

Appendix 15. Illustrated core description, Canyon Creek no.1 (G-51) and Canyon Creek no. 2 (J-20).

CANYON CREEK # 1 G-51

UWID: 300/G-51-6520-12615

STATUS: Drld & ABD

LAHEE: EXP

SPUD: 1945/06/27

DRILLED BY (ORIG OPER): Imperial Oil Ltd.

Core 1236-1363 ft., recovery 105/127 ft.

The core shows preferential recovery of sandstones. Shale intervals are rubbly and apparently poorly recovered. Upper one-half of the section is dominated by sandstone and believed to have better recovery close to 90%. The lower one-half of the section represents sandstone-shale alternation and shale dominance in the base. Its recovery could be 50-70%. More accurate estimation of shale and sandstone intervals is not possible with only SP and Resistivity logs available. Depth intervals below are stretched to cored interval and may significantly deviate from measured depth.

Measured depth is given in meters; original imperial units appear in brackets.

Canyon Member (type section)

376.7-377.3 (1236-1238 ft.) Sandstone: gray, massive, very fine-grained, quartzose, with 10% admixture of black grains – coaly detritus and/or mafic detrital minerals.

377.3-378.5 (1238-1241.7 ft.) Sandstone: gray, with texture similar to 1236-1238 m but different by presence of “mud flakes” and slumping features (photo). The mud flakes are different-size (some exceeding core diameter), composed of brownish dark gray fissile shaly siltstones.

378.5-379 (1241.7-1243.3 ft.) Sandstone: gray very fine-grained, intercalated with dark gray fissile micaceous siltstones, indicative of sand-dominated Bouma rhythms. Sandstones form hard beds with sharp soles complicated by flame and ball structures.

379-379.9 (1243.3-1246.4 ft.) Sandstone: massive, vf/g, very similar to 1236-1238 ft.

379.9-381.1 (1246.4-1250.2 ft.) Sandstone: massive to faintly laminated, vf/g, quartzose with mafic grains, with thick (> 1 cm) intercalations of dark brownish gray laminated siltstones and mudrocks. Some of these siltstones and mudrocks show pyritic tables (acritarchs) and rare sponge spicules on bedding

planes (photo). Coarser and finer-grained rocks form normally graded sandstone-dominated Bouma rhythms. Some basal sandstones in rhythms bear rare mud flakes.

381.1-381.4 (1250.2-1251.2 ft.) Sandstone to c/g siltstone: distinctly laminar and slightly darker than sandstones above.

381.4-385.8 (1251.2-1265.8 ft.) Sandstone: gray, massive to faintly laminated. The lamination is inclined and changing angles, could be hummocky type.

385.8-387 (1265.8-1269.6 ft.) Sandstone-siltstone-mudrock alternation: dominated by sandstone in core boxes, apparently due to poor recovery of finer-grained fissile recessive rocks. Sandstones are very fine-grained, with soles distorted by ball and flame structures. Some sandstones and siltstones show bands of impregnation with rusty material – siderite? Contorted, originally wavy lamination is common. Rare planes with pyritized tables; infrequent coaly detritus. Shales are rich in water-expanding clays.

387-388.9 (1269.6-1276.0 ft.) Sandstone: massive with minor faintly laminated varieties, similar to the above.

388.9-391.1 (1276.0-1283.2 ft.) Sandstone: massive, as above, intercalated by thick (>1 cm) dark brownish gray muddy siltstones. The basal siltstone is notably rich in pyritized tablets and similarly pyritized sponge spicules (microphoto). This basal siltstone is thick and grades downward into the sandstone (full Bouma rhythm) with coarser-grained (medium-grained) base containing cm-sized intraclasts of mudrock-siltstone. Interbeds of dark siltstone above this basal parts also contain pyritic tablets.

391.1-404.3 (1283.2-1326.4 ft.) Sandstone: predominantly massive very fine-grained, with rare dark brownish mud flakes (siltstones and mudrock), in lower two-thirds with horizons of mineral impregnation weathering rusty (siderite?). Rare faintly laminar intervals, very rare intercalations of dark gray siltstone and mudrock. In upper ½, mudrock intercalations are of same type as above, containing pyrite tablets; mudrock pieces at 1321.6 ft. show lighter-colored shale matrix and numerous dark detrital grains.

404.3-404.9 (1326.4-1328.5 ft.) Siltstone: pale to dark gray, with contorted wavy lamination, with sandstone intercalations; these sandstone interbeds are rich in mud flakes.

Loon Creek member

404.9-406.0 (1328.5-1332.0 ft.) Mudrock: predominantly hard, black, silty, pyritic (pyritic streaks and “dust”); disintegrated into shardy pieces with conchoid surfaces; contains distorted interbeds of pale gray very fine-grained sandstones to siltstones (photo).

406.0-406.3 (1232.0-1233.0 ft.) Sandstone: a graded bed with 25 cm thick basal sandstone and upper siltstone (5 cm preserved); the latter is distorted into balls, may be bioturbated (photo).

406.3-409 (1233.0-1342.0 ft.) Mudrock: silty, dark brownish gray, hard, less pyritic than above, with “pyrite dust” decreasing to the base; disintegrated into large (1-5 cm) shards.

Mirror Lake member

409-412.6 (1342.0-1353.7 ft.) Shale: dark gray to gray, pelitomorphic, with admixture of silt-sized (>0.07 mm) mafic grains; mostly non-pyritic, locally with minor “pyrite dust”. Rare sponge spicules only in lower part; no pyritized acritarchs detected. The lower 2-3 ft. is partially reverting to dark gray hard shale producing larger chips with conchoid surfaces (photo).

412.6-415.4 (1353.7-1363.0 ft.) Sandstone: gray, very fine-grained, mostly massive, tighter (more cemented) than in the upper part of the section; minor shale interbeds preserved as loose chips only; some sandstone chunks have sharply undulating slickensided tops or bases covered with dark gray clay skins (indication of sandstone dyking).

End of core.

Core 1860-1874 ft.

566.9-571.2 (1860-1874 ft.) Calcareous mudrock: black, hard, moderately pyritic (rare pyrite streaks), grading to thin-bedded limestone; in upper half dominated by micritic/pelitomorphic mudrock with thin common collapsed tentaculitids; in lower half predominantly calcisiltite with common tentaculitids – carbonate silt graded beds.

CANYON CREEK # 2 (J-20)

UWID: 300/J-20-6510-12615

STATUS: Drld & ABD

LAHEE: EXP

SPUD: 1945/08/29

DRILLED BY (ORIG OPER): Imperial Oil Ltd.

Core 2, 664-765 ft., recovery 96 ft.; 5 ft./box

202.4-203.3 (664-667 ft.) Mudrock to siltstone: alternation of harder muddy siltstones and softer fissile silty shales; shales show flaky fabrics on bedding planes; the interval rich in expandable clays; no obvious sedimentary lamination; infrequent biogenic phosphate particles (conodonts and probably fish); some coaly detritus. Base gradational with low-contrast alternation of silty mudrocks, siltstones and very fine-grained sandstones; gently inclined surfaces on transition to the underlying sandstone (ripples, hummocks or soft-sediment deformation structures).

203.3-203.6 (667-668 ft.) Sandstone: very fine-grained, gray, quartzose, grading to coarse-grained siltstone, faintly laminated. Rare cm-sized gently curved mudstone flakes (intraclasts). The base is

defined by 1-2 cm thick dark gray fissile muddy siltstone. Upper 5 cm of the sandstone show dispersed pyritization.

203.6-213.4 (668-700 ft.) Sandstone: very fine-grained to fine-grained, pale gray, porous, mostly massive.

Below the section is not described.

Description of the basal part of Core 2:

230.7-233.2 (757-765 ft.) Mudrock: dark gray to gray, fissile silty shale with minor muddy siltstones. Rare moderately pyritized intervals. Intact sedimentary lamination locally seen (lack of bioturbation). Mudrocks usually show floccular fabric. Siltstone intervals contain rare to common sponge spicules; pavements of pyritic tablets (acritarchs) are spotted in basal 1-2 ft.; no other fossils.

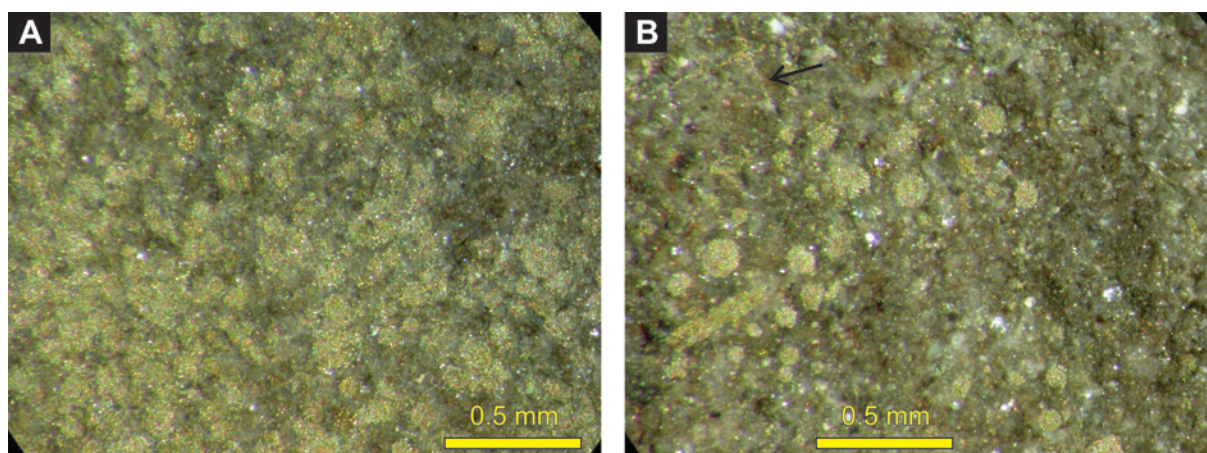


Figure J-20-1. Muddy siltstone with a pavement of pyritized tablets (A and B); similarly pyritized sponge spicule is arrowed on (B); approximate depth 233 m MD.