

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY^{1/}

Core samples of the Green River Formation from Bureau of Mines-Atomic Energy Commission Colorado Corehole No. 2 drilled in 1966 in SW1/4 NW1/4NE1/4 sec 14 (710.4 ft S of N line and 2005.1 ft W of E line), T 1 S, R 99 W, Rio Blanco County, Colorado

Elevation KB: 6607.7 feet (10.7 feet above ground level)
 Cored interval: 805.4-2214.1 feet
 Mahogany marker: 1252.2 feet

From	To	Description
805.4	809.4	Siltstone: medium brownish gray to buff and gray-buff (2.5Y 5/2 & 5/1-7/2 & 7/1), slightly calcareous. Faint distorted to contorted streaks and stringers. Irregular thick parting; slightly irregular fracture. Some thin sandy stringers.
809.4	813.1	Siltstone and mudstone: medium and light brownish gray in upper part to buff and gray-buff in lower part (2.5Y 5/2 & 5/1-7/2 & 7/1). Very faint bedding with occasional faint distorted stringers to massive. Very irregular parting and fracture.
813.1	816.9	Siltstone and sandstone: medium to light brownish gray and gray-buff (2.5Y 5/2-7/1), slightly calcareous. Fairly distinct fairly regular stringers and bands. Slightly irregular to irregular thick parting; regular to some irregular fracture.
816.9	820.4	Siltstone and some sandstone: light to medium brownish gray and some gray-buff (2.5Y 6/1-4/1, some 7/1). Very faint fairly regular bands and laminae. Slightly irregular to irregular thick parting; slightly irregular fracture. A 1/2-inch zone with very common fine vitreous black streaks at 819.9 feet.
820.4	822.4	Siltstone and sandstone: light to medium brownish gray and neutral gray (10YR 6/1-5/1 & 7-6N). Very faintly bedded to massive. Very irregular parting and fracture.
822.4	825.3	Sandstone and siltstone: very light gray to gray-buff (8N to 10YR 7/1). Massive to very faintly bedded. Badly broken up and mixed up; true length doubtful.
825.3	827.1	Missing.
827.1	829.7	Siltstone and some sandstone: medium brownish gray to gray-buff (10YR 5/2 & 5/1-7/1). Faint to moderately distinct distorted streaks and stringers. Irregular thick parting; slightly irregular fracture.
829.7	831.9	Siltstone and some oil shale: medium to light brownish gray (2.5Y 5/1 & 5/2-6/1 & 6/2). Faint distorted streaks, stringers, and rare laminae. Irregular parting and fracture. Very rare fine vitreous black organic streaks.

^{1/} By L. G. Trudell

Illustration No. SBR-4003P (Sheet 1 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
831.9	833.4	Siltstone: medium to light brownish gray (10YR 5/2 & 5/1-6/1). Massive to faint distorted stringers. Very irregular parting and fracture. Some fine light gray sandy streaks and stringers. Badly broken up and mixed up; true length doubtful.
833.4	837.2	Sandstone and siltstone: very light gray to gray-buff and some light brownish gray (8N to 10YR 7/1, some 6/1-6/2). Faint contorted and broken stringers to massive. Very irregular parting and fracture. Common very fine carbonaceous specks and streaks. Very badly broken up and mixed up; true length doubtful.
837.2	837.7	Missing.
837.7	843.3	Siltstone: medium to light brownish gray (10YR & 2.5Y 5/2 & 5/1-6/2 & 6/1, rare 4/2). Faint distorted streaks and stringers to massive. Irregular thick parting; slightly irregular fracture. Rare small fine grained marcasite (or pyrite?) blebs and thin stringers.
843.3	844.8	Siltstone: light to medium brownish gray (10YR 6/1-5/1). Very faint distorted streaks and stringers. Irregular parting and fracture. Rare very fine vitreous black organic streaks. A fine tight diagonal fracture with irregular pyrite fillings in middle part. Some very small pyrite blebs near base.
844.8	849.9	Siltstone, marlstone and lean oil shale: light brownish gray to gray-buff siltstone (10YR 6/1-7/1) and buff to medium brownish gray marlstone and oil shale (2.5Y 7/2-5/2). Siltstone interbedded with thick zones of faintly streaked and laminated marlstone and oil shale. Irregular to slightly irregular thick parting; slightly irregular fracture. Lower part badly broken up and mixed up; true length doubtful.
849.9	850.6	Sandstone: buff (2.5Y 7/2-8/2). Massive to faintly streaked. Irregular parting and fracture. Some very fine black carbonaceous streaks.
850.6	852.2	Oil shale: light to medium brownish gray (2.5Y 6/2-4/2; some slight olive tint). Very faint smooth to distorted laminae and streaks. Irregular to some very smooth, thick to thin parting; very irregular fracture. Badly broken up and mixed up; true length doubtful.
852.2	858.9	Oil shale: dark to some light brownish gray and buff (2.5Y 3/2-5/2, some 6/2-7/2; some slight olive tint). Faint to some distinct, smooth to distorted laminae and streaks. Regular to irregular, thick to thin parting; irregular to some hackly fracture. Rare thin irregular gray-buff limestone stringers. Some natural diagonal fractures.

Illustration No. SBR-4003P (Sheet 2 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of dark to medium brownish gray oil shale from 853.2 feet: X-ray - dolomite, calcite, quartz, analcite, feldspar, illite.
858.9	860.0	Oil shale: dark to light brownish gray (2.5Y 3/2-6/2). Faint smooth streaks and stringers. Irregular limonite stained parting and fracture surfaces. Footage measurement error; sample is only 0.4 foot long.
860.0	865.8	Marlstone, lean oil shale and siltstone: buff to rare medium brownish gray marlstone and oil shale (2.5Y 7/2-6/2, rare 5/2) and gray-buff siltstone (10YR 7/1-8/1). Faint slightly distorted streaks to some massive. Irregular parting and fracture. Some thick gray fine granular stringers. Footage measurements doubtful.
865.8	872.9	Siltstone and some sandstone: buff and light to rare medium brownish gray (10YR & 2.5Y 7/2 & 7/1-6/2 & 6/1, rare 5/2). Very faint to some fairly distinct, very distorted to fairly smooth streaks and stringers. Irregular thick parting; slightly irregular fracture. Footage measurements doubtful.
872.9	878.5	Siltstone and some ostracodal sandstone: light to medium brownish gray and some gray-buff (10YR 6/2-5/2, some 7/1). Massive to faint fairly smooth stringers and laminae. Irregular to fairly regular thick parting; slightly irregular to regular fracture. Common buff to light brownish gray marlstone stringers from 874.5 to 875.5 feet.
878.5	879.7	Siltstone: light to medium brownish gray and rare gray-buff (10YR 6/2-5/2, rare 7/1 & 4/2). Massive to faint distorted streaks and stringers. Irregular parting and fracture. Some lean oil-shale stringers in middle part.
879.7	881.0	Siltstone and mudstone: light brownish gray to buff (10YR 6/2-7/2). Massive to faintly streaked. Irregular parting and fracture.
881.0	883.2	Siltstone and some sandstone: light brownish gray to gray-buff (10YR 6/2-8/1). Faint distorted to contorted streaks and stringers. Irregular parting and fracture. Some marlstone and lean oil-shale stringers in lower part.

Illustration No. SBR-4003P (Sheet 3 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
883.2	884.0	Siltstone: light to medium brownish gray (10YR 6/2-5/2). Faint contorted streaks and stringers. Irregular parting and fracture.
884.0	885.3	Siltstone, marlstone, and some oil shale: buff and gray-buff to medium brownish gray (2.5Y 7/2 & 7/1-5/2, some 4/2). Moderately distinct contorted streaks and stringers. Very irregular parting and fracture.
885.3	886.0	Marlstone: buff to light and rare medium brownish gray (2.5Y 7/2-6/2, rare 5/2). Faint contorted streaks and stringers. Irregular parting and fracture.
886.0	895.1	Mudstone, marlstone, and some siltstone: buff to light and very rare medium brownish gray (2.5Y 7/2-6/2, rare 5/2). Very faint distorted to contorted streaks and stringers. Very irregular parting and fracture. Some very irregular fine tight natural fractures with some bitumen fillings in upper part. Very irregular core pieces to very badly broken up and mixed up; true length doubtful.
895.1	898.0	Marlstone, mudstone, and siltstone: buff to light and rare medium brownish gray (2.5Y & 10YR 7/2-6/2, rare 5/2 upper part, some 8/2 lower part). Moderately distinct to very faint distorted streaks and stringers. Irregular thick parting; slightly irregular fracture.
898.0	899.1	Oil shale and some marlstone: medium brownish gray to buff (2.5Y & 10YR 5/2-7/2). Fairly distinct distorted to contorted streaks and stringers. Irregular parting and fracture. Some very irregular gray siltstone stringers in lower part.
899.1	899.5	Marlstone: buff to tan and rare medium brownish gray (10YR 7/2-6/3, rare 5/2). Faint distorted streaks and stringers. Slightly irregular parting and fracture.
899.5	903.4	Siltstone: buff to light and rare medium brownish gray (10YR & 2.5Y 7/2-6/2 & 6/1, rare 5/2-5/1), calcareous. Massive to faint distorted streaks and stringers. Very irregular parting and fracture in upper half; slightly irregular thick parting and fairly regular fracture in lower half. Some fine vertical fractures with pyrite fillings in upper part.
903.4	904.3	Siltstone and marlstone: buff to some medium brownish gray (2.5Y 7/2-6/2 & 6/1, some 5/2). Very faint to moderately distinct distorted streaks and stringers. Irregular parting and fracture. Rare irregular gray silty to sandy stringers.

Illustration No. SBR-4003P (Sheet 4 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
904.3	906.6	Oil shale: buff to medium brownish gray (2.5Y 7/2-5/2, rare 4/2). Fairly distinct very distorted streaks and stringers. Irregular thick parting; slightly irregular fracture. A thick light gray siltstone stringer at 905.3 to 905.8 feet.
906.6	909.3	Oil shale: medium and rare dark brownish gray to buff (2.5Y 4/2-7/2, rare 3/2). Fairly distinct distorted to contorted streaks and stringers. Irregular thick parting; very irregular fracture.
909.3	911.6	Oil shale and marlstone: buff to medium brownish gray (10YR & 2.5Y 7/2-5/2, rare 4/2). Fairly distinct very contorted streaks and stringers in upper and lower parts; smooth to slightly distorted laminae with common fine loop structures from 909.8 to 910.5 feet. Very irregular parting and fracture in upper and lower parts; regular parting and fracture from 909.8 to 910.5 feet. Thick massive light gray to light brownish gray siltstone bands at 909.6 and 910.5 feet; some contorted siltstone stringers in lower part. Rare fine pyrite streaks. <div style="margin-left: 40px;"> Sample of laminated marlstone from 910.1 feet: X-ray - dolomite, quartz, feldspar, analcite, calcite, illite. </div>
911.6	913.3	Oil shale: medium and rare dark brownish gray to some buff (2.5Y 4/2-6/2, some 7/2, rare 3/2). Faint to distinct very distorted streaks and stringers. Irregular parting and fracture. Some very irregular siltstone stringers near top. A 0.3-foot tan and gray (top) to white (bottom) fine granular to chalky stringer at 912.4 feet. <div style="margin-left: 40px;"> Sample of gray granular material from stringer at 912.5 feet: X-ray - analcite; some dolomite, quartz, feldspar. </div>
913.3	913.7	Missing.
913.7	914.9	Oil shale: medium and rare dark brownish gray to some buff (2.5Y 4/2-6/2, some 7/2, rare 3/2). Fairly distinct very distorted streaks and stringers. Irregular parting and fracture. Rare thin light brownish gray silty stringers.
914.9	916.6	Oil shale: medium brownish gray to buff (2.5Y 5/2-7/2, rare 4/2). Faint to distinct distorted streaks and laminae. Very irregular parting and fracture. Some natural fractures with fine pyrite crystals. Badly broken up and mixed up; true length doubtful.

Illustration No. SBR-4003P (Sheet 5 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
916.6	921.1	Oil shale: dark to light brownish gray and some buff (2.5Y 3/2-6/2, some 7/2). Faint to some distinct fairly smooth laminae and streaks. Irregular to some fairly regular thick parting; very irregular fracture. Some natural fractures with pyrite. Footage measurements doubtful.
		Sample of dark to medium brownish gray oil shale from 919.0 feet: X-ray - dolomite, quartz, analcite, calcite, feldspar, illite.
921.1	924.1	Marlstone: buff to some light and rare medium brownish gray (2.5Y 7/2-8/2, some 6/2, rare 5/2-4/2 upper part). Faint smooth to slightly distorted laminae and streaks. Slightly irregular to very irregular, medium to thick parting; irregular to conchoidal fracture.
924.1	924.6	Oil shale: medium brownish gray to buff (2.5Y 5/2-7/2, rare 4/2). Faint to moderately distinct smooth laminae and streaks. Irregular mixed up core pieces; true length doubtful.
924.6	927.0	Oil shale: very dark to some light brownish gray and buff (2.5Y & 10YR 2/2-5/2, some 6/2-7/2); rare resinous luster. Faint to some very distinct, smooth to slightly distorted streaks, stringers, and laminae. Irregular to some very regular, thick to medium parting; very irregular fracture. Some vertical to diagonal fractures with very fine disseminated pyrite crystals.
927.0	932.5	Oil shale: medium to light brownish gray and some buff (2.5Y 4/2-6/2, some 7/2). Moderately distinct to faint slightly distorted streaks and laminae. Very irregular parting and fracture. Common natural diagonal to vertical fractures--some with very fine grained crystalline coatings. Thick buff to white, silty textured to chalky stringers at 928.2 and 932.0 feet.
932.5	936.0	Marlstone, mudstone, and siltstone: buff to some medium brownish gray (2.5Y & 10YR 7/2-6/2, some 8/2 & 5/2). Faint very distorted streaks and stringers to some massive. Very irregular parting and fracture. Some natural diagonal fractures with disseminated pyrite. Some fine to small pyrite blebs in upper part.
936.0	940.8	Mudstone and siltstone: buff and buff-white to some light and rare medium brownish gray (10YR 7/2-9/2, some 6/2, rare 5/2), slightly calcareous. Faint distorted to contorted streaked bedding and some very irregular stringers. Very irregular parting and fracture. Some very fine black carbonaceous specks and streaks.

Illustration No. SER-4003P (Sheet 6 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
940.8	943.4	Siltstone and some very fine sandstone: light to medium brownish gray (10YR 6/2 & 6/1-5/2 & 5/1), slightly calcareous. Faint contorted streaks and stringers to massive. Irregular thick parting; slightly irregular to conchoidal fracture. Common very fine black carbonaceous streaks and specks.
943.4	944.4	Siltstone and fine sandstone: medium to light brownish gray and some gray-buff (10YR 4/2-6/2, some 7/1). Very faint distorted streaked bedding with faint to distinct irregular stringers and streaks. Irregular thick parting; slightly irregular to irregular fracture. Common very fine black carbonaceous specks and streaks in some parts.
944.4	946.9	Siltstone and some very fine sandstone: light to medium brownish gray and rare gray-buff (10YR 6/2-5/2, rare 7/1), slightly calcareous to calcareous. Moderately distinct to faint, contorted to distorted streaks and stringers. Irregular thick parting; irregular to slightly conchoidal fracture. Fairly common fine black carbonaceous specks and streaks. Some slightly irregular, fairly tight natural diagonal fractures in upper part.
946.9	949.4	Siltstone and some mudstone: light brownish gray to gray-buff (2.5Y & 10YR 6/2 & 6/1-7/1, some 8/1 lower part), calcareous, sandy in upper part. Massive to very faint distorted streaked bedding in upper part; faint distorted to fairly smooth streaks, laminae and bands in lower part. Irregular to some fairly regular thick parting; irregular to slightly irregular fracture. Rare very fine black carbonaceous specks. A few tight irregular natural fractures in middle part.
949.4	952.0	Siltstone and some mudstone: light and rare medium brownish gray to buff (10YR & 2.5Y 6/2-7/2, some 8/2, rare 5/2), very calcareous. Faint and some moderately distinct distorted streaks and stringers to massive. Irregular to <u>very</u> irregular parting and fracture. Very common very fine carbonaceous specks in upper part. Badly broken up, <u>spongy to brecciated friable core pieces</u> in lower part; true length doubtful.
952.0	957.3	Missing.
957.3	967.6	Siltstone and very fine sandstone: buff to some light brownish gray (10YR & 2.5Y 7/2-8/2, some 6/2-6/1), calcareous. Faint contorted to some fairly smooth streaks and stringers, and some massive. Irregular thick parting; irregular to slightly conchoidal fracture. Some to common fine carbonaceous specks and streaks.

Illustration No. SBR-4003P (Sheet 7 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Common irregular natural (?) diagonal fractures with yellowish earthy coatings. Lower part very badly broken up and mixed up; true length doubtful.
967.6	968.1	Missing.
968.1	969.6	Siltstone: buff and gray-buff to some light brownish gray (2.5Y & 10YR 7/2 & 7/1-8/2 & 8/1, some 6/1). slightly calcareous. Very faint distorted and displaced streaks and stringers. Irregular parting and fracture. Rare very fine disseminated pyrite. Some irregular broken up and mixed up core pieces; true length doubtful.
969.6	970.1	Oil shale: medium to light brown and brownish gray (10YR 5/3 & 5/2-6/3 & 6/2, rare 4/2). Faint to moderately distinct distorted laminae and streaks. Irregular parting and fracture. Very irregular inter-fingering gray-buff to buff siltstone stringers in upper and lower parts.
970.1	974.0	Siltstone: gray-buff to light brownish gray, some very light buff near top (10YR & 2.5Y 7/1-6/1 & 6/2, some 8/2 near top). Faint distorted streaked bedding with very common fine brownish gray oil-shale streaks, stringers, and shreds. Irregular parting and fracture. Lower part badly broken up and mixed up; true length doubtful.
974.0	975.0	Siltstone and oil shale: light gray and light brownish gray siltstone (6N & 10YR 6/1-6/2), and medium to light brownish gray oil shale (10YR 4/2-6/2). Very faint very distorted streaks and stringers in siltstone; faint distorted and displaced laminae and streaks in oil shale. Very irregular mixed up core pieces; true length doubtful.
975.0	975.7	Missing.
975.7	976.6	Oil shale: medium to light brownish gray and some buff (10YR 4/2-6/2, some 7/2). Fairly distinct smooth to distorted laminae and streaks; common fine displacements and loop structures. Irregular thick parting; irregular to conchoidal fracture. Some natural diagonal fractures. Some thin irregular buff-white stringers with very small gray pyritic blebs at 976.2-976.4 feet.
976.6	977.9	Mudstone and siltstone: light brownish gray to buff-white (2.5Y 6/2-8/2 & 8/1). Faint distorted streaked bedding to massive; some very irregular and distorted oil-shale stringers and shreds in middle part. Very irregular parting and fracture.

Sample of massive white siltstone from 976.9 feet:
X-ray - quartz, sanidine, some dolomite?

Illustration No. SBR-4003P (Sheet 8 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
977.9	979.9	Oil shale: medium brownish gray to buff (2.5Y 5/2-7/2). Moderately distinct distorted laminae and streaks. Very irregular thick parting; irregular to slightly conchoidal fracture. Rare thin buff to gray-buff siltstone stringers. Very irregular mixed up core pieces; true length doubtful.
979.9	983.0	Oil shale: buff to medium brownish gray (2.5Y 7/2-5/2, some 4/2 middle part). Moderately distinct distorted and displaced laminae and streaks. Irregular thick parting; irregular to conchoidal fracture. A few natural diagonal fractures with very rare fine pyrite crystals. Some very irregular thin chalky white stringers at 981.3 feet.
		[Sample of chalky white stringer from 981.3 feet: X-ray - sanidine, some analcite.
983.0	984.9	Oil shale: light to medium brownish gray and some buff (2.5Y 6/2-5/2, some 7/2). Faint to moderately distinct distorted streaks. Irregular parting and fracture. Some irregular buff-white to gray-buff, earthy to silty stringers. Some irregular mixed up core pieces; true length doubtful.
984.9	986.0	Oil shale and marlstone: light brownish gray to buff (2.5Y & 10YR 6/2-7/2). Faint to very faint, distorted to contorted streaks and stringers. Very irregular thick parting; slightly irregular to slightly conchoidal fracture.
		[Sample of buff marlstone from 986.0 feet: X-ray - calcite, dolomite, quartz, feldspar
986.0	986.3	Missing.
986.3	990.3	Sandstone: light to medium brownish gray (10YR 6/1-5/1 & 5/2, rare 4/2), very fine to fine grained, calcareous. Massive with some faint contorted streaks and stringers. Very irregular parting and fracture. Common very fine carbonaceous specks. Common white silty stringers near base. Lower part very badly broken up and mixed up; true length doubtful.
990.3	992.2	Oil shale: light brownish gray to buff (10YR 6/2-7/2). Faint to moderately distinct, distorted to contorted and displaced streaks and stringers. Very irregular parting and fracture. A thick buff-white silty stringer with common very fine black specks at 990.8-991.1 feet; rare thin gray to white silty stringers in other parts.

Illustration No. SBR-4003P (Sheet 9 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
992.2	995.3	Siltstone: light to some medium brownish gray (10YR 6/1-6/2, some 5/1-5/2), calcareous. Massive with faint contorted streaks and stringers. Very badly broken up and mixed up; true length very doubtful.
995.3	998.6	Siltstone: buff-white to light brownish gray (10YR 9/1-6/1), calcareous. Massive with some distorted stringers. Some buff to medium brownish gray oil shale. Very badly broken up and mixed up; true length doubtful.
998.6	999.7	Siltstone and very fine sandstone: medium to light brownish gray and some gray-buff (10YR & 2.5Y 5/2-6/2 & 6/1, some 7/1), calcareous. Moderately distinct distorted stringers and streaks. Irregular thick parting; irregular to conchoidal fracture. Medium to light brownish gray oil shale with rare thin chalky white stringers in lower 0.3 foot.
999.7	1000.5	Missing.
1000.5	1004.5	Oil shale: medium brownish gray to buff (2.5Y 5/2-7/2, rare 4/2). Distinct distorted laminae and streaks; very common small loop structures and displacements. Irregular thick parting; irregular fracture. Some natural diagonal fractures with calcite and pyrite crusts. Rare thin light brownish gray silty stringers. Lower part badly broken up and mixed up; true length doubtful.
1004.5	1006.0	Oil shale: medium to light brownish gray and rare buff (2.5Y & 10YR 5/2-6/2, some 4/2, rare 7/2). Distinct distorted to fairly smooth laminae and streaks. Irregular to slightly irregular thick parting; irregular to slightly conchoidal fracture. Rare thin irregular white silty to earthy stringers. Some natural diagonal fractures with pyrite in upper part.
		Sample of oil shale from 1005.6 feet: X-ray - dolomite, quartz, calcite, feldspar.
1006.0	1007.0	Oil shale: medium to light brownish gray and some buff (2.5Y & 10YR 4/2-6/2, some 7/2). Faint to distinct slightly distorted laminae and streaks; some irregular loop structures. Very irregular parting and fracture. Some very thin white earthy stringers near top.
1007.0	1009.0	Oil shale: medium and some dark brownish gray to buff (10YR 4/2-6/2, some 3/2-2/2 & 7/2-8/2); rare satiny luster. Very distinct to faint, fairly smooth to distorted laminae and streaks; some fine loop structures

Illustration No. SBR-4003P (Sheet 10 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		and displacements. Irregular to slightly irregular thick parting; irregular fracture. Some fine to moderately thick, buff to white, earthy to silty stringers. Some natural diagonal fractures with pyrite in lower part.
		Sample of white stringer from 1008.3 feet: X-ray - sanidine, albite, analcite, dolomite, quartz
1009.0	1010.0	Oil shale: dark to rare light brownish gray (10YR 3/2-5/2, rare 6/2). Faint slightly distorted laminae and streaks. Badly broken up and mixed up; true length doubtful.
1010.0	1013.2	Oil shale: dark to some light brownish gray and buff (10YR 3/2-5/2, some 6/2-7/2). Faint to some distinct, distorted to contorted laminae, streaks, and stringers. Irregular parting and fracture. Some thin tan to buff silty textured stringers and lenses.
1013.2	1014.1	Oil shale: buff and gray-buff to medium brownish gray (10YR 7/2 & 7/1-5/2, some 8/2-8/1). Fairly distinct distorted laminae and streaks; very common fine displacements. Irregular to slightly irregular thick parting; irregular fracture. Rare fine gray pyritic blebs and streaks.
1014.1	1015.1	Oil shale: medium to light brownish gray, some buff in lower part (10YR 4/2-6/2, some 7/2-8/2). Faint to some very distinct fairly smooth laminae and streaks. Irregular thick parting; slightly conchoidal to irregular fracture. Rare very thin gray-white stringers in lower part.
1015.1	1016.0	Marlstone and oil shale: buff to some medium and dark brownish gray (2.5Y & 10YR 8/2-6/2, some 5/2-3/2 lower part). Faint to distinct fairly smooth laminae and streaks. Irregular parting and fracture.
1016.0	1017.6	Oil shale: medium to dark and rare light brownish gray (10YR & 7.5YR 5/2-3/2, rare 6/2). Faint fairly smooth laminae and streaks. Irregular parting and fracture. Some natural fractures with rare pyrite.
1017.6	1020.0	Oil shale: medium to some dark brownish gray and buff (2.5Y 4/2-5/2, some 3/2 & 6/2-7/2). Distinct distorted to fairly smooth laminae, streaks, and lenses. Slightly irregular to irregular thick parting; irregular to fairly smooth fracture. Some small to medium, very fine grained crystalline dolomite (?) nodules in upper part. A fine black striated gilsonite-like crust on parting surfaces at 1019.8 feet.

Illustration No. SBR-4003P (Sheet 11 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1020.0	1027.0	Oil shale: as above. Rare irregular buff-white earthy stringers. Very badly broken up and mixed up; true length doubtful.
1027.0	1028.0	Oil shale: medium and rare dark brownish gray to buff (10YR 4/2-7/2, rare 3/2). Distinct fairly smooth to distorted streaks and laminae. Irregular thick parting; irregular fracture. Rare fine vitreous black gilsonite-like streaks in upper part.
		[Sample of oil shale from 1027.4 feet: X-ray - calcite, dolomite, quartz, analcite, feldspar
1028.0	1031.3	Oil shale: medium brownish gray to buff (10YR & 2.5Y 5/2-7/2, some 4/2). Distinct to some faint distorted streaks, lenses, and rare laminae. Irregular thick parting; irregular fracture. Some parts badly broken up and mixed up; true length doubtful.
1031.3	1031.6	Missing.
1031.6	1032.8	Oil shale: medium and rare dark brownish gray to buff (10YR 4/2-7/2, some 8/2 upper part, rare 3/2). Distinct to faint distorted laminae and streaks. Irregular parting and fracture. A natural vertical fracture with very fine disseminated pyrite in lower part.
1032.8	1034.4	Oil shale: medium to rare dark brownish gray and buff (10YR 4/2-5/2, rare 3/2 & 6/2-7/2). Faint to some distinct, fairly smooth to distorted streaks and laminae. Very irregular parting and fracture.
Footage correction (Geograph reset)		
1033.0	1034.0	Oil shale: medium brownish gray and brown to buff (10YR & 2.5Y 5/2 & 5/3-7/2, some 4/2). Distinct slightly distorted streaks and lenses. Irregular thick parting; slightly irregular fracture. Rare small irregular fine granular gray pyritic blebs.
1034.0	1035.0	Oil shale: medium and rare dark brownish gray and brown to tan and buff (10YR 4/2 & 4/3-6/3 & 7/2, rare 3/2). Very distinct distorted to fairly smooth laminae, streaks, and lenses. Slightly irregular to irregular thick parting; irregular fracture. A very irregular, 0- to 3/4-inch, orange-tan to buff, silty textured stringer at 1034.4 feet.
		[Sample of tan to buff silty textured stringer from 1034.4 feet: X-ray - analcite, quartz, feldspar, calcite, dolomite

Illustration No. SBR-4003P (Sheet 12 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1035.0	1036.0	Oil shale: medium to dark brownish gray and brown, rare tan to buff (10YR 4/2 & 4/3-3/2, some 5/2, rare 2/2 & 6/3-7/2). Moderately distinct to faint slightly distorted streaks and laminae. Slightly irregular thick parting; irregular fracture. Rare fine gray pyritic streaks and blebs. A natural diagonal fracture with very fine disseminated pyrite in lower part.
		[Sample of dark brownish gray oil shale from 1035.9 feet: X-ray - dolomite, calcite, quartz, analcite.
1036.0	1037.8	Oil shale: medium and some dark brownish gray to tan and buff (10YR & 2.5Y 4/2-6/3 & 7/2, some 3/2). Faint to moderately distinct distorted streaks and rare laminae. Irregular parting and fracture. Some natural diagonal fractures with very common fine pyrite crystals. A few thin gray fine granular stringers.
		[Sample of gray granular stringer from 1037.4 feet: X-ray - analcite, dolomite, quartz, feldspar
1037.8	1040.0	Oil shale: buff to some medium brownish gray (10YR & 2.5Y 7/2-6/2, some 5/2). Faint distorted streaks and stringers. Very irregular parting and fracture.
1040.0	1043.2	Marlstone and rare oil shale: buff to rare medium brownish gray (10YR & 2.5Y 7/2-6/2, some 8/2, rare 5/2). Faint to very faint distorted streaks and stringers. Irregular thick parting; slightly irregular to very irregular fracture.
		[Sample of buff marlstone from 1043.0 feet: X-ray - calcite, dolomite, quartz, analcite, feldspar
1043.2	1048.0	Oil shale: buff to medium brownish gray (10YR 7/2-5/2, rare 8/2 & 4/2). Faint to distinct, fairly smooth to distorted streaks and rare laminae. Irregular to slightly irregular thick parting; slightly irregular to irregular fracture.
1048.0	1048.6	Oil shale: buff to medium and some dark brownish gray (10YR 7/2-4/2, some 3/2-2/2 & 8/2). Very distinct fairly smooth to distorted streaks, stringers, and laminae. Slightly irregular to irregular, medium to thick parting; irregular fracture. Very irregular chalky white stringers at 1048.3 and 1048.5 feet.

Illustration No. SBR-4003P (Sheet 13 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1048.6	1049.8	Oil shale: medium to some dark brownish gray and brown and some buff (10YR 5/2 & 5/3-4/2 & 4/3, some 3/2 & 6/2-7/2). Faint to some distinct slightly distorted streaks and laminae. Irregular thick parting; fairly regular to irregular fracture. Rare fine gray pyritic streaks.
1049.8	1050.8	Oil shale: medium brownish gray to buff (10YR 5/2-7/2, some 4/2). Faint to fairly distinct, slightly distorted streaks and laminae. Slightly irregular thick parting; irregular fracture. Rare fine gray blebs and streaks.
1050.8	1052.2	Oil shale: medium to some dark brownish gray and rare buff (10YR 5/2-4/2, some 3/2, rare 6/2-7/2). Faint to some distinct contorted streaks and laminae. Slightly irregular to very irregular thick parting; irregular fracture.
1052.2	1053.9	Oil shale: medium brownish gray to buff (10YR 5/2-7/2, some 4/2). Faint to distinct, contorted to fairly smooth streaks and laminae. Very irregular parting and fracture. Rare small gray pyritic blebs and streaks. Badly broken up in part; true length doubtful.
1053.9	1054.3	Missing.
1054.3	1055.4	Marlstone and oil shale: buff to some medium brownish gray (10YR 8/2-6/2, some 5/2-4/2 upper part). Faint fairly smooth streaks and laminae in upper 0.2 foot; fairly distinct to faint intricately contorted laminae and stringers in lower part. Very irregular thick parting; slightly conchoidal to irregular fracture.
1055.4	1058.4	Oil shale: medium brownish gray to buff (10YR 4/2-7/2, some 8/2 upper part). Distinct slightly distorted to smooth streaks and laminae. Slightly irregular to irregular thick parting; irregular to slightly conchoidal fracture. Rare small gray blebs (some pyritic). A 1-inch white earthy to chalky band at 1055.9 feet; a 1/4-inch white band at 1058.2 feet. Some natural high angle fractures with fine pyritic patches in lower part.
1058.4	1060.8	Oil shale: buff and tan to medium brownish gray and brown (10YR 7/2 & 6/3-5/2 & 5/3, rare 4/2). Fairly distinct very smooth laminae. Slightly irregular to regular thick parting; irregular to slightly conchoidal fracture. A fine buff-white earthy stringer at 1058.7 feet.

Illustration No. SBR-4003P (Sheet 14 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1060.8	1061.9	Oil shale: medium to light and rare dark brownish gray and brown (10YR 5/2 & 5/3-6/2, some 4/2-4/3, rare 3/2). Fairly distinct to faint smooth laminae; some fine loop structures and displacements. Very regular to slightly irregular thick parting; smooth to slightly irregular and conchoidal fracture. A fine white chalky stringer at 1061.2 feet. [Sample of oil shale from 1060.9 feet: X-ray - dolomite, calcite, quartz, analcite, feldspar
1061.9	1063.0	Oil shale: medium and rare dark brownish gray to buff (10YR 4/2-7/2, rare 3/2). Moderately distinct contorted to fairly smooth streaks and laminae. Irregular to slightly irregular, thick to medium parting; irregular fracture. Some very irregular massive buff calcareous stringers in upper part. Some natural high to low angle fractures with very fine crystalline calcite and disseminated pyrite in lower part.
1063.0	1064.0	Oil shale: dark to medium brownish gray and some tan to buff (10YR 3/2-5/2, some 6/3-7/2). Faint to moderately distinct smooth streaks and laminae. Irregular parting and fracture. Some natural high angle fractures with calcite crusts and very fine disseminated pyrite. A thin white porous very fine grained crystalline stringer at 1063.6 feet.
1064.0	1065.0	Oil shale: medium to rare light brownish gray and buff (10YR 4/2-5/2, rare 6/2-7/2). Faint to some moderately distinct, smooth to slightly distorted streaks and laminae. Irregular parting and fracture. A thin brownish gray porous tuff stringer with common fine bitumen blebs at 1064.4 feet. Some irregular natural fractures with calcite crusts in lower part.
1065.0	1066.5	Oil shale, marlstone, and siltstone: medium brownish gray to buff oil shale and marlstone (10YR 4/2-8/2) and light brownish gray to gray-buff siltstone (10YR 6/1-8/1). Faint smooth laminae to distorted streaks and stringers. Very badly broken up and mixed up; true length doubtful.
1066.5	1070.0	Siltstone and some fine sandstone: medium brownish gray to buff and gray-buff (7.5YR 5/2-7/2 & 7/1, rare 4/2). Faint to distinct distorted streaks and stringers. Irregular parting and fracture. Common fine bitumen streaks and blebs in upper part; some in lower part. Very rare small fine grained pyrite blebs. Light brownish gray to buff marlstone at 1068.0 to 1068.2 feet.

Illustration No. SBR-4003P (Sheet 15 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of buff sandstone from 1067.0 feet: X-ray - albite, quartz; some analcite, dolomite, pyrite.
1070.0	1075.0	Siltstone and some fine sandstone: light and rare medium brownish gray to buff-white (7.5YR & 10YR 6/2-9/2, rare 5/2-4/2). Very faint to some fairly distinct distorted streaks and stringers. Very irregular parting and fracture. Some very fine bitumen blebs--especially in sandy parts. Common natural high to low angle fractures with pyrite. Lower part badly broken up and mixed up; true length doubtful.
1075.0	1077.0	Siltstone and mudstone: buff to some light brownish gray (10YR 8/2-7/2, some 6/2). Very faint distorted streaks and stringers. Very irregular parting and fracture. Some high to low angle fractures with pyrite.
		Sample of buff mudstone from 1076.7 feet: X-ray - quartz; some feldspar, dolomite, analcite.
1077.0	1080.0	Siltstone and sandstone: medium brownish gray to buff and gray-buff (10YR 5/2-8/2 & 8/1, rare 4/2). Distinct very contorted stringers. Very irregular parting and fracture. Some neutral fractures with pyrite. Some marlstone in lower part. Common irregular mixed up core pieces; true length doubtful.
1080.0	1081.0	Marlstone and mudstone: buff to light and rare medium brownish gray (10YR 7/2-6/2, some 8/2, rare 5/2). Moderately distinct to faint, very distorted to fairly smooth stringers. Irregular thick parting; slightly irregular to conchoidal fracture.
1081.0	1083.0	Siltstone and mudstone: buff and gray-buff to some medium brownish gray (10YR 7/2 & 7/1-6/2, some 5/2 lower part), calcareous. Very faint distorted streaks and stringers to massive. Irregular thick parting; slightly irregular to conchoidal fracture. Rare very fine oil-shale stringers in upper part.
		Sample of hard massive siltstone from 1082.2 feet: X-ray - quartz, calcite, dolomite, feldspar, analcite.
1083.0	1084.2	Siltstone and mudstone: light and some medium brownish gray to buff (10YR 6/2-7/2, some 5/2), very calcareous. Faint to some moderately distinct distorted streaks and stringers. Irregular thick parting; slightly irregular to conchoidal fracture.

Illustration No. SBR-4003P (Sheet 16 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1084.2	1085.1	Siltstone and some oil shale: light to medium brownish gray siltstone (10YR & 7.5YR 6/1 & 6/2-5/1 & 5/2, rare 4/2) and some buff to medium brownish gray oil shale (10YR 7/2-5/2). Moderately distinct fairly smooth streaks in upper part to faint distorted stringers in lower part. Slightly irregular to very irregular thick parting; slightly irregular fracture.
1085.1	1086.1	Mudstone and siltstone: buff to gray-buff (10YR 7/2-7/1), calcareous. Very faint distorted streaks and stringers. Irregular parting and fracture. A striated gilsonite-like crust on parting surfaces at 1085.8 feet.
1086.1	1088.2	Siltstone: light to medium brownish gray and some gray-buff (10YR 6/2-4/2, some 7/1), slightly calcareous. Faint to moderately distinct, distorted to contorted streaks and stringers. Irregular parting and fracture. A 3-inch zone of buff to medium brownish gray oil shale at top. Some fine black bitumen streaks and specks in middle part. Some broken up core with rare pyritic fracture surfaces in lower part.
1088.2	1090.6	Siltstone: light brownish gray to buff (10YR 6/2-8/2), slightly calcareous. Faint distorted stringers to massive. Irregular thick parting; slightly irregular to conchoidal fracture. Lower part very badly broken up and mixed up; true length doubtful.
1090.6	1096.0	Siltstone: light to medium brownish gray (10YR 6/2 & 6/1-5/2 & 5/1). Very faint distorted streaks and stringers; some gray-buff contorted sandy stringers in lower part. Irregular thick parting; slightly irregular to irregular and conchoidal fracture. Some very irregular marlstone stringers in upper part. Some fine carbonaceous specks and streaks in lower part.
1096.0	1098.0	Siltstone: light brownish gray to buff (10YR 6/2-8/2). Very faint contorted to distorted streaks and stringers. Irregular parting and fracture. A high angle natural fracture with some fine pyrite blebs in lower part.
1098.0	1100.0	Siltstone: light to medium brownish gray (10YR 6/2 & 6/1-5/2 & 5/1, rare 4/2). Faint distorted to fairly smooth streaks and stringers; some massive. Irregular thick parting; irregular to slightly conchoidal fracture. Some thin marlstone stringers. Rare small fine grained pyrite patches in middle part.

Illustration No. SBR-4003P (Sheet 17 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1100.0	1101.0	Marlstone: light and rare medium brownish gray to buff (10YR 6/2-7/2, rare 5/2). Faint contorted to distorted streaks and stringers. Irregular parting and fracture. Some siltstone stringers in upper part. A very irregular natural vertical fracture with calcite crusts in lower part.
1101.0	1102.0	Marlstone and some oil shale: buff to some medium brownish gray (10YR & 2.5Y 7/2-6/2, some 5/2-4/2, rare 8/3). Very faint to moderately distinct distorted streaks and stringers. Irregular parting and fracture. Rare thin silty stringers.
1102.0	1103.1	Siltstone: light brownish gray and rare gray-buff (10YR 6/2-6/1, rare 7/1). Very faint distorted streaks to massive. Irregular thick parting; irregular to slightly conchoidal fracture. Some very fine carbonaceous streaks and specks.
1103.1	1104.7	Siltstone: light to medium brownish gray (10YR 6/2 & 6/1-5/2). Faint contorted to distorted streaks and stringers. Very irregular parting and fracture. Common thin marlstone stringers and streaks.
1104.7	1110.2	Marlstone and oil shale: light to medium brownish gray and some buff (10YR 6/2-5/2, some 7/2). Faint distorted streaks. Irregular parting and fracture. Some light to medium brownish gray siltstone stringers in upper and lower parts. Rare small porous white to buff blebs. A vertical limonite-stained fracture in lower part.
		Sample of marlstone from 1106.9 feet: X-ray - feldspar, quartz, dolomite, calcite
1110.2	1112.5	Siltstone and some mudstone: gray-buff to light brownish gray (10YR 7/1-6/1 & 6/2). Very faint distorted streaks and stringers. Irregular thick parting; slightly irregular to irregular fracture. Some very fine carbonaceous streaks. A very irregular vug (?) at 1011.3 feet.
1112.5	1118.0	Mudstone and marlstone: light and some medium brownish gray to buff (10YR & 2.5Y 6/2-7/2, some 5/2). Very faint distorted streaks. Irregular thick parting; irregular fracture. A 1-1/4- x 2-inch irregular vug at 1115.3 feet. Rare gray to brownish gray siltstone stringers. Common irregular fine grained pyrite patches in lower 0.1 foot.
		Sample of light to medium gray mudstone from 1115.1 feet: X-ray - quartz; some feldspar, dolomite

Illustration No. SBR-4003T (Sheet 18 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1118.0	1120.7	Mudstone and siltstone: medium brownish gray to gray-buff (10YR & 2.5Y 5/2 & 5/1-7/1, some 8/1), calcareous. Faint distorted streaks. Very irregular parting and fracture. Rare small pyrite patches. Common fine high angle fractures with calcite fillings in lower part.
1120.7	1121.6	Marlstone and oil shale: buff to medium brownish gray (10YR & 2.5Y 7/2-5/2, some 4/2 lower part). Faint to fairly distinct slightly distorted laminae and streaks. Slightly irregular to irregular thick parting; irregular to slightly conchoidal fracture. Some irregular natural fractures with very fine calcite crusts and rare limonite stains.
		[Sample of marlstone from 1121.0 feet: X-ray - dolomite; some calcite, quartz, analcite, feldspar
1121.6	1123.6	Oil shale: very dark to medium brownish gray (10YR 2/2-4/2, some 5/2 lower part). Very faint to faint, slightly distorted streaks and laminae. Irregular to some fairly regular thick parting; irregular fracture. Some natural diagonal to vertical fractures with fine crystalline calcite crusts and disseminated pyrite. Some thin dense massive dolomite stringers in lower part. Irregular interfingering contact with tuff below.
		{ Sample of dark rich oil shale from 1122.8 feet: X-ray - quartz, dolomite, calcite, analcite, feldspar
Upper wavy bed 1123.6	1128.0	Tuff: tan and yellowish tan to buff (10YR & 2.5Y 6/3-7/2), slightly calcareous. Faintly bedded with very common distinct fine shreds to some thin distorted stringers of medium to dark brownish gray oil shale; a 3-inch band of faintly streaked and laminated oil shale at 1126.3 feet. Irregular to slightly irregular thick parting; slightly irregular fracture. Some very irregular small buff to white massive crystalline blebs and stringers. Occasional fine to small dark gray silty-textured pyritic blebs.
		[Sample of tuff with fine oil-shale shreds from 1125.0 feet: X-ray - quartz; some analcite, dolomite, feldspar, calcite

Illustration No. SBR-4003P (Sheet 19 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1128.0	1129.5	Oil shale: dark to some medium brownish gray (10YR 3/2-2/2, some 4/2). Very faint smooth laminae and streaks. Slightly irregular thick parting; slightly irregular fracture. Rare fine dense gray to brownish gray dolomite streaks and small lenses.
1129.5	1133.0	Oil shale: medium to dark brownish gray and brown, rare tan (7.5YR & 10YR 4/2 & 4/3-3/2, rare 5/3-6/3, some 2/2 lowerpart). Faint to rare moderately distinct, fairly smooth to some distorted streaks and laminae. Slightly irregular to very irregular thick parting; slightly conchoidal to very irregular fracture. Rare fine to small light buff silty textured blebs in upper part. A natural high angle fracture with calcite crusts and very fine disseminated pyrite in middle part.
1133.0	1142.0	Oil shale: dark to some medium brownish gray and brown (7.5YR & 10YR 2/2-3/2 & 3/3, some 4/2-4/3). Very faint to faint, smooth to slightly distorted laminae and streaks. Slightly irregular to irregular thick parting; slightly irregular fracture. Some medium brownish gray to buff silty-textured tuff stringers with irregular crystalline streaks at 1136.7-1136.9 feet. A few medium to high angle fractures with common very fine pyrite at 1140-1141 feet; some very thin bleached zones along fractures.
1142.0	1143.5	Oil shale: dark brownish gray and brown (7.5YR & 10YR 3/2-3/3, some 2/2). Very faint smooth streaks and laminae. Very irregular thick parting; conchoidal to irregular fracture. A very thin zone of common fine buff streaks and lenses at 1142.1 feet. A few diagonal fractures with very fine pyrite near top.
1143.5	1144.5	Oil shale: dark brownish gray and brown (7.5YR & 10YR 3/2-3/3). <u>Very faint smooth bedding.</u> Very irregular parting and fracture. Common natural high angle fractures with very fine calcite crusts and rare very fine pyrite.
		[Sample of fractured oil shale from 1143.8 feet: X-ray - dolomite, quartz, calcite, analcite, feldspar
1144.5	1145.9	Oil shale: medium brown (10YR 4/3-5/3). Faint smooth to distorted laminae and streaks. Irregular thick parting; slightly irregular to very irregular fracture. Some tight natural fractures with calcite and rare pyrite in upper part. <u>Some irregular breccia zones (collapsed vugs?)</u> in lower part with porous fracture

Illustration No. SBR-4003P (Sheet 20 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		fillings; common fine drusy quartz (?) crystals; common fine to small, chalky white to brown crystalline blebs and fillings.
		Sample of small buff to brown radial crystalline bleb from 1145.6 feet:
		X-ray - calcite; trace quartz, analcite
		Sample of porous fracture fillings with drusy quartz from 1145.7 feet:
		X-ray - quartz; some analcite, dolomite?
1145.9	1147.3	Oil shale: medium to dark brown and brownish gray (10YR 4/3 & 4/2-3/2). Very faint smooth streaks and laminae. Slightly irregular to irregular thick parting; slightly conchoidal fracture. Very rare very fine gray-buff to light gray dense crystalline lenses.
1147.3	1148.4	Oil shale: medium to light brownish gray and some buff (10YR 5/2-6/2, some 4/2 & 7/2). Distinct to some faint smooth laminae and streaks. Irregular to regular thick parting; irregular fracture. Some fine to thin dense crystalline streaks with chalky white blebs at 1147.4 feet. Thin irregular brownish gray porous stringers with common fine white to transparent crystals and some very fine black bitumen (?) specks at 1147.7 and 1148.0 feet. A short tight vertical fracture with non-calcareous crusts and some pyrite at 1147.9 to 1148.0 feet.
		Sample of thin porous stringer with fine crystals and some black specks from 1148.0 feet:
		X-ray - quartz; some analcite, dolomite, calcite, feldspar
1148.4	1149.4	Oil shale: medium to dark and some light brownish gray (10YR & 7.5YR 5/2-3/2, some 6/2). Faint to some distinct smooth laminae and streaks. Regular to some very irregular thick parting; irregular to slightly conchoidal fracture. Some high angle fractures with very slight calcite coatings and rare very fine pyrite in middle part.
1149.4	1151.0	Oil shale: medium to dark brownish gray (10YR 4/2-3/2, rare 5/2). Faint to very faint smooth laminae and streaks. Fairly regular to irregular thick parting; irregular to conchoidal fracture. A very finely striated brittle black organic crust (plant fossil?) on parting surfaces at 1149.7 feet. Some thin brownish gray silty-textured to massive crystalline streaks with earthy white blebs at 1150.2 feet. Irregular natural high angle fracture with slight calcite coatings and rare pyrite in lower half.

Illustration No. SBR-4003P (Sheet 21 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1151.0	1153.5	Oil shale: dark brownish gray to rare black (5YR to 10YR 3/2-2/2, rare 1/2). Very faint smooth laminae and streaks. Slightly irregular to very irregular thick parting; irregular to slightly conchoidal fracture. Some high to medium angle natural fractures. [Sample of dark rich oil shale from 1151.5 feet: X-ray - dolomite, quartz, analcite, calcite, feldspar
1153.5	1154.8	Oil shale: dark to medium brownish gray and brown (10YR 3/2-4/2 & 4/3, some 5/2-5/3 lower part). Faint to moderately distinct smooth laminae and streaks. Irregular thick parting; slightly conchoidal to irregular fracture.
1154.8	1156.3	Marlstone and oil shale: buff to medium and rare dark brownish gray (10YR 7/2-5/2, some 4/2, rare 3/2). Very distinct to some faint, smooth to some distorted and contorted laminae; some fine loop structures. Very irregular to some slightly irregular thick parting; irregular to slightly conchoidal fracture. Common high angle fractures with fine drusy calcite crusts in upper part. A very thin irregular buff to white, earthy to chalky stringer near base.
1156.3	1157.4	Marlstone: very light buff to light and rare medium brownish gray and brown (10YR 8/2-6/2, rare 5/2 & 5/3-4/2 & 4/3). Very faint and rare distinct, distorted to contorted laminae. Irregular thick parting; very irregular fracture. Some natural high angle fractures with rare very fine pyrite in upper part. [Sample of marlstone from 1157.1 feet: X-ray - dolomite, quartz, feldspar
1157.4	1158.4	Oil shale and marlstone: medium brownish gray and brown to very light buff (10YR 4/2 & 4/3-8/2). Distinct very distorted laminae, stringers and streaks. Slightly irregular thick parting; irregular fracture.
1158.4	1159.4	Marlstone and oil shale: buff to medium brownish gray and brown (10YR 7/2-5/2 & 5/3, some 8/2, rare 4/2). Moderately distinct to faint, distorted and commonly displaced stringers and streaks. Slightly irregular thick parting; irregular fracture.

Illustration No. SBR-4003P (Sheet 22 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1159.4	1161.5	Oil shale and marlstone: buff to some dark brownish gray and brown (10YR 7/2-4/2 & 4/3, some 3/2-3/3). Very distinct slightly distorted to smooth laminae; very common fine loop structures and displacements; colors are grouped in thick light and dark zones in lower part. Regular thick parting; slightly irregular to slightly conchoidal fracture. Rare fine pyrite streaks and stringers in upper part. A thin very light orangish buff earthy stringer with fine black silty-textured pyritic streaks and some limonite stains at 1160.7 feet.
		Sample of orangish buff earthy stringer with fine dark streaks from 1160.7 feet: X-ray - sanidine, albite, pyrite, marcasite?
1161.5	1163.2	Oil shale: dark to medium brownish gray and brown (10YR & 7.5YR 3/2-5/2 & 5/3). Faint to fairly distinct smooth streaks and laminae. Slightly irregular to irregular thick parting; slightly conchoidal to some very irregular fracture. A small buff-white fine grained crystalline lens at 1162.6 feet. Some high angle fractures with very fine crystalline calcite and pyrite.
1163.2	1164.0	Marlstone and oil shale: buff to medium brownish gray (10YR 7/2-5/2, rare 4/2). Distinct to faint smooth laminae. Irregular to regular thick parting; slightly conchoidal to irregular fracture. Some high angle fractures with very fine crystalline calcite.
1164.0	1165.1	Oil shale: dark to medium brownish gray and rare buff (10YR 3/2-4/2, rare 7/2). Faint smooth streaks and laminae. Badly broken up and mixed up. Common irregular fractures with calcite. True length very doubtful.
1165.1	1166.1	Oil shale: dark to medium brownish gray and brown (10YR 3/2-4/2 & 4/3, some 5/2-5/3 upper part, rare 2/2 lower part). Faint to very faint, slightly distorted to smooth streaks and laminae. Irregular thick parting; irregular fracture. Some natural high angle fractures with very fine pyrite.
1166.1	1171.8	Oil shale: dark brownish gray to rare black (10YR & 7.5YR 3/2-2/2, rare 1/2); very rare resinous luster. Faint to very faint smooth streaks and laminae. Irregular to slightly irregular thick parting; irregular to slightly conchoidal fracture. Rare tight high angle fractures with calcite. A 0.1-foot zone of medium brownish gray oil shale at 1168.0 feet.

Illustration No. SBR-4003P (Sheet 23 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1171.8	1173.0	Oil shale: dark to medium brownish gray (7.5YR & 10YR 3/2-4/2, rare 5/2). Very faint smooth to slightly distorted streaks and laminae. Slightly irregular thick parting; very irregular fracture. Irregular vertical fracture with calcite crusts in lower half.
1173.0	1176.0	Oil shale: medium to some dark brownish gray (7.5YR 4/2, some 3/2). Very faint smooth streaks and laminae. Slightly irregular to irregular thick parting; irregular to conchoidal fracture. Some high angle fractures with calcite and some pyrite.
1176.0	1177.3	Oil shale: medium to dark brownish gray and some black (7.5YR & 10YR 4/2-2/2, some 1/2). Faint slightly distorted and commonly displaced laminae and streaks. Slightly irregular to very irregular thick parting; very irregular fracture. Common irregular discontinuous high angle fractures with patchy buff to white calcite fillings and some yellow-orange limonite stains. Lower part badly broken up and mixed up; true length doubtful. { Sample of fractured shale from 1176.7 feet: X-ray - quartz, dolomite, feldspar, analcite, pyrite
1177.3	1178.3	Oil shale: dark brownish gray to black (10YR 3/2-1/2). Faint smooth laminae and streaks. Regular to very irregular, medium to thick parting; slightly conchoidal to irregular fracture. Common natural high angle fractures with very common very fine pyrite and some calcite crusts.
1178.3	1179.4	Oil shale: dark to medium brownish gray and brown, rare black (10YR 3/2-4/2 & 4/3, some 2/2, rare 1/2 & 5/2-5/3). Faint to moderately distinct, smooth to slightly distorted laminae and streaks. Irregular thick parting; very irregular fracture. Common natural high angle fractures with pyrite and calcite in upper part; some very irregular discontinuous tight fractures with chalky white calcite and some pyrite fillings in lower part.
1179.4	1180.4	Oil shale: medium to dark brownish gray and brown (10YR 4/2 & 4/3-3/2, some 5/2 & 5/3, rare 2/2). Moderately distinct to faint, slightly distorted to smooth laminae and streaks. Slightly irregular thick parting; irregular fracture. Very irregular fine tight natural fractures with calcite and pyrite fillings in upper part.

Illustration No. SBR-4003P (Sheet 24 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1180.4	1181.4	Oil shale: medium to some dark brown and brownish gray (10YR 4/3-4/2, some 3/2, rare 5/2-5/3). Faint to very faint smooth streaks and rare laminae. Slightly irregular thick parting; slightly irregular to fairly smooth fracture. Rare irregular fine tight fractures with calcite and pyrite fillings.
1181.4	1182.5	Oil shale: dark and rare medium brownish gray (7.5YR & 10YR 3/2-2/2, rare 4/2). Faint smooth streaks and laminae. Slightly irregular to irregular thick parting; slightly irregular fracture. Some natural medium to high angle fractures with fine crystalline calcite.
1182.5	1183.4	Oil shale: medium to rare light and dark brown and brownish gray (10YR 5/3 & 5/2-4/3 & 4/2, rare 6/2 & 3/2). Faint smooth to slightly distorted streaks and some laminae. Slightly irregular to irregular thick parting; irregular fracture. Some tight irregular fractures with calcite and pyrite fillings.
1183.4	1184.5	Oil shale: medium to dark brown and brownish gray (10YR & 7.5YR 5/3 & 5/2-3/2, rare 2/2). Moderately distinct to very faint smooth laminae and streaks. Irregular to slightly irregular thick parting; slightly irregular to fairly smooth fracture. Rare irregular discontinuous very fine short tight fractures with calcite and pyrite.
		Sample of medium to dark brown oil shale from 1183.9 feet: X-ray - dolomite, quartz, calcite, aragonite?, feldspar, analcite
1184.5	1185.5	Oil shale: medium to dark and some light brownish gray (10YR & 7.5YR 4/2-3/2, some 5/2-6/2). Moderately distinct to very faint, smooth to distorted streaks. Slightly irregular thick parting; slightly irregular to irregular fracture. Some thin light gray (very slight pink tint) slightly calcareous siltstone stringers and small lenses.
1185.5	1188.0	Oil shale: light to dark brownish gray and some tan to brown (10YR 6/2-3/2, some 6/3-4/3). Faint to moderately distinct, smooth to some distorted streaks and laminae; commonly in moderately thick light and dark zones. Fairly regular to irregular thick parting; slightly irregular fracture. A 0.1-foot gray to brownish gray band with fine smooth oil-shale streaks at top. Gray-buff to light gray siltstones with distorted

Illustration No. SBR-4003P (Sheet 25 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1188.0	1189.2	to contorted oil-shale stringers at 1186.4-1186.7 and 1187.5-1187.7 feet; occasional thin siltstone stringers in other parts. Oil shale: dark to medium brownish gray and brown, some tan to buff in lower part (10YR 3/2-5/2 & 5/3, some 6/2 & 6/3-7/2). Faint to some distinct, smooth to some distorted laminae and streaks. Irregular thick parting; slightly irregular to very irregular fracture. Some natural high angle fractures with calcite in lower part. A 1/2-inch massive buff marlstone band at 1188.6 feet. Very sharp smooth contact with siltstone below.
1189.2	1193.3	Siltstone and mudstone: light to medium brownish gray and rare gray-buff (10YR & 7.5YR 6/1-5/1 & 6/2-5/2, rare 7/1; some almost neutral gray). Faintly banded with very faint smooth to some distorted bedding. Regular to some very irregular thick parting; slightly conchoidal to smooth fracture. Rare fine pyritic streaks and blebs. Very regular to slightly irregular 1-inch bands of buff to dark brownish gray laminated marlstone and oil shale at 1189.7, 1189.9, 1190.2, 1191.4, and 1191.6 feet; some thin distorted to contorted oil shale and marlstone stringers from 1192.0 to 1193.3 feet. Badly broken up and mixed up in lower foot; some natural fractures with pyrite. <div style="margin-left: 40px;"> { Sample of light gray siltstone from 1189.4 feet: X-ray - feldspar, dolomite, quartz, analcite, calcite </div>
1193.3	1195.1	Marlstone and oil shale: buff to medium and rare dark brownish gray and brown (10YR & 7.5YR 7/2-5/2 & 5/3, some 4/2-4/3, rare 3/2). Faint to some very distinct, slightly distorted to smooth laminae and streaks. Regular to some irregular thick parting; slightly irregular fracture. Some thin gray siltstone stringers and small blebs near top. Some very irregular fine fractures with massive pyrite and porous crystalline calcite fillings at 1194.0-1194.2 feet.
1195.1	1196.1	Oil shale: medium to dark brown and brownish gray, some tan to buff (10YR & 7.5YR 5/2 & 5/3-3/2, some 6/3-7/2). Fairly distinct slightly distorted to smooth laminae and streaks. Irregular to fairly regular thick parting; slightly irregular to conchoidal fracture. Very thin gray very fine grained crystalline streaks and lenses at 1195.2 feet. Some medium to high angle fractures with rare very fine pyrite.

Illustration No. SBR-4003P (Sheet 26 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of gray crystalline lens from 1195.1 feet: X-ray - analcite; some feldspar, quartz, calcite, dolomite
1196.1	1197.5	Oil shale: medium to dark brown and brownish gray (10YR & 7.5YR 4/3 & 4/2-2/2, some 5/3). Faint to fairly distinct fairly smooth laminae and streaks; common fine loop structures. Slightly irregular thick parting; slightly irregular fracture.
1197.5	1199.0	Oil shale: dark brownish gray to black (10YR 3/2-1/1); rare slight satiny luster. Very faint smooth laminae and streaks; some fine loop structures. Very regular thick to some thin parting; fairly smooth to rare hackly fracture. Some thin tan silty-textured streaks from 1198.1 to 1198.3 feet. Some short diagonal fractures with very common fine pyrite at 1198.3 feet (also some pyrite on parting surfaces).
1199.0	1200.0	Oil shale: medium to dark brownish gray and brown (10YR & 7.5YR 4/2 & 4/3-2/2, rare 5/2). Moderately distinct to very faint smooth laminae. Regular to irregular thick parting; fairly smooth to irregular fracture. A fine tan to buff, silty textured to fine granular stringer at 1199.3 feet.
1200.0	1201.0	Oil shale: medium to dark brownish gray and brown (10YR 4/2 & 4/3-3/2, some 5/2 & 2/2). Moderately distinct smooth laminae; some fine loop structures. Slightly irregular thick parting; irregular fracture. Rare fine gray pyritic streaks.
1201.0	1201.8	Oil shale: dark to some medium brownish gray (10YR 3/2-2/2, some 4/2). Very faint smooth laminae and streaks. Slightly irregular thick parting; irregular fracture. Rare fine gray pyritic blebs and streaks.
1201.8	1202.7	Oil shale: medium to dark brownish gray and brown (10YR 5/2 & 5/3-3/2). Faint to moderately distinct, smooth to slightly distorted and displaced laminae and streaks. Slightly irregular to smooth, thick to medium parting; slightly irregular fracture. Some fine gray pyritic streaks.
1202.7	1203.1	Oil shale: dark brownish gray to some medium brown (10YR & 7.5YR 3/2-2/2, some 4/3). Moderately distinct very smooth laminae; rare fine loop structures and displacements. Regular thick parting; slightly irregular fracture.

Illustration No. SBR-4003P (Sheet 27 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1203.1	1204.2	Oil shale: very dark brownish gray to black (10YR 2/2-1/2, rare 3/2), common satiny to resinous luster. Very faint fine smooth laminae and streaks. Regular thick to thin shaly parting; slightly irregular to some very hackly fracture. A 1/4-inch light brownish gray to light gray silty-textured tuff (?) band at 1203.3 feet. Common very fine tan to buff blebs, streaks and rare laminae in middle part.
1204.2	1205.2	Oil shale: very dark brownish gray to some medium brown (10YR & 7.5YR 2/2-3/2, some 4/3). Very faint to faint smooth laminae and streaks; some fine loop structures and displacements. Regular thick parting; slightly irregular to smooth fracture. { Sample of dark brownish gray to brown oil shale from 1205.0 feet: X-ray - dolomite, aragonite, calcite, quartz, analcite *
1205.2	1206.0	Oil shale: dark to medium brownish gray (10YR & 7.5YR 3/2-4/2, some 2/2). Faint smooth laminae and streaks. Regular thick parting; irregular fracture. A natural high angle fracture with rare very fine pyrite in lower half (very fine slightly bleached zones adjacent to fracture).
Top A-groove		
1206.0	1207.0	Oil shale: medium and some dark brownish gray to buff (10YR & 2.5Y 4/2-7/2, some 3/2). Very distinct smooth laminae; very common fine loop structures and displacements. Irregular to slightly irregular thick parting; irregular to slightly conchoidal fracture. Some natural irregular nearly vertical fractures with fine disseminated pyrite.
1207.0	1212.8	Oil shale: buff to medium and rare dark brownish gray (10YR 7/2-5/2, some 4/2 & 8/2, rare 3/2). Very distinct smooth laminae; common fine loop structures and displacements. Smooth to very irregular, thick to some thin parting; slightly conchoidal to irregular fracture. Some nearly vertical to diagonal natural fractures with very fine disseminated pyrite. Very rare very fine buff to gray crystalline streaks. Some badly broken up and mixed up core in middle part; true length doubtful (1210.3-1211.0 missing.)

Illustration No. SBR-4003P (Sheet 28 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of buff to light brownish gray oil shale from 1207.4 feet: X-ray - dolomite, quartz, feldspar, calcite?
1212.8	1213.7	Oil shale: dark to medium brownish gray and brown, some tan to buff (10YR & 7.5YR 3/2-5/2 & 5/3, some 6/3-8/2). Faint to very distinct, distorted and brecciated to smooth laminae; common fine displacements. Very irregular parting and fracture. Brecciated shale with some small cavities and very fine drusy crystals in upper part. Some very irregular high angle fractures with very fine pyrite in lower part.
1213.7	1214.7	Oil shale: medium and rare dark brownish gray and brown to tan and buff (10YR & 7.5YR 4/2 & 4/3-6/3 & 7/2, some 8/2, rare 3/2). Very distinct smooth laminae; some fine loop structures and displacements. Irregular to some very smooth thick parting; very irregular to slightly irregular fracture. Common nearly vertical to diagonal tight natural fractures with very fine disseminated pyrite. A very irregular 1/2- to 1-1/2-inch buff mudstone band at base.
1214.7	1215.7	Oil shale: light to dark brownish gray and some brown to buff (10YR & 7.5YR 6/2-3/2, some 4/3-6/3 & 7/2). Very distinct to faint smooth laminae; some fine loop structures. Regular to irregular thick parting; irregular fracture. Some irregular high angle natural fractures with very common very fine pyrite and some slight blue-gray coatings. Some irregular mixed up core pieces in lower part; true length doubtful.
		Sample of dark brownish gray oil shale from 1215.2 feet: X-ray - dolomite, quartz, feldspar
1215.7	1222.8	Marlstone and oil shale: buff to buff-white and some light to rare medium and dark brownish gray (10YR 7/2-9/2, some 6/2, rare 5/2-3/2). Faint to some distinct smooth laminae; some very fine loop structures and displacements. Very smooth to irregular, thick to thin parting; very irregular to some conchoidal fracture. Common high angle natural (?) fractures with very rare fine pyrite. Rare very fine dull black streaks. Commonly badly broken up and mixed up; true length very doubtful.

Illustration No. SBR-4003P (Sheet 29 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		<p>1217.5 { Sample of buff to buff-white marlstone from 2117.5 feet: X-ray - dolomite, quartz, feldspar, ferroan</p>
Bottom A-groove 1222.8	1224.4	Oil shale: medium to some light and dark brownish gray and brown, rare buff in upper part (10YR & 7.5YR 4/2 & 4/3-5/2 & 5/3, some 6/2 & 3/2, rare 7/2 & 2/2). Distinct to faint smooth laminae; common fine loop structures and displacements. Fairly regular to very irregular thick parting; slightly irregular to very irregular fracture. Some irregular tight high angle natural fractures with rare pyrite. Common very fine buff streaks and lenses in upper part.
		<p>{ Sample of oil shale with very fine buff lenses and streaks from 1223.4 feet: X-ray - dolomite, quartz, feldspar, ferroan</p>
1224.4	1225.9	Oil shale: medium to dark brown and brownish gray (7.5YR 4/3 & 4/2-3/2). Very faint smooth laminae and streaked bedding. Very badly broken up and mixed up. Common natural fracture surfaces--some with very fine glossy slickensides and rare calcite coatings. True length very doubtful.
1225.9	1226.9	Oil shale: medium to dark brownish gray (7.5YR & 10YR 4/2-3/2, some 2/2). Very faint smooth streaked bedding and rare laminae. Very smooth thick parting; irregular fracture. Some tight natural diagonal fractures. A very irregular thin brown dolomite (?) stringer at 1226.2 feet.
1226.9	1227.7	Oil shale: medium brownish gray to some black (10YR 4/2-2/2, some 5/2 & 1/2); common resinous to rare waxy luster. Moderately distinct to very faint, smooth to slightly distorted laminae; very common fine to small loop structures. Slightly irregular thick parting; slightly irregular fracture. Rare fine brown to buff streaks and laminae. A very fine tan crystalline lamina at 1227.1 feet.
		<p>{ Sample of rich resinous shale from 1227.5 feet: X-ray - dolomite, quartz, analcite, feldspar, ferroan</p>
1227.7	1228.9	Oil shale: dark to medium brownish gray and brown (10YR 3/2-4/2 & 4/3, some 2/2 upper part, some 5/3 lower part). Moderately distinct to faint smooth laminae; very common fine to small loop structures. Slightly irregular thick parting; irregular fracture. Some irregular high to low angle fractures with fine crystalline calcite crusts.

Illustration No. SBR-4003P (Sheet 30 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from B. Mines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1228.9	1229.7	Missing.
1229.7	1231.2	Oil shale: medium to some dark brownish gray and rare buff (10YR & 7.5YR 5/2-4/2, some 3/2, rare 6/2-7/2 middle part). Faint to moderately distinct fairly smooth laminae; very common fine to small loop structures and displacements. Regular thick parting; slightly irregular fracture. Some fine buff-white to gray crystalline streaks and lenses--occasionally pyritic. A 0.1-foot buff to dark reddish brown porous tuff band at top. Some high angle fractures with common very fine pyrite in lower part. Some very irregular fine buff crystalline stringers with pyrite in distorted shale in lower 0.2 foot. <div style="margin-left: 40px;"> Sample of tuff from 1229.7 feet: X-ray - quartz, analcite, feldspar Sample of shale with fine crystalline stringers and some pyrite fracture fillings from 1231.1 feet: X-ray - quartz, analcite, feldspar, dolomite, pyrite </div>
1231.2	1232.0	Oil shale: orangish buff and light to some dark brownish gray (7.5YR 7/3-4/2 upper part; 10YR & 2.5Y 6/2-4/2, some 3/2 lower part). Very distinct slightly distorted to smooth laminae; common fine loop structures. Very irregular to regular thick parting; irregular to slightly conchoidal fracture. Some irregular crystalline stringers (fracture fillings) in upper part. Rare very fine buff crystalline streaks and laminae in lower part.
1232.0	1233.0	Oil shale: medium to dark brownish gray and some tan to buff (10YR & 2.5Y 4/2-3/2, some 5/2 & 6/3-7/2, rare 2/2). Faint to some very distinct, slightly distorted to smooth laminae and streaked bedding; common fine loop structures and displacements. Slightly irregular thick to medium parting; irregular to slightly irregular fracture. A tight diagonal fracture with slight blue-white coatings near top; an irregular vertical fracture with very common fine pyrite below 1232.4 feet. Some thin buff to brown crystalline stringers and lenses. A 1/2-inch tan silty textured tuff band at 1232.3 feet.

Illustration No. SBR-4003P (Sheet 31 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMiner-AEC Colorado Corehole No. 2--Continued

From	To	Description
1233.0	1234.6	Oil shale: dark to some medium brownish gray (7.5YR 3/2-2/2, some 4/2, rare 5/2). Faint smooth to slightly distorted laminae. Fairly regular to some irregular, thick to thin parting; irregular to some hackly fracture. A 2-inch buff-white to buff slightly porous tuff at 1233.7 feet; common fine to 1/2-inch tufts in other parts. Common blue-gray coatings on parting surfaces in upper part. Some fine irregular buff to white crystalline stringers and blebs (like 1223.4 feet). <div style="margin-left: 2em;">Sample of tuff from 1233.7 feet: X-ray - quartz, albite, analcite, siderite?</div>
1234.6	1235.9	Oil shale: dark to rare medium brownish gray (10YR 3/2-2/2, rare 4/2). Faint smooth laminae; common fine loop structures. Regular thick parting; fairly smooth fracture. Rare very thin buff to gray stringers and streaks.
1235.9	1237.9	Oil shale: medium to dark brownish gray (10YR 4/2-3/2, some 5/2, rare 2/2). Faint to moderately distinct smooth laminae; very common fine to small loop structures. Very regular thick parting; fairly smooth fracture. Rare fine buff and tan to gray streaks and lenses. A tight diagonal fracture with calcite crusts near top.
1237.9	1239.5	Oil shale: very dark brownish gray to black (10YR 2/2-1/2, rare 3/2); very common satiny to resinous luster. Very faint smooth laminae; common fine loop structures. Regular thick to thin shaly parting; slightly irregular to some hackly fracture. Some thin to fine, light brownish gray to buff tuff stringers and lenses in lower part. Some irregular high to low angle fractures with pyrite in lower part.
1239.5	1240.6	Oil shale: dark to some medium brownish gray and brown, rare black in upper part (7.5YR 3/2 & 3/3-2/2, some 4/3, rare 1/2); some satiny to resinous luster in upper part. Faint smooth laminae to some very faint streaked bedding; very common fine loop structures and displacements. Regular thick parting; slight hackly to fairly smooth fracture. Rare very small reddish brown silty-textured lenses and streaks. Some high to low angle natural fractures with pyrite and calcite in lower part.

Illustration No. SBR-4003P (Sheet 32 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1240.6	1243.0	Oil shale: medium to dark brownish gray and some brown (7.5YR & 10YR 4/2-3/2, some 4/3, rare 2/2). Very faint slightly distorted and displaced streaked bedding to faint smooth laminae; some very fine loop structures. Very irregular to some slightly irregular thick parting; irregular to smooth fracture. Some high to low angle natural fractures with rare very fine pyrite in upper part. A very irregular porous gritty mass with some blebby to drusy crystals and common bright orange stains at 2041.3 feet. Rare fine buff crystalline stringers and streaks in lower part.
1243.0	1245.4	<p>Sample of porous gritty mass from 1241.3 feet: X-ray - quartz, pyrite, analcite?</p> <p>Oil shale: medium to some dark brownish gray (10YR 4/2, some 3/2, rare 5/2 & 2/2). Very faint smooth streaked bedding and laminae; some very fine loop structures and displacements. Regular to some very irregular, thick to medium parting; fairly smooth to some very irregular fracture. Some high to low angle natural fractures with common very fine pyrite and rare very fine crystalline calcite at 1243.2-1243.7 and 1244.1-1244.5 feet.</p>
1245.4	1246.4	Oil shale: medium to rare dark brownish gray (10YR 4/2-5/2, rare 3/2). Faint very smooth laminae. Regular thick parting; fairly smooth fracture. Fairly dense and heavy.
1246.4	1247.4	Oil shale: medium to some dark brownish gray (10YR 4/2, some 3/2, rare 5/2). Very faint smooth laminae and streaked bedding. Irregular to regular thick parting; irregular fracture. Some diagonal to nearly vertical natural fractures with calcite crusts and some very fine pyrite.
1247.4	1249.0	<p>Oil shale: medium to dark brownish gray and brown (10YR 4/2 & 4/3-3/2, rare 2/2). Very faint to faint smooth laminae; common fine loop structures. Regular thick to medium parting; fairly smooth fracture. Rare very fine dense brown to tan crystalline lenses.</p> <p>Sample of medium to dark brownish gray oil shale from 1248.0 feet: X-ray - quartz, dolomite, analcite, feldspar, calcite</p>

Illustration No. SBR-4003P (Sheet 33 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1249.0	1250.4	Oil shale: medium to dark and rare light brownish gray and brown (10YR 5/2 & 5/3-3/2, rare 2/2 & 6/2). Faint to moderately distinct smooth laminae; some fine loop structures. Regular to some irregular thick parting; irregular to fairly smooth fracture. A very fine dark brownish gray to white crystalline lamina at 1249.6 feet. An irregular fracture with very fine crystalline calcite in lower 0.6 foot. Some chalky white and dull black material and orange stains on irregular parting surface at base.
1250.4	1252.2	Oil shale: medium to dark brownish gray and brown, some tan to buff (10YR 5/2 & 5/3-3/2, some 6/3-7/2, rare 2/2 & 8/2). Faint to very distinct smooth laminae; very common fine loop structures. Regular thick parting; slightly conchoidal to smooth fracture. Some tight diagonal to vertical fractures with slight blue-white coatings and rare pyrite. Some fine chalky white and dull black streaks at 1251.0 feet. Some thin oil-stained silty-textured lenses at 1252.0 feet.
Mahogany marker		
1252.2	1253.4	Tuff: buff-white to buff (10YR & 2.5Y 9/2-8/2), slightly calcareous, very fine silty to earthy texture. Common fine to thin, medium brownish gray to buff distorted oil-shale stringers and shreds. Irregular parting and fracture. Some irregular mixed up core pieces; true length doubtful. [Sample of tuff from 1253.2 feet: X-ray - quartz, analcite, feldspar, siderite?
1253.4	1254.8	Oil shale: buff to medium and rare dark brownish gray (10YR 7/2-4/2, rare 8/2 & 3/2). Distinct smooth laminae; common fine loop structures. Regular thick parting; fairly smooth to some irregular fracture. Some natural diagonal fractures with very fine pyrite in lower part. [Sample of buff to dark brownish gray oil shale from 1253.8 feet: X-ray - quartz, dolomite, feldspar
1254.8	1255.0	Missing.
1255.0	1259.2	Oil shale: medium to dark brownish gray and some buff (10YR 5/2-3/2, some 6/2-7/2). Faint to some distinct, slightly distorted to smooth laminae and streaks; common fine loop structures and displacements. Very badly broken up and mixed up. Common vertical to diagonal fracture surfaces with patchy calcite crusts

Illustration No. SBR-4003P (Sheet 34 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		and very fine pyrite. Some irregular pieces of light brownish gray to buff faintly bedded tuff in lower part. True length very doubtful.
		Sample of light brownish gray tuff from 1257.0 to 1259.2 feet: X-ray - albite, quartz, siderite?
1259.2	1259.9	Oil shale: buff to dark brownish gray (10YR 7/2-3/2). Very distinct smooth laminae; common fine loop structures. Regular thick parting; fairly smooth fracture. Some fine white streaks and blebs at 1259.3 feet. An irregular 1- x 3-inch light brownish gray to dark gray dense crystalline lens at 1259.6 feet. Sample of dense crystalline lens from 1259.6 feet: X-ray - quartz, analcite, feldspar, calcite?
1259.9	1261.3	Oil shale: dark and rare medium brownish gray to black (10YR 3/2-1/2, rare 4/2); common satiny to resinous luster. Very faint smooth laminae with common very fine distinct tan streaks and laminae. Regular thick to thin shaly parting; hackly to very irregular parting. Common vertical to diagonal fractures with very common very fine pyrite. Common very fine pyrite on some parting surfaces. Lower part badly broken up and mixed up; true length doubtful. Sample of resinous black shale with distinct tan laminae from 1260.2 feet: X-ray - dolomite, quartz, analcite, feldspar, ferroan, illite
1261.3	1262.8	Oil shale: dark and rare medium brownish gray to some black (10YR 3/2-2/2, some 1/2, rare 4/2). Very faint to faint smooth laminae; common fine loop structures. Regular thick parting; coarse hackly to fairly smooth fracture. A natural vertical fracture with common very fine pyrite and some drusy calcite extends through the interval.
1262.8	1264.4	Oil shale: dark to medium brownish gray (10YR 3/2-4/2, some 2/2). Faint to very faint smooth laminae and streaked bedding; some very fine loop structures. Regular thick parting; fairly smooth fracture.
1264.4	1265.9	Oil shale: medium brown to some dark brownish gray and rare tan to buff (10YR & 7.5YR 4/3-5/3, some 3/2, rare 6/3-7/2 near top). Distinct to faint smooth laminae; common fine loop structures and displacements. Regular thick parting; fairly smooth fracture. Very rare very fine dense white streaks.

Illustration No. SBR-4003P (Sheet 35 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1265.9	1266.5	Oil shale: very dark brownish gray to black (10YR & 7.5YR 2/2-1/2, some 3/2); some slight satiny luster. Very faint smooth streaked bedding. Regular thick parting; smooth fracture.
1266.5	1267.0	Oil shale: medium brown to some dark brownish gray and rare tan to buff (7.5YR & 10YR 4/3, some 3/2, rare 5/3-6/3 & 7/2). Faint and rare distinct smooth laminae; some fine loop structures. Regular thick parting; fairly smooth fracture. A thin buff zone with common small irregular gray to buff-white dense crystalline blebs at 1266.6 feet (probably like 1259.6 feet).
1267.0	1268.2	Oil shale: very dark brownish gray to black (10YR 2/2-1/2); very common satiny to rare resinous luster. Very faint smooth streaked bedding. Regular thick to medium parting; fairly smooth and rare coarse hackly fracture. Some fine streaks to small lenses and irregular stringers of dark brown and brownish gray, dense to silty textured tuff (?) in upper part. A 3-inch light brownish gray to buff silty textured tuff with fine oil-shale stringers at base.
		Sample of light brownish gray tuff from 1268.0 feet: X-ray - albite, quartz
1268.2	1269.2	Oil shale: very dark and rare medium brownish gray to black (10YR 2/2-1/2, rare 3/2-4/2); common satiny luster. Very faint smooth laminae; some fine loop structures. Regular to slightly irregular, thick to medium parting; coarse hackly to slightly irregular and conchoidal fracture. A nearly vertical natural fracture with very fine pyrite extends through interval. A very irregular 1/2- to 1-inch, brownish gray to buff tuff with very distorted oil-shale stringers at 1268.5 feet. Upper part badly broken up and mixed up; true length doubtful.
1269.2	1270.1	Oil shale: dark to medium brownish gray (10YR & 7.5YR 3/2-4/2, rare 2/2). Faint smooth laminae and streaked bedding. Regular thick to medium parting; irregular fracture. Some natural irregular high angle fractures with very fine crystalline calcite crusts and rare pyrite.
1270.1	1272.4	Oil shale: dark brownish gray to black (10YR 3/2-1/2); some satiny to resinous luster. Very faint smooth laminae and streaked bedding; common fine to small loop structures in upper part. Regular shaly to papery

Illustration No. SBR-4003P (Sheet 36 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		parting and some irregular thick parting; irregular to hackly fracture. Very rare fine tan silty-textured crystalline laminae. Some pipe dope stains. Mostly very badly broken up and mixed up; true length very doubtful.
1272.4	1273.4	Oil shale, very rich: black to rare medium brown and brownish gray (10YR 1/2-3/2, rare 4/3-5/3 upper part; rare 4/2 lower part); nearly all has waxy to resinous luster. Very faint smooth laminae with occasional very distinct brown laminae; common fine to some small loop structures. Regular to slightly wavy, thick to thin parting; coarse to slight hackly fracture. Very rare fine dense buff crystalline streaks and blebs.
		Sample of waxy shale with distinct brown laminae from 1273.0 feet: X-ray - quartz, dolomite, analcite, feldspar, illite
1273.4	1274.4	Oil shale, very rich: very dark to medium brownish gray and brown, some black (10YR 2/2-4/2 & 4/3, some 1/2, very rare 5/3); very common resinous to waxy luster. Faint to moderately distinct smooth laminae; very common fine to small loop structures. Slightly wavy to some irregular thick parting; very slight hackly to irregular fracture. Gritty porous pyritic material with orange to brown iron stains on parting surface at 1273.9 feet (like 1241.3 feet).
1274.4	1276.1	Oil shale: dark brownish gray and some black (10YR & 7.5YR 2/2-3/2, some 1/2); common satiny to rare resinous luster. Very faint smooth laminae and streaked bedding; some fine loop structures in upper part. Very regular thick to rare thin parting; irregular to some hackly fracture.
1276.1	1277.8	Oil shale: dark brownish gray and some dark to rare medium brown (10YR & 7.5YR 2/2-3/2, some 3/3, rare 4/3 & 1/2); some satiny to resinous and rare waxy luster. Very faint smooth streaked bedding and some faint laminae. Regular to some irregular thick parting; irregular to fairly smooth fracture. A natural high angle fracture with common very fine pyrite from 1276.3 to 1277.1 feet.
1277.8	1278.8	Oil shale: very dark brownish gray to black (10YR & 7.5YR 2/2-1/2, rare 3/2); common satiny and rare resinous luster. Very faint smooth laminae and

Mahogany Bed

Illustration No. SBR-4003P (Sheet 37 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		streaked bedding; rare fine loop structures. Regular thick to some thin parting; very slight to rare coarse hackly fracture. Very rare thin dark brown dense to silty-textured stringers and streaks.
1278.8	1280.8	Oil shale: dark brownish gray, some black in upper part (10YR & 7.5YR 2/2-3/2, some 1/2 upper part); some very slight satiny luster in upper part. Faint smooth laminae and streaked bedding; some fine loop structures. Regular to rare irregular thick parting; irregular to some smooth fracture. A nearly vertical natural fracture with very fine calcite crusts from 1279.6 to 1280.0 feet.
1280.8	1281.8	Oil shale: dark to medium brownish gray and brown (10YR & 7.5YR 3/2-4/2 & 4/3, some 2/2). Moderately distinct to faint smooth laminae; common fine to small loop structures. Regular to some irregular thick parting; irregular fracture. Several high angle natural fractures with calcite crusts and common very fine pyrite. Very rare very fine dark brown crystalline blebs.
1281.8	1282.8	Oil shale: dark to some medium brownish gray and brown, rare black (10YR & 7.5YR 3/2-2/2, some 4/2-4/3, rare 1/2). Faint smooth laminae and streaked bedding; some fine to small loop structures in upper part. Regular to slightly irregular thick parting; slight hackly to fairly smooth fracture. A short high angle fracture with very fine drusy calcite in lower part (may be out of place).
1282.8	1283.8	Oil shale: dark brownish gray to some black (7.5YR 3/2-2/2, some 1/2); some slight satiny luster. Faint smooth to slightly distorted streaked bedding. Slightly irregular thick to some medium parting; irregular to slight hackly fracture. Some thin dense dark brown stringers and blebs with fine black bitumen specks in lower part.
1283.8	1285.4	Oil shale: dark brownish gray to rare black (7.5YR & 10YR 3/2-2/2, rare 1/2). Very faint to faint fairly smooth streaked bedding and laminae; some small displacements. Irregular to regular, thin to thick shaly parting; hackly to irregular fracture. Common natural irregular high to low angle fractures with common very fine pyrite and some calcite crusts. Some irregular mixed up core pieces; true length doubtful.

Illustration No. SBR-4003P (Sheet 38 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1285.4	1286.6	Oil shale: dark to some medium brownish gray and rare black (7.5YR & 10YR 3/2-2/2, some 4/2, rare 1/2). Faint to very faint smooth laminae and streaked bedding; some fine to small loop structures and displacements. Slightly irregular thick parting; slightly irregular fracture. Rare very fine tight high angle natural fractures with calcite fillings.
1286.6	1288.8	Oil shale: dark to rare medium brownish gray (7.5YR & 10YR 3/2-2/2, rare 4/2). Faint to very faint smooth streaked bedding and laminae; some fine loop structures. Very irregular parting and fracture. Common natural irregular high angle fractures with calcite fillings. Very irregular core pieces to badly broken up and mixed up; true length doubtful.
1288.8	1293.4	Oil shale: dark and rare medium brownish gray (10YR & 7.5YR 3/2-2/2, rare 4/2). Faint smooth laminae with common fine loop structures in upper 0.3 foot; very faint smooth to some distorted streaked bedding in other parts. Slightly irregular to very irregular thick parting; slightly irregular to very irregular and conchoidal fracture. Some high to low angle natural fractures with calcite below 1290.0 feet.
1293.4	1294.4	Oil shale: medium to some dark brownish gray (10YR 4/2, some 3/2). Very faint slightly distorted to smooth streaked bedding. Irregular thick parting; fairly smooth fracture. Some fine buff silty to earthy blebs and streaks. <div style="margin-left: 40px;"> Sample of oil shale with some very fine buff streaks from 1294.0 feet: X-ray - feldspar, aragonite, quartz, calcite, dolomite </div>
1294.4	1297.8	Oil shale: dark to medium brownish gray (10YR 3/2-4/2). Very faint to faint, smooth to slightly distorted streaked bedding. Slightly irregular to irregular thick parting; fairly smooth to very irregular fracture. Some high to low angle natural fractures with calcite. Some thin irregular porous stringers and small blebs with drusy calcite and yellowish orange iron stains near base.
1297.8	1300.0	Oil shale: medium to dark brownish gray (10YR 5/2-3/2). Moderately distinct smooth laminae; common fine displacements. Slightly irregular to irregular thick parting; fairly smooth to some very irregular fracture. Rare high angle natural fractures with calcite and

Illustration No. SBR-4003P (Sheet 39 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1300.0	1302.3	pyrite. Very rare very fine buff-white streaks. Some very thin brownish gray silty-textured tuff stringers at 1298.0 feet. Oil shale: dark to some medium brownish gray (10YR & 7.5YR 3/2, some 4/2, rare 2/2). Faint smooth laminae to very faint slightly distorted streaked bedding (inclined about 40° in lower part). Smooth to slightly irregular thick parting; slightly irregular to irregular fracture. Some thin to fine dense brown lenses and streaks. A fine vitreous black gilsonite-like crust on parting surfaces at 1301.9 feet.
1302.3	1303.7	Oil shale: dark brownish gray and rare black (7.5YR & 10YR 3/2-2/2, rare 1/2 near top); rare satiny luster near top. Very faint smooth streaked bedding to faint and moderately distinct smooth laminae; some fine displacements and rare loop structures. Irregular to regular, medium to thick parting; irregular to fairly smooth fracture. Some irregular tight natural fractures with calcite and pyrite (slight bleaching next to some fractures).
1303.7	1305.0	Oil shale: dark to medium brownish gray (10YR & 7.5YR 3/2-4/2, some 5/2, rare 2/2). Distinct to faint smooth laminae and streaked bedding. Very irregular parting and fracture. Common tight irregular natural fractures with calcite and rare pyrite. Very irregular core pieces; true length doubtful.
1305.0	1306.3	Oil shale and marlstone: dark brownish gray to buff (10YR 3/2-7/2, rare 2/2). Faint fairly smooth to distorted and brecciated laminae in upper part; distinct thin irregular broken stringers of oil shale in massive buff marlstone in lower part. Very irregular parting and fracture. Common yellowish orange to orange-brown iron stains, gray gritty material, and some drusy crystals in brecciated shale in middle part. Very irregular core pieces to badly broken up and mixed up; true length doubtful.
1306.3	1307.4	Sample of buff marlstone from 1306.0 feet: X-ray - calcite, dolomite, quartz, feldspar Missing.

Illustration No. SBR-4003P (Sheet 40 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1307.4	1308.3	Oil shale: medium to rare dark brownish gray and brown (10YR 5/2 & 5/3-4/2 & 4/3, rare 3/2-2/2). Moderately distinct to faint smooth laminae; some very fine loop structures and displacements. Irregular parting and fracture. Some irregular natural fractures with calcite. Some fine buff earthy to dense crystalline streaks and stringers. Some irregular mixed up core pieces; true length doubtful.
1308.3	1309.3	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-2/2). Very faint smooth laminae and streaked bedding. Irregular thick parting; very irregular fracture. Common vertical to irregular natural fractures with calcite and pyrite. Some small irregular vugs with coarse boxworks at 1309.1 feet.
1309.3	1310.7	Oil shale: medium brownish gray and brown (10YR 4/2 & 4/3-5/2 & 5/3). Faint smooth laminae and streaked bedding; some fine loop structures and displacements. Regular thick parting; irregular to fairly smooth fracture. Some very tight natural high angle fractures. A very fine white lamina at 1309.8 feet. Irregular iron-stained parting surface with light gray to black gritty material at base (common very fine fibrous crystals).
1310.7	1311.7	Oil shale: dark brownish gray and some black (7.5YR 2/2-3/2, some 1/2). Very faint to moderately distinct smooth laminae; common fine to small loop structures. Regular thick parting; slightly irregular fracture. Common fine irregular limonite stained gray to black streaks with fine buff-white blebs near top. Some fine to thin, buff to buff-white streaks and stringers at 1311.2 feet. Some very fine very tight high angle fractures with calcite in lower part. <div style="margin-left: 2em;"> Sample of iron-stained shale with black streaks and buff blebs from 1310.7 feet: X-ray - quartz, dolomite, feldspar, pyrite, calcite </div>
1311.7	1312.7	Oil shale: dark to medium brownish gray and brown (7.5YR & 10YR 3/2-4/2 & 4/3, some 2/2 upper part and 5/2 lower part). Faint to fairly distinct smooth laminae; some fine loop structures. Regular thick parting; slightly irregular fracture. A very thin brown silty-textured stringer with rare earthy white blebs at 1312.2 feet.

Illustration No. SBR-4003P (Sheet 41 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1312.7	1314.1	Oil shale: dark to medium brownish gray and brown (7.5YR & 10YR 3/2-4/2 & 4/3, rare 2/2 lower part). Faint smooth laminae; some fine loop structures. Slightly irregular to very irregular thick parting; very irregular to conchoidal fracture. Common smooth to irregular natural high angle fractures with very common very fine crystalline calcite and pyrite.
1314.1	1315.9	Oil shale: medium brown and brownish gray to rare dark brown and tan (10YR 4/3 & 4/2-5/3 & 5/2, rare 3/3 & 6/3). Faint to moderately distinct smooth laminae; common very fine loop structures and displacements. Some irregular natural high angle fracture with very fine crystalline calcite in upper part; some smooth high to medium angle fractures with slightly glossy surfaces in lower part. Some fine <u>iron-stained cavities</u> to earthy crushed shale in middle part. Some irregular mixed up core pieces; true length doubtful.
1315.9	1317.3	<p>Sample of oil shale from 1315.6 feet: X-ray - dolomite, quartz, feldspar, calcite</p> <p>Oil shale: dark brownish gray (10YR & 7.5YR 3/2). Very faint very smooth streaked bedding. Slightly irregular to very irregular thick parting; smooth to conchoidal fracture. Rare natural diagonal fractures with very fine patchy calcite crusts and <u>very</u> fine disseminated pyrite.</p> <p>Sample of oil shale from 1316.4 feet: X-ray - dolomite, quartz, feldspar, calcite, pyrite</p>
1317.3	1319.0	Oil shale: medium brownish gray and brown to some tan (10YR & 2.5Y 5/2 & 5/3-4/2 & 4/3, some 6/3). Faint smooth to some distorted laminae and streaked bedding. Very badly broken up and mixed up. Some irregular fractures surfaces with rare very fine pyrite. Rare black to gray gritty blebs and streaks. True length very doubtful.
1319.0	1320.7	Missing.
1320.7	1322.4	Oil shale: dark and rare medium brownish gray to some black (7.5YR & 10YR 3/2-2/2, some 1/2, rare 4/2); common resinous luster in lower part. Faint smooth laminae to distorted streaks and stringers; some fine loop structures. Slightly irregular to very irregular, medium to thick parting; irregular to some slight hackly fracture. Some <u>vuggy fractured shale</u> with orangish yellow stains.

Illustration No. SER-4003P (Sheet 42 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1322.4	1323.4	Oil shale: dark to medium brownish gray and rare black (10YR 3/2-4/2, some 5/2 & 2/2, rare 1/2); rare satiny to resinous luster. Very faint to moderately distinct, slightly distorted to very distorted laminae, stringers, and streaks; common fine to large irregular loop structures. Very irregular to some slightly irregular thick parting; irregular fracture. Some natural high to low angle fractures with calcite crusts in upper part.
1323.4	1326.6	Oil shale: dark to rare medium brownish gray (10YR 3/2, rare 4/2); rare fine satiny to waxy streaks. Very faint smooth to rare distorted streaked bedding. Very irregular to slightly irregular thick parting; very irregular to slightly irregular and conchoidal fracture. Some irregular natural fractures with pyrite and calcite in upper part.
1326.6	1328.2	Oil shale: dark to medium brownish gray and brown (10YR 3/2-4/2 & 4/3, rare 5/3). Very faint to some moderately distinct, slightly distorted to smooth laminae and streaks. Irregular to slightly irregular, thick to medium parting; slightly irregular to very irregular fracture. Some irregular natural fractures with pyrite and calcite. Rare irregular iron-stained parting surfaces with gray to black gritty material. Middle part very badly broken up and mixed up; true length doubtful.
1328.2	1330.8	Oil shale: medium to some dark brown and rare tan (7.5YR & 10YR 5/3-4/3, some 3/3, rare 6/3). Moderately distinct to very faint, smooth to some distorted laminae; common fine loop structures. Very badly broken up and mixed up. Some very irregular <u>vuggy iron-stained surfaces</u> with gray gritty material in upper part. Occasional irregular pieces of porous crushed shale in middle part. Rare natural fracture surfaces with calcite crusts. True length very doubtful.
1330.8	1331.8	Oil shale: medium brown to rare dark brownish gray (7.5YR & 10YR 4/3-5/3, rare 3/2-2/2). Faint to rare distinct smooth laminae and streaked bedding. Irregular parting and fracture. Common fine irregular natural fractures with calcite fillings.

Illustration No. SBR-4003P (Sheet 43 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1331.8	1334.8	Oil shale: medium and rare dark brown to tan (7.5YR & 10YR 4/3-6/3, rare 3/3-2/2). Faint to fairly distinct smooth laminae; some fine loop structures and displacements. Very irregular parting and fracture. Common irregular natural fractures with calcite fillings. A vuggy iron-stained parting surface near top. Badly broken up and mixed up; true length doubtful.
1334.8	1337.0	Oil shale: dark brownish gray to some medium brown and rare black (7.5YR & 10YR 3/2-2/2, some 4/2-4/3, rare 1/2). Faint smooth to some slightly distorted laminae; some fine loop structures and displacements. Very irregular parting and fracture. Common irregular natural fractures with calcite fillings and some with common very fine pyrite. Some porous crushed shale with drusy crystals in upper part. Rare dense brownish gray stringers with very fine disseminated pyrite. Upper part badly broken up and mixed up; true length doubtful.
1337.0	1338.0	Oil shale: dark brownish gray to some medium brown (7.5YR 3/2, some 4/3 & 2/2). Faint smooth laminae; some fine loop structures. Irregular parting and fracture. Some natural calcite filled fractures.
1338.0	1341.7	Oil shale: medium to some dark brown and rare tan (7.5YR & 10YR 4/3-5/3, some 3/3, rare 6/3). Faint smooth laminae; common fine loop structures and displacements. Very irregular parting and fracture. Common natural calcite-filled fractures. Some irregular pieces of porous earthy crushed shale in middle part. Some fine gray streaks in lower part. A few rounded pieces of buff siltstone near base (caving?). Commonly very badly broken up and mixed up; true length very doubtful.
1341.7	1342.7	Oil shale: dark to rare medium brownish gray (7.5YR & 10YR 3/2-2/2, rare 4/2). Very faint smooth streaked bedding. Irregular to some smooth thick parting; irregular to slightly conchoidal fracture. Some natural fractures with very fine pyrite. Rare fine dense crystalline streaks and blebs.
1342.7	1343.3	Missing.
1343.3	1345.9	Oil shale: dark to medium brownish gray (10YR & 7.5YR 3/2-4/2, some 2/2). Very faint slightly distorted to smooth streaked bedding and some laminae. Very irregular parting and fracture. Common irregular natural

Illustration No. SBR-4003P (Sheet 44 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		fractures with pyrite and calcite; some brecciated shale in middle part. A 3-inch medium to light brownish gray tuff (?) with thin interfingering marlstone stringers at 1345.4 feet. Light brownish gray to buff marlstone with rare fine gray streaks in lower 0.2 foot. Commonly broken up and mixed up; true length doubtful.
1345.9	1348.6	<p>Sample of tuff from 1345.6 feet: X-ray - quartz, sanidine, ferroan</p> <p>Oil shale: dark to medium brownish gray (7.5YR & 10YR 3/2-4/2, some 5/2 lower part). Very faint to some fairly distinct smooth laminae and streaked bedding. Very smooth to some very irregular, thick to thin parting; very irregular fracture. Very badly broken up and mixed up. Common natural fracture surfaces with very slight blue-gray coatings, some calcite; and rare pyrite; rare glossy fracture surfaces with very fine slickensides. True length very doubtful.</p>
1348.6	1350.2	<p>Oil shale: very dark to some medium brownish gray and black (7.5YR & 10YR 2/2-3/2, some 1/2 upper part, some 4/2 lower part); some satiny luster in upper part. Faint to moderately distinct smooth laminae; common fine to small loop structures and displacements. Smooth medium to thick parting and slightly irregular fracture in upper part; very irregular parting and fracture in lower part. Common irregular natural fractures with calcite and pyrite. Some very fine dense dark brownish gray streaks and blebs in upper part. Rare fine gray streaks in lower part. Some irregular mixed up core pieces; true length doubtful.</p> <p>Sample of dark brownish gray to black shale with very fine dense streaks and blebs from 1348.8 feet: X-ray - dolomite, quartz, analcite, feldspar, calcite</p>
1350.2	1353.9	<p>Oil shale: dark brownish gray to medium brown and some tan to buff (10YR 3/2-5/3, some 2/2 & 6/3-7/2). Very distinct to some faint smooth laminae; common fine loop structures. Very irregular parting and fracture. Common natural fractures with slight chalky coatings and rare pyrite. A 1/2- to 3/4-inch tuff at 1353.5 feet (like 1345.6 feet) with some gilsonite (?) filled fractures immediately above. Very irregular mixed up core pieces; true length doubtful.</p>

Illustration No. SBR-4003P (Sheet 45 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of distinctly laminated shale from 1353.8 feet: X-ray - dolomite, quartz, analcite, feldspar, calcite
1353.9	1355.5	Oil shale: dark brownish gray to tan and buff (10YR 3/2-6/3 & 7/2, some 2/2 lower part). Distinct very distorted laminae in upper part to very faint smooth laminae in lower part. Very badly broken up and mixed up. Very common very irregular natural fracture surfaces with pyrite, some calcite, and rare gilsonite-like crusts. Some slightly <u>vuggy</u> to brecciated fragments. True length very doubtful.
1355.5	1357.1	Oil shale: very dark brownish gray and some black (10YR 2/2, some 1/2). Very faint smooth streaked bedding. Very badly broken up and mixed up; some thin shaly to papery parting. Common very irregular fracture surfaces with pyrite and calcite. Rare fish scales. True length very doubtful.
		Sample of black papery shale with some fish scales and pyrite on parting surfaces from 1355.8 feet: X-ray - quartz, analcite, dolomite, feldspar, pyrite, illite, ferroan?
1357.1	1357.9	Oil shale: dark to some medium brownish gray (10YR 3/2-2/2, some 4/2). Very faint to faint, smooth to slightly distorted laminae. Very irregular parting and fracture. Common irregular calcite filled fractures. Rare vuggy surfaces. Some pieces have core-cutting surfaces in two directions.
1357.9	1359.1	Missing.
1359.1	1362.3	Oil shale: dark brownish gray to tan and buff (10YR 3/2-6/3 & 7/2). Very faint streaked bedding to distinct laminae. Very badly broken up and mixed up. <u>Rare vuggy core pieces</u> . True length very doubtful.
1362.3	1364.6	Oil shale: dark to medium brownish gray and brown, rare tan to buff (10YR 3/2-5/2 & 5/3, some 2/2, rare 6/3-7/2). Faint to distinct smooth laminae. Badly broken up and mixed up. Rare calcite crusts on fracture surfaces. Buff earthy tuff (?) on parting surface at base. True length doubtful.
1364.6	1366.1	Missing.

Illustration No. SBR-4003P (Sheet 46 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1366.1	1367.1	Oil shale: dark to some medium brownish gray (10YR & 7.5YR 3/2-2/2, some 4/2). Faint smooth to slightly distorted laminae and streaks. Irregular thick parting; irregular to conchoidal fracture. Some high angle fractures with very fine disseminated pyrite.
		<i>Curly</i>
		<i>Lower wavy bed?</i>
1367.1	1369.1	Tuff: light to rare medium brownish gray and buff (10YR 6/2, rare 5/2 & 8/2). Very faint slightly distorted bedding with common very fine oil-shale streaks and rare very irregular stringers; a thick zone of medium brownish gray to black oil shale with faint smooth curved laminae in middle. Irregular parting and fracture. Some natural diagonal fractures with chalky white coatings in tuff and with fine disseminated pyrite in oil shale. Fairly smooth contacts with oil shale above and below. Sample of tuff from 1368.6 feet: X-ray - sanidine, quartz
1369.1	1370.1	Oil shale: dark and rare medium brownish gray (10YR 3/2-2/2, rare 4/2). Faint very smooth laminae. Slightly irregular thick parting; fairly smooth fracture. Rare very fine tight high angle fractures with calcite filling.
1370.1	1371.3	Oil shale: dark to rare medium brownish gray and tan (10YR 3/2-2/2, rare 4/2-6/3). Very faint smooth to distorted streaked bedding. Very badly broken up and mixed up. Very common fracture surfaces with fine pyrite crystals. Some vuggy core pieces. True length very doubtful.
1371.3	1372.2	Tuff and oil shale: light brownish gray to buff-white (10YR 6/2-9/2). Very faint contorted bedding with some very irregular oil-shale stringers and inclusions. Very irregular parting and fracture. Very irregular interfingering contacts with shale above and below; some porous brecciated shale at upper contact. Dark brownish gray shale with distorted streaked bedding in lower 2 inches.
1372.2	1376.6	Missing.
1376.6	1378.8	Oil shale: dark brownish gray to some medium brown and tan (10YR & 7.5YR 3/2-2/2, some 4/3-6/3). Very faint distorted to smooth streaked bedding. Very badly broken up and mixed up. Some brown to tan earthy porous shale. <u>Rare vuggy core pieces.</u> True length very doubtful.

Illustration No. SBR-4003P (Sheet 47 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		[Sample of brown porous shale from 1377.2 feet: X-ray - