 845.45', 1.5" thick at 845.8'; numerous plant fossils throughout entire section, with an unusual apparent fossil twig or branch at 845.8'; high angle fracture with smooth, soapy surfaces and white clay material on fracture surfaces. |
| 847.0' | 850.2' | Claystone, light brown to buff, dolomitic; interbedded tuffs and some oil shale, medium brown; slight odor; upper section down to 848.0' mostly claystone with thin tuff lenses; lower section more interbedded tuffs, partially analcitized; some dolomite crystals at 849.2'; cavity 1" wide at 849.5' filled with clay in blade structures. |
| 850.2' | 853.3' | Oil shale, varved medium to dark brown, dolomitic; numerous thin blebs of tuff, thin lenses of analcitized tuff scattered throughout; solution cavities with residual clay blade structures at 850.9', 851.0', and 852.0'; numerous vugs; some fossil plant and possible animal material. |
| 853.3' | 853.7' | Missing |
| Core #47 | | 853.2'-882.1' Cored 28.4' Recovered 28.0' |
| 853.7' | 855.3' | Oil shale, dark brown, varved, dolomitic; thin interbedded claystone; irregularly bedded, with some eye-like structures and truncated beds; vertical and horizontal fractures with smooth and soapy faces and white clay on fracture surfaces. |
| 855.3' | 868.25' | Oil shale, varved medium to dark brown, dolomitic; interbedded claystone sections, light brown, at 856.1', 856.65', 861.4'-861.7', 862.5'-863.1' and 863.75'-864.0'; some thin oil shale interbedded with the claystone sections; very numerous lenses of analcitized tuff 1/2" thick at 856.2', 856.8', 859.15', 861.0', 861.7'; numerous other lenses less than 1/4" thick; most are partly to completely analcitized; numerous blebs of analcitized tuff scattered throughout; numerous solution cavities, as wide as 1.5" with residual clay blade structures; irregular bedding, mostly around solution cavities; numerous small vugs |

| From | To | Description |
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| | | below 865.0'; dolomite crystals at 861.05'; high angle fractures with some clay on surfaces; very fractured section from 860.4'-861.4'. |
| 868.25' | 879.6' | Oil shale, varved medium to dark brown, dolomitic; interbedded thin claystones and thick claystone sections, thicker sections at 869.3', 820.5'-871.65' (with some thin oil shales); numerous thin lenses of analcitized tuff scattered throughout unit; thicker lenses partially analcitized tuff 1/4" thick at 867.2', 3/4" thick at 869.35', 1/2" thick at 870.6', 1/4" thick at 872.1', 1" thick at 873.6', 1" thick at 875.9'; numerous blebs of analcitized tuff throughout unit. Some solution cavities with residual clay blade structures at 871.1', 872.15', 872.5', 875.15' and 878.15', 1" thick at 879.5'; numerous vugs scattered throughout unit; some irregular bedding around solution cavities; unit fractured, mostly on bedding planes. |
| 879.6' | 881.7' | Oil shale, varved medium to dark brown, some interbedded green brown oil shale; irregular bedding with some eye-like structures; some thin lenses of tuff, analcitized; bottom 1' badly fractured and broken with high angle and bedding plane fractures. |
| 881.7' | 882.1' | Missing |
| Core #48 | | 882.1'-897.1' Cored 15.0' Recovered 14.0' |
| 882.1' | 883.5' | Oil shale, varved medium brown to green brown; some interbedded claystone, light brown, dolomitic; blebs of analcitized tuff with some pyrite 1/2" thick; irregular bedding with some slump features. |
| 883.5' | 884.8' | Claystone, light brown to buff; some interbedded oil shale, medium brown; badly fractured with high angle fractures, some of which are smooth and soapy; lenses of tuff 3/4" thick at 883.75', 1/4" thick at 884.05', analcitized on contact edges; blebs of tuff 1/8" thick at 883.5' and 1/2" thick at 884.7', also partially analcitized; some fracture cavities. |
| 884.8' | 891.7' | Oil shale, medium brown, varved, some green brown oil shale; interbedded thin claystone, |

| From | To | Description |
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| | | light brown; lenses of tuff 1/4" thick at 885.0', analcitized; 1.5" thick zone of tuff at 889.4', partially analcitized; some blebs of tuff, mostly analcitized; high angle fractures throughout, with smooth and soapy faces, also white clay on fracture surfaces; zone of high degree fracture 886.7'-887.0'; some solution cavities with residual clay blade structures at 887.2' and 888.6'. |
| 891.7' | 896.1' | Oil shale, dark brown, varved; numerous blebs of tuff scattered throughout; carbonized plant fragments scattered throughout unit; solution cavities with residual clay blade structures and some white crystals 2" thick at 894.27', 2" thick at 895.8'; some irregular bedding around cavities. |
| 896.1' | 897.1' | Missing |
| Core #49 | | 897.1'-931.7' Cored 34.6' Recovered 31.9' |
| 897.1' | 909.0' | Oil shale, varved dark brown to medium dark brown, banded with zones of medium brown oil shale with clay; lenses of tuff, partially analcitized, mostly less than 1/4" thick, scattered throughout, more prominent in lower 3'; some on interbedded claystone, light brown; numerous blebs of tuff, thin; those larger than 1/4" thick are analcitized; some irregular bedding from 897.5'-898.0'; high angle fractures with smooth soapy faces and white clay on fracture surfaces; also some bedding plane fractures. |
| 909.0' | 915.6' | Claystone, light brown; interbedded zones of oil shale and beds of oil shale, medium to dark brown; some interbedded tuffs, buff, at 912.3', 912.5', 913.2', 913.55', 914.0', 914.35', 914.5'; oil shale zones 911.2'-912.1', and 912.8'-913.15', medium brown, slightly varved; numerous thin analcitized tuff lenses, some tuff blebs; section is pitted on core surface, also yuggy; some fracture cavities evident; solution cavities at 911.9', 912.6', and 915.3'; some irregular bedding around cavities. |
| 915.6' | 918.85' | Oil shale, dark brown, varved; some slight thin banding of claystone at 916.05', 916.55' and 917.1'; thin lenses and blebs of |

| From | To | Description |
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| 918.85' | 930.0' | tuff. Oil shale, varved medium to dark brown; interbedded zones and thin beds of claystone, light to medium brown; some interbedded tuffs, partially analcitized, 1" thick at 918.85', 1.5" thick at 919.85', 1" thick at 926.5'; numerous thin lenses of analcitized tuff up to 1/4" thick, mostly in claystone zones; zones of claystone from 918.85'-920.0', 921.1'-923.4'; zones appear fractured and reworked with fracture cavities and vugs; solution cavities at 920.0', 920.3', 921.1', 924.0', 924.7', 925.25', 926.1' and 928.5'; evidence of residual clay blade structures; high angle and bedding plane fractures in oil shale zones with smooth soapy fracture surfaces with white clay. |
| 930.0' | 931.7' | Missing |
| Core #50 | 931.7'-966.1' | Cored 34.4' Recovered 34.4' |
| 931.7' | 954.3' | Oil shale, varved medium to dark brown; interbedded zones of claystone, light brown, and tuff; claystone zones from 931.7'-932.5'; numerous thin tuff lenses, analcitized, 935.0'-936.1', medium brown with analcitized tuff blebs, 942.3'-944.5', medium to light brown analcitized tuff blebs; all claystone zones are badly fractured with numerous fracture cavities and some solution cavities; some thin claystone interbedding in oil shale zones, 3" thick at 939.0'; tuff zones from 934.6'-935.1' interbedded with oil shale, partially analcitized; 940.4'-942.3', analcitized with some interbedded oil shale, appears like rotting wood; numerous other thinner lenses of analcitized tuff throughout unit; numerous solution cavities, some with crystalline material, possibly nahcolite; entire unit badly fractured with some clay on smooth soapy fracture surfaces. |
| 954.3' | 966.1' | Oil shale, medium brown, becoming darker toward bottom, varved, dolomitic; zones of tuff interbedding and lenses 4" thick at 955.0', 1" thick at 958.6', 3" thick at 959.9', 3/4" thick at 961.75', all partially analcitized; some blebs of analcitized tuff; some solution cavities along contact surfaces |

| From | To | Description |
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| | | of tuff zones; high angle fractures with some clay on fracture surfaces; also bedding plane fractures; bottom 2' badly fractured and broken. |
| Core #51 | 966.1'-995.1' | Cored 29.0' Recovered 23.7' |
| 966.1' | 970.2' | Oil shale, varved medium brown to dark brown, dolomitic; high angle fractures with smooth soapy fracture surfaces and some clay on surfaces. |
| 970.2' | 975.3' | Claystone, medium to light brown; some thin interbedded oil shale, medium brown; lenses of analcitized tuff scattered throughout; irregular bedding; badly broken in places, small fragments. |
| 975.3' | 989.7' | Oil shale, varved medium to dark brown; interbedded zones of claystone, light to medium brown, and tuff; claystone zones from 975.8'-978.0' with some interbedded oil shale; zone of tuff and claystone from 979.7'-980.1'; zone of tuffs and claystone from 982.4'-986.0' with interbedded oil shale in thin zones; claystone zones are badly fractured; solution cavities throughout unit with some residual clay blade structures present; lower portion below 983.8' has numerous small vugs and larger solution cavities; tuff lenses are mostly analcitized and usually interbedded with claystones; unit is fractured, usually on bedding planes; also some high angle fractures are evident. |
| 989.7' | 995.1' | Missing |
| Core #52 | 995.1'-1049.0' | Cored 53.9' Recovered 53.6' |
| 995.1' | 997.7' | Oil shale, dolomitic, medium to dark brown, blebby with light brown claystone and/or tuff; some fractures near middle of unit have white earthy clay material on surfaces; some black earthy material present also; solution cavity at 997.1' with residual bladed clay lining. |
| 997.1' | 1001.7' | Claystone, varved, light brown to medium brown, interbedded with medium brown oil shale; fractured near middle of unit with black earthy material associated with fractures; |

| From | To | Description |
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| 1001.7' | 1007.4' | thin bedded medium brown tuff at 1000.5'. Oil shale, medium brown, dolomitic, dull waxy lustre; blebby with claystone and tuff; solution cavities with residual bladed clays at 1002.8' and 1006.7'; irregularly bedded thin analcitized tuff at 1003.1' and regularly bedded analcitized tuff at 1005.7'; thin layers of pyrite along with rare blebs of pyrite; unit is broken at 1006.0'. |
| 1007.4' | 1033.6' | Oil shale, varved medium brown to dark brown, dolomitic to marly; blebby with light brown tuff; lensing of varves creates eye-like structures; some enterolithic structures around larger blebs; pyrite common. |
| 1033.6' | 1035.7' | Claystone, medium brown, interbedded with medium to light brown mudstone; high angle fracture near middle of unit; irregularly bedded tuffs at 1034.8'; black earthy material on fracture surfaces. |
| 1035.7' | 1048.7' | Oil shale, dolomitic; blebby with claystone, varved medium brown to light brown near bottom of unit, varved medium green to light green brown near middle of unit with gradual change between varving colors; lensing and truncating of varves; bottom of unit badly fractured. |
| 1048.7' | 1049.0' | Missing |
| Core #53 | 1049.0'-1110.7' | Cored 61.7' Recovered 60.5' |
| 1049.0' | 1050.8' | Oil shale, medium brown, marly, large (larger than 2" in diameter) solution cavities with residual bladed clay lining cavities; also black earthy material around cavities; 1/4" thick layer of nahcolite at 1049.7'. |
| 1050.8' | 1052.2' | Oil shale, marly, medium brown, dull waxy lustre; blebby with claystone and/or tuff; bottom of unit shows evidence of solution cavity. |
| 1052.2' | 1054.0' | Oil shale, dolomitic, varved, dark brown, very regular bedding, some streaks of blackish material, possibly oil shale higher in kerogen. |
| 1054.0' | 1056.3' | Oil shale, dolomitic, varved medium brown to light brown to buff; lensing and truncating of varves; large solution cavity (most missing) at 1055.2'. |

| From | To | Description |
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| 1056.3' | 1063.4' | Oil shale, medium brown, dolomitic; blebby with claystone; irregularly bedded tuffs at 1057.0', 1057.7', 1058.1'; tuffs have pyrite mineralization at contact with surrounding rock; thin irregular bed of gilsonite at 1059.7', 1/4" thick; irregularly bedded (cast loaded) contact with lower unit. |
| 1063.4' | 1073.9' | Oil shale, slightly marly to dolomitic, varved dark green brown to medium brown; lensing and truncating of varves throughout unit; small blebs of analcitized tuff; blebby with claystone and medium brown tuff; small fish scales (?) on bedding planes around 1070.5'. |
| 1073.9' | 1092.5' | Oil shale, dolomitic, varved dark brown to medium brown to buff; lensing and truncating of varves; blebby with claystone; thinly bedded tuffs at 1075.2', 1078.3', 1078.7', 1079.8', 1082.8', 1083.0', 1087.4', 1089.5'; analcitized tuff at 1082.5'; thin layer of gilsonite at 1082.4'; pyrite rare. |
| 1092.5' | 1108.5' | Oil shale, varved medium brown to buff, marly; thinly interbedded light brown marlstones; some lensing of varves and enterolithic structure; analcitized tuff (injected) with pyrite mineralization at 1092.6', 1093.1', 1093.7', 1095.0', 1095.4'; solution cavities at 1095.7', 1101.4', 1105.3', 1107.2'; nahcolite crystals at 1105.1', 1106.1', 1107.2', 1108.1', 1108.4'; rock in horizon of nahcolite appears to be altered from surrounding rock, lighter in color and appearing more porous; white pasty material around cavity at 1107.2'. |
| 1108.5' | 1110.7' | Missing |
| Core #54 | | 1110.7'-1115.0' Cored 4.3' Recovered 3.7' |
| 1110.7' | 1115.0' | Marlstone, light brown; large solution cavities with black material, effervesces with HCl; layer of partially analcitized tuff near bottom of unit; unit badly broken and fractured. |
| Core #55 | | 1115.0'-1138.5' Cored 23.5' Recovered 11.2' |
| 1115.0' | 1121.2' | Marlstone, medium brown; solution cavities and vugs (reminds one of Swiss cheese); |

| From | To | Description |
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| | | cavities have residual bladed clay linings; some of clay lining effervesces violently with HCl, possibly nahcolite that has not been washed out by drilling procedure; unit is broken at most large solution cavities. |
| 1121.2' | 1126.0' | Oil shale, varved medium brown, dolomitic; small solution cavities and vugs with slight nahcolite (?) content; unit is badly broken and fractured. |
| 1126.0' | 1138.5' | Missing |
| Core #56 | | 1138.5'-1151.1' Cored 12.6' Recovered 10.0' |
| 1138.5' | 1148.6' | Oil shale, dolomitic, medium brown; large solution cavities throughout unit; black earthy material with cavities; all cavities have residual clay blades; nahcolite that has not yet been washed out at 1141.3'. |
| 1148.6' | 1151.1' | Missing |
| Core #57 | | 1151.1'-1160.1' Cored 9.0' Recovered 3.8' |
| 1151.1' | 1153.9' | Oil shale, medium brown, slightly varved, dolomitic; large solution cavities with residual bladed clay; unit badly broken and fractured. |
| 1153.9' | 1160.1' | Missing |
| Core #58 | | 1160.1'-1168.6' Cored 8.5' Recovered 7.0' |
| 1160.1' | 1166.1' | Oil shale, medium brown, dolomitic; large solution cavities with residual bladed clays; black earthy material associated with cavities; lensing and truncating of varves. |
| 1166.1' | 1168.6' | Missing |
| Core #59 | | 1168.6'-1228.0' Cored 59.4' Recovered 60.5' 1.1' recovered from previous core, #58 |
| 1168.6' | 1175.75' | Oil shale, varved dark to medium brown, banded with medium brown units, dolomitic; some very thin black blebs of either plant fossils or gilsonite; gilsonite bleb 1/8" thick at 1171.9'; some thin blebs of claystone, light brown; unit of truncated and irregular bedding at 1173.7'-1173.9'. |

| From | To | Description |
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| 1175.75' | 1182.0' | Oil shale, varved medium to light brown, interbedded with thin beds and units of claystone, light brown to buff; also some interbedded tuffs and green oil shale; tuff bed from 1175.65'-1175.95' partially analcitized; tuff and claystone, 1172.55', 1177.65', 1179.0'-1179.15', partially analcitized; from 1179.9'-1180.15', partially analcitized; and from 1181.0'-1181.1', partially analcitized; bleb of analcitized tuff at 1181.95'; some irregular bedding with eye-like structures and truncated beds; numerous other thinner blebs of tuff scattered throughout unit; solution cavities with some residual clay forming blade structures at 1175.95' and 1177.4'. |
| 1182.0' | 1187.2' | Oil shale, varved medium brown to dark brown; very numerous blebs of tuff throughout; also some blebs of claystone, green gray; some banding of zones of even bedding in upper 2.5"; mostly irregular bedding with numerous bedding structures (eye-like, etc.); beds also truncated; numerous very thin blebs of darker more organic material throughout entire unit. |
| 1187.2' | 1188.5' | Oil shale, varved dark brown, as above only dark brown. |
| 1188.5' | 1189.85' | Oil shale, varved medium to light brown; interbedded green oil shale and light brown claystone; irregular bedding in some units with truncated beds and other bedding structures (eye-like, etc.); analcitized tuff blebs at 1189.0' and 1189.35'. |
| 1189.85' | 1206.1' | Oil shale, dark to medium brown, becoming more medium to green brown to light brown toward bottom; color change is gradual and transitional; banded at top with irregular interbedding of lighter brown material; toward bottom banding of green to light brown; very irregular bedding from 1189.85'-1193.75' with numerous very thin dark blebs of more organic material, possibly plant fossils; blebs are fewer and more like thin lenses in lower portion; lense of tuff 1/4" thick at 1193.85'; lower portion below 1200.5' has more interbedded light brown claystone. |

| From | To | Description |
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| 1206.1' | 1208.4' | Oil shale, dark brown, varved, with some medium brown interbedding with thin light brown claystone down to 1206.8'; irregular bedding with eye-like structures and truncated beds down to 1206.8'; lower zone is evenly bedded, mostly dark brown. |
| 1208.4' | 1213.6' | Oil shale, varved dark brown to greenish brown; infill of thin dark green material in irregular pattern throughout unit; some form of infill; fractures not apparent; so means of infill unknown. |
| 1213.6' | 1218.5' | Oil shale, medium dark brown, varved; a few thin interbedded light brown claystones less than 1/4" thick; very thin dark brown varving of organic material throughout. |
| 1218.5' | 1221.3' | Oil shale, varved dark to medium brown; some interbedded claystone, light brown to gray brown; also some very thin dark brown to black organic rich varves; irregular bedding with eye-like structures and truncated beds from 1219.8'-1221.3'; interbedded tuffs and claystones from 1221.0'-1221.3', with numerous thin stringers of analcitized tuff. |
| 1221.3' | 1228.0' | Oil shale, varved medium to light brown; some thin dark brown beds, marly; interbedded tuff and some light brown to buff claystones; tuff bed from 1221.3'-1221.4' with some claystones and numerous thin lenses of analcitized tuff; analcitized tuff lenses at 1221.75', 1221.95', 1225.5', 1226.25', 1227.3' and 1227.45'; analcitized tuff blebs scattered from 1223.0'-1224.5'; solution cavities at 1223.05' and 1224.7' with light brown to buff crystals (like snow flakes) of nahcolite; numerous interbedded claystone beds throughout entire unit. |
| Core #60 | 1228.0'-1288.3' | Cored 60.3' Recovered 60.3' |
| 1228.0' | 1232.8' | Oil shale, varved medium to light brown; interbedded claystone, light brown to buff; tuff blebs, analcitized, 3/4" thick at 1229.2' and 1230.45'; some irregular bedding with eye-like structures around the tuff blebs. |
| 1232.8' | 1237.9' | Oil shale, varved medium to dark brown, banded with zones of dark brown and medium brown; dark brown zones 1232.8'-1234.3' |

| From | To | Description |
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| | | and 1236.6'-1237.9'; thin blebs of tuff throughout darker zones; lense of tuff, analcitized, at 1236.6'; some high angle fractures evident; most breaks along bedding plane. |
| 1237.9' | 1255.5' | Oil shale, varved medium to dark brown; interbedded zones of medium to light brown to green banded oil shale and claystones with zones of dark brown oil shale; thin dark brown interbedded oil shale throughout unit; numerous thin (less than 1/4" thick) blebs of tuff scattered throughout unit; tuff blebs greater than 1/4" thick at 1239.55', 1241.9', 1252.1', 1254.7', and a zone of tuff blebs from 1252.9'-1253.4'; numerous thin lenses of tuff scattered throughout unit; lenses of analcitized tuff from 1250.3'-1250.6'. |
| 1255.5' | 1256.8' | Oil shale, dark brown, varved, dolomitic; slightly argillaceous with some smooth soapy fracture faces. |
| 1256.8' | 1258.5' | Oil shale, medium to light brown, varved dark brown; banded medium to light brown, irregular bedding; lenses of tuff 1/4" thick at 1257.8', 1258.35' and 1258.45'. |
| 1258.5' | 1261.55' | Oil shale, dark brown to gray brown, slightly varved, dolomitic, very argillaceous; interbedded shale; discus fracturing with some high angle fractures. |
| 1261.55' | 1262.55' | Oil shale, as above, badly fractured and broken. |
| 1262.55' | 1263.7' | Oil shale, as above, with discus fracturing. |
| 1263.7' | 1264.5' | Shale, gray to gray brown, dolomitic; badly fractured and broken, with some poker chip fractures. |
| 1264.5' | 1272.4' | Oil shale, varved medium to dark brown to gray brown, argillaceous, dolomitic; interbedded shale, dark gray, waxy; discus type fractures with some high angle fractures evident. |
| 1272.4' | 1276.6' | Oil shale, varved medium to light brown, interbedded dark brown, slightly marly; numerous blebs of tuff scattered throughout unit; some irregular bedding at 1274.3', 1275.4' and 1275.65'; very thin blebs of dark rich organic material scattered throughout, or possibly plant fossils. |
| 1276.6' | 1281.55' | Oil shale, gray brown to medium brown, slightly varved; very argillaceous, almost a shale; |

| From | To | Description |
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| | | badly fractured, with discus and vertical fractures; section is badly broken; lense of tuff at 1277.6'; interbedded zones of good varving and better oil shale. |
| 1281.55' | 1286.55' | Oil shale, varved dark brown to gray brown, argillaceous, dolomitic; discus fractures; lenses of tuff scattered throughout section; numerous very thin lenses of white crystalline material from 1283.3'-1284.4', hard, with no reaction to acid; plant fossils evident as thin black lenses. |
| 1286.55' | 1288.3' | Oil shale, varved medium to light brown, interbedded claystone light brown to light green gray; irregular bedding with truncated beds and eye-like structures; blebs of tuff scattered throughout. |
| Core #61 | 1288.3'-1319.6' | Cored 31.3' Recovered 27.8' |
| 1288.3' | 1292.65' | Oil shale, varved medium to light brown, marly; interbedded claystone, light brown to buff; some thin interbedded tuffs; blebs of tuff scattered throughout; irregular bedding with eye-like structures and truncated beds; claystone blebs scattered throughout section; interbedded thin dark brown oil shale. |
| 1292.65' | 1293.75' | Oil shale, dark brown, varved, interbedded shale, gray to blue gray; badly fractured along shale beddings, with smooth soapy fracture surfaces on high angle fractures. |
| 1293.75' | 1297.0' | Shale, gray to blue gray, very few interbedded oil shale units; shale is badly fractured on bedding planes, high angles and vertical, also some poker chip fracturing is evident; some fossils evident in section; shale is dolomitic (Blue Marker). |
| 1297.0' | 1303.3' | Oil shale, dark brown, varved; interbedded shale, dark brown to gray brown; badly fractured in all directions with some poker chip fractures evident; some fossils evident; unit is marly. |
| 1303.3' | 1316.0' | Shale, gray, blue gray to blue; some interbedded oil shale, dark brown, oil shale composing about 25 to 30% of section; section is badly fractured on bedding planes, vertical, high angle and poker chip; on some fracture surfaces toward the top is a black |

| From | To | Description |
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| 1316.0' | 1319.6' | oil residue looking material; numerous very thin lenses of tuff throughout unit; numerous fossils, mostly small fish, throughout unit; most fish are pyritized. |
| Core #62 | | Missing |
| | | 1319.6'-1355.6' Cored 36.0' Recovered 37.9' Recovered 1.9' from previous core. |
| 1319.6' | 1325.0' | Shale, dark gray green, slightly kerogenetic; hacky to discing fractures; some carbonized wood fragments; very thin layers of gypsum on bedding planes. |
| 1325.0' | 1355.6' | Oil shale, dark brown, argillaceous; discing, some poker chip; very thin layers of gypsum on bedding planes; blebs of analcitized tuff only locally; beds of 0.2' thick marlstone at 1327.6', 1345.0', 1346.0'; some irregularly bedded analcitized tuffs at 1343.0', 1351.7'; thin layers of high pyrite content common. |
| Core #63 | | 1355.6'-1415.1' Cored 59.5' Recovered 59.5' |
| 1355.6' | 1356.5' | Oil shale, gray, discing; small fossil fragments on bedding planes (clay); talc-like substance on bedding planes. |
| 1356.5' | 1389.2' | Oil shale, varved medium brown to dark brown, argillaceous; discing; fossil fragments and cast loading on bedding planes; some slumping enterolithic structures at 1362.6'; analcitized tuff, irregularly bedded, at 1375.0', 1387.4'. |
| 1389.2' | 1394.1' | Shale, gray, calcareous; discing to poker chip; slightly kerogenetic. |
| 1394.1' | 1412.0' | Sandstone, very fine grain, gray to brown, massive, calcareous; fossil fragments (plant); injected tuff, light gray, at 1405.4'; pyrite common. |
| 1412.0' | 1415.1' | Oil shale, varved dark brown, slightly marly; smooth texture to sucrossic texture; some zones more highly calcareous than others. |
| Core #64 | | 1415.1'-1473.5' Cored 58.4' Recovered 58.4' |
| 1415.1' | 1416.9' | Oil shale, dark brown, argillaceous, calcareous, thin leaner layers, paper shale variety, with |

| From | To | Description |
|----------|-----------------|--|
| 1416.9' | 1418.1' | abundant plant fragments. Sandstone, very fine grained, gray, calcareous. |
| 1418.1' | 1418.3' | Oil shale, dark brown, argillaceous, calcareous. |
| 1418.3' | 1421.4' | Sandstone, very fine grained, gray calcareous, abundant plant fragments. |
| 1421.4' | 1424.6' | Oil shale, dark brown, argillaceous, calcareous, paper shale variety. |
| 1424.6' | 1427.4' | Sandstone, very fine grained, gray, argillaceous in parts; plant fragments abundant. |
| 1427.4' | 1473.5' | Oil shale, dark brown, argillaceous, interbedded with thin marlstone, dolomite and shale; thin tuffs common; bleb-like bodies, coprolites (?), present throughout much of unit. |
| Core #65 | 1473.5'-1515.1' | Cored 41.6' Recovered 41.6' |
| 1473.5' | 1476.8' | Oil shale, dark brown, varved, dolomitic, argillaceous; interbedded shale; some high angle fractures; fossil material abundant, appears to be fish; some gilsonite at 1474.95'. |
| 1476.8' | 1483.15' | Shale, gray to gray brown, some interbedded oil shale, dark brown and thin tuffs with some nodules of claystone; some fossil fragments, possibly fish fragments; badly fractured, discus fractures, some vertical and high angle; tuff lense at 1482.4'-1482.8'. |
| 1483.15' | 1499.7' | Oil shale, dark brown, varved, argillaceous; some interbedded medium brown oil shale and some thin tuff beds, banded light to medium brown; lenses of tuff at 489.7' and 491.0'; bedded calcite 3/4" thick at 490.15'; numerous very small fossils, probably ostracods. |
| 1499.2' | 1515.1' | Shale, gray to blue gray, dolomitic; interbedded oil shale, dark brown; numerous fossils, probably ostracods; unit badly fractured and broken; some blebs of tuff scattered throughout; some tar-like possible oil residue on some fracture surfaces at 1504.0' and 1510.0'. |
| 1515.1' | | Bottom of cored interval. |

CORE TO USBM LARAMIE

CE-707

| <u>Box No.</u> | <u>Footage</u> | <u>Box No.</u> | <u>Footage</u> |
|----------------|----------------|----------------|----------------|
| 1 | 83.1-86.3' | 31 | 198.1-208.1' |
| 2 | 86.3-89.6 | 2 | 208.1-211.4 |
| 3 | 89.6-92.8 | 3 | 211.4-214.6 |
| 4 | 92.8-96.6 | 4 | 214.6-217.8 |
| 5 | 96.6-99.8 | 5 | 217.8-221.0 |
| 6 | 99.8-103.1 | 6 | 221.0-225.0 |
| 7 | 103.1-106.4 | 7 | 225.0-228.3 |
| 8 | 106.4-112.0 | 8 | 228.3-231.5 |
| 9 | 112.0-115.2 | 9 | 231.5-234.2 |
| 10 | 115.2-118.5 | 40 | 234.2-257.1 |
| 1 | 118.5-121.8 | 1 | 257.1-260.4 |
| 2 | 121.8-125.0 | 2 | 260.4-288.1 |
| 3 | 125.0-128.1 | 3 | 288.1-291.6 |
| 4 | 128.1-131.5 | 4 | 291.6-295.1 |
| 5 | 131.5-134.8 | 5 | 295.1-298.4 |
| 6 | 134.8-137.9 | 6 | 298.4-301.7 |
| 7 | 137.9-141.2 | 7 | 301.7-304.9 |
| 8 | 141.2-144.4 | 8 | 304.9-308.2 |
| 9 | 144.4-160.3 | 9 | 308.2-311.4 |
| 20 | 160.3-163.6 | 50 | 311.4-315.0 |
| 1 | 163.6-166.9 | 1 | 315.0-318.5 |
| 2 | 166.9-170.1 | 2 | 318.5-321.5 |
| 3 | 170.1-173.35 | 3 | 321.5-325.0 |
| 4 | 173.35-177.3 | 4 | 325.0-328.3 |
| 5 | 177.3-180.5 | 5 | 328.3-331.4 |
| 6 | 180.5-183.7 | 6 | 331.4-334.6 |
| 7 | 183.7-186.8 | 7 | 334.6-337.75 |
| 8 | 186.8-192.0 | 8 | 337.75-344.0 |
| 9 | 192.0-195.1 | 9 | 344.0-347.2 |
| 30 | 195.1-198.1 | 60 | 347.2-350.6 |

| <u>Box No.</u> | <u>Footage</u> | <u>Box No.</u> | <u>Footage</u> |
|----------------|----------------|----------------|----------------|
| 61 | 350.6-354.0' | 95 | 467.2-473.1' |
| 2 | 354.0-357.1 | 6 | 473.1-476.3 |
| 3 | 357.1-360.2 | 7 | 476.3-479.4 |
| 4 | 360.2-363.3 | 8 | 479.4-483.6 |
| 5 | 363.3-366.5 | 9 | 483.6-486.4 |
| 6 | 366.5-369.6 | 100 | 486.8-489.4 |
| 7 | 369.6-372.6 | 1 | 489.9-493.1 |
| 8 | 372.6-275.8 | 2 | 493.1-496.3 |
| 9 | 375.8-379.0 | 3 | 496.3-499.6 |
| 70 | 379.0-382.2 | 4 | 499.6-502.7 |
| 1 | 382.2-385.3 | 5 | 502.7-505.6 |
| 2 | 385.3-388.4 | 6 | 505.6-509.1 |
| 3 | 388.4-391.6 | 7 | 509.1-513.4 |
| 4 | 391.6-394.7 | 8 | 513.4-515.1 |
| 5 | 394.7-397.8 | 9 | 515.1-518.3 |
| 6 | 397.8-400.8 | 110 | 518.3-521.5 |
| 7 | 400.8-404.0 | 1 | 521.5-524.8 |
| 8 | 404.0-408.5 | 2 | 524.8-530.5 |
| 9 | 408.5-411.0 | 3 | 530.5-533.7 |
| 80 | 411.0-416.2 | 4 | 533.7-537.1 |
| 1 | 416.2-420.0 | 5 | 537.1-540.2 |
| 2 | 420.0-427.0 | 6 | 540.2-544.4 |
| 3 | 427.0-430.4 | 7 | 544.4-547.7 |
| 4 | 430.4-433.8 | 8 | 547.7-553.8 |
| 5 | 433.8-437.2 | 9 | 553.8-557.0 |
| 6 | 437.2-440.6 | 120 | 557.0-561.0 |
| 7 | 440.6-443.8 | 1 | 561.0-564.5 |
| 8 | 443.8-447.2 | 2 | 564.5-567.7 |
| 9 | 447.2-451.1 | 3 | 567.7-571.0 |
| 90 | 451.1-454.3 | 4 | 571.0-579.7 |
| 1 | 454.3-457.5 | 5 | 579.7-582.8 |
| 2 | 457.5-460.8 | 6 | 582.8-586.2 |
| 3 | 460.8-464.0 | 7 | 586.2-589.4 |
| 4 | 464.0-467.2 | 8 | 589.4-592.7 |

| <u>Box No.</u> | <u>Footage</u> | <u>Box No.</u> | <u>Footage</u> |
|----------------|----------------|----------------|----------------|
| 129 | 592.7-596.9' | 161 | 710.9-714.4 |
| 130 | 596.9-600.3 | 2 | 714.4-718.2 |
| 1 | 600.3-603.8 | 3 | 718.2-721.5 |
| 2 | 603.8-606.8 | 4 | 721.5-724.6 |
| 3 | 606.8-613.3 | 5 | 724.6-727.7 |
| 4 | 613.3-616.5 | 6 | 727.7-731.1 |
| 5 | 616.5-619.8 | 7 | 731.1-734.1 |
| 6 | 619.8-623.8 | 8 | 734.1-737.4 |
| 7 | 623.8-627.3 | 9 | 737.4-741.8 |
| 8 | 627.3-630.7 | 170 | 741.8-745.1 |
| 9 | 630.7-634.0 | 1 | 745.1-748.3 |
| 140 | 634.0-638.7 | 2 | 748.3-751.4 |
| 1 | 638.7-642.0 | 3 | 751.4-754.5 |
| 2 | 642.0-646.0 | 4 | 754.5-757.8 |
| 3 | 646.0-650.3 | 5 | 757.8-761.2 |
| 4 | 650.3-654.6 | 6 | 761.2-769.0 |
| 5 | 654.6-657.7 | 7 | 769.0-772.1 |
| 6 | 657.7-665.0 | 8 | 772.1-775.2 |
| 7 | 665.0-668.1 | 9 | 775.2-779.2 |
| 8 | 668.1-672.0 | 180 | 779.2-781.3 |
| 9 | 672.0-675.2 | 1 | 781.3-784.5 |
| 150 | 675.2-678.4 | 2 | 784.5-787.6 |
| 1 | 678.1-682.0 | 3 | 787.6-790.7 |
| 2 | 682.0-685.4 | 4 | 790.7-794.1 |
| 3 | 685.4-688.5 | 5 | 794.1-797.3 |
| 4 | 688.5-691.6 | 6 | 797.3-800.5 |
| 5 | 691.6-694.8 | 7 | 800.5-803.7 |
| 6 | 694.8-698.0 | 8 | 803.7-806.9 |
| 7 | 698.0-701.3 | 9 | 806.9-812.9 |
| 8 | 701.3-704.5 | 190 | 812.9-816.4 |
| 9 | 704.5-707.7 | 1 | 816.4-826.6 |
| 160 | 707.7-710.9 | 2 | 826.6-829.7 |

| <u>Box No.</u> | <u>Footage</u> | <u>Box No.</u> | <u>Footage</u> |
|----------------|----------------|----------------|----------------|
| 193 | 829.7-833.0' | 226 | 940.5-943.75' |
| 4 | 833.0-836.3 | 7 | 943.75-947.1 |
| 5 | 836.3-839.5 | 8 | 947.1-950.5 |
| 6 | 839.5-842.6 | 9 | 950.5-954.8 |
| 7 | 842.6-845.7 | 230 | 954.8-956.8 |
| 8 | 845.7-848.9 | 1 | 956.8-959.9 |
| 9 | 848.9-852.1 | 2 | 959.9-963.2 |
| 200 | 852.1-855.9 | 3 | 963.2-966.4 |
| 1 | 855.9-859.1 | 4 | 966.4-969.45 |
| 2 | 859.1-862.6 | 5 | 969.45-973.0 |
| 3 | 862.6-865.8 | 6 | 973.0-976.2 |
| 4 | 865.8-868.9 | 7 | 976.2-979.5 |
| 5 | 868.9-872.3 | 8 | 979.5-982.8 |
| 6 | 872.3-875.5 | 9 | 982.8-986.0 |
| 7 | 875.5-878.9 | 240 | 986.0-989.3 |
| 8 | 878.9-882.4 | 1 | 989.3-997.3 |
| 9 | 882.4-885.7 | 2 | 997.3-1001.1 |
| 210 | 885.7-889.2 | 3 | 1001.1-1004.3 |
| 1 | 889.2-892.4 | 4 | 1004.3-1007.4 |
| 2 | 892.4-895.7 | 5 | 1007.4-1010.6 |
| 3 | 895.7-899.7 | 6 | 1010.6-1013.7 |
| 4 | 899.7-902.8 | 7 | 1013.7-1016.8 |
| 5 | 902.8-906.0 | 8 | 1016.8-1020.0 |
| 6 | 906.0-909.3 | 9 | 1020.0-1023.1 |
| 7 | 909.3-912.3 | 250 | 1023.1-1026.3 |
| 8 | 912.3-915.6 | 1 | 1026.3-1030.3 |
| 9 | 915.6-918.9 | 2 | 1030.3-1033.5 |
| 220 | 918.9-922.0 | 3 | 1033.5-1036.5 |
| 1 | 922.0-925.4 | 4 | 1036.5-1039.6 |
| 2 | 925.4-931.7 | 5 | 1039.6-1042.7 |
| 3 | 931.7-934.0 | 6 | 1042.7-1045.8 |
| 4 | 934.0-937.3 | 7 | 1045.8-1049.3 |
| 5 | 937.3-940.5 | 8 | 1049.3-1052.7 |

| <u>Box No.</u> | <u>Footage</u> | <u>Box No.</u> | <u>Footage</u> |
|----------------|----------------|----------------|----------------|
| 259 | 1052.7-1055.9' | 289 | 1170.7-1174.0' |
| 260 | 1055.9-1058.5 | 290 | 1174.0-1177.1 |
| 1 | 1058.5-1062.0 | 1 | 1177.1-1180.2 |
| 2 | 1062.0-1065.0 | 2 | 1180.2-1183.5 |
| 3 | 1065.0-1067.3 | 3 | 1183.5-1186.7 |
| 4 | 1067.3-1071.4 | 4 | 1186.7-1189.8 |
| 5 | 1071.4-1074.4 | 5 | 1189.8-1193.1 |
| 6 | 1074.4-1077.4 | 6 | 1193.1-1196.3 |
| 7 | 1077.4-1080.3 | 7 | 1196.3-1199.5 |
| 8 | 1080.3-1082.4 | 8 | 1199.5-1202.7 |
| 9 | 1082.4-1086.4 | 9 | 1202.7-1206.0 |
| 270 | 1086.4-1089.6 | 300 | 1206.0-1209.2 |
| 1 | 1089.6-1092.8 | 1 | 1209.2-1212.3 |
| 2 | 1092.8-1096.0 | 2 | 1212.3-1215.4 |
| 3 | 1096.0-1099.0 | 3 | 1215.4-1218.7 |
| 4 | 1099.0-1101.8 | 4 | 1218.7-1222.2 |
| 5 | 1101.8-1104.6 | 5 | 1222.2-1225.5 |
| 6 | 1104.6-1108.7 | 6 | 1225.5-1228.6 |
| 7 | 1108.7-1112.8 | 7 | 1228.6-1231.7 |
| 8 | 1112.8-1116.3 | 8 | 1231.7-1234.9 |
| 9 | 1116.3-1119.5 | 9 | 1234.9-1238.2 |
| 280 | 1119.5-1122.7 | 310 | 1238.2-1241.5 |
| 1 | 1122.7-1138.8 | 1 | 1241.5-1244.8 |
| 2 | 1138.8-1141.6 | 2 | 1244.8-1248.0 |
| 3 | 1141.6-1145.7 | 3 | 1248.0-1251.3 |
| 4 | 1145.7-1147.7 | 4 | 1251.3-1254.6 |
| 5 | 1147.7-1160.1 | 5 | 1254.6-1257.8 |
| 6 | 1160.1-1162.6 | 6 | 1257.8-1261.0 |
| 7 | 1162.6-1168.6 | 7 | 1261.0-1264.3 |
| 8 | 1168.6-1170.7 | 8 | 1264.3-1267.6 |

| <u>Box No.</u> | <u>Footage</u> | <u>Box No.</u> | <u>Footage</u> |
|----------------|----------------|----------------|----------------|
| 319 | 1267.6-1271.0' | 349 | 1369.2-1372.1 |
| 320 | 1271.0-1274.3 | 350 | 1372.1-1375.1 |
| 1 | 1274.3-1277.5 | 1 | 1375.1-1378.2 |
| 2 | 1277.5-1281.0 | 2 | 1378.2-1381.0 |
| 3 | 1281.0-1284.3 | 3 | 1381.0-1384.0 |
| 4 | 1284.3-1287.5 | 4 | 1384.0-1386.0 |
| 5 | 1287.5-1290.7 | 5 | 1386.0-1389.9 |
| 6 | 1290.7-1294.0 | 6 | 1389.9-1393.7 |
| 7 | 1294.0-1297.6 | 7 | 1393.7-1396.6 |
| 8 | 1297.6-1301.0 | 8 | 1396.6-1399.4 |
| 9 | 1301.0-1304.2 | 9 | 1399.4-1402.2 |
| 330 | 1304.2-1307.6 | 360 | 1402.2-1405.0 |
| 1 | 1307.6-1310.9 | 1 | 1405.0-1408.0 |
| 2 | 1310.9-1314.5 | 2 | 1408.0-1410.9 |
| 3 | 1314.5-1319.4 | 3 | 1410.9-1413.7 |
| 4 | 1319.4-1323.0 | 4 | 1413.7-1416.6 |
| 5 | 1323.0-1326.3 | 5 | 1416.6-1419.3 |
| 6 | 1326.3-1329.5 | 6 | 1419.3-1422.2 |
| 7 | 1329.5-1332.6 | 7 | 1422.2-1425.1 |
| 8 | 1332.6-1336.0 | 8 | 1425.1-1428.0 |
| 9 | 1336.0-1339.3 | 9 | 1428.0-1431.0 |
| 340 | 1339.3-1342.8 | 370 | 1431.0-1434.0 |
| 1 | 1342.8-1345.7 | 1 | 1434.0-1437.0 |
| 2 | 1345.7-1349.0 | 2 | 1437.0-1439.9 |
| 3 | 1349.0-1352.2 | 3 | 1439.9-1442.9 |
| 4 | 1352.2-1355.0 | 4 | 1442.9-1445.9 |
| 5 | 1355.0-1360.4 | 5 | 1445.9-1448.9 |
| 6 | 1360.4-1363.5 | 6 | 1448.9-1451.9 |
| 7 | 1363.5-1366.4 | 7 | 1451.9-1454.9 |
| 8 | 1366.4-1369.2 | 8 | 1454.9-1457.9 |

| <u>Box No.</u> | <u>Footage</u> |
|----------------|----------------|
| 379 | 1457.9-1460.9' |
| 380 | 1460.9-1463.9 |
| 1 | 1463.9-1466.9 |
| 2 | 1466.9-1469.9 |
| 3 | 1469.9-1472.9 |
| 4 | 1472.9-1475.0 |
| 5 | 1475.0-1477.9 |
| 6 | 1477.9-1480.9 |
| 7 | 1480.9-1483.8 |
| 8 | 1483.8-1486.7 |
| 9 | 1486.7-1489.6 |
| 390 | 1489.6-1492.4 |
| 1 | 1492.4-1495.4 |
| 2 | 1495.4-1498.2 |
| 3 | 1498.2-1501.2 |
| 4 | 1501.2-1504.4 |
| 5 | 1504.4-1507.5 |
| 6 | 1507.5-1510.7 |
| 7 | 1510.7-1513.6 |
| 8 | 1513.6-1515.1 |

END OF CORE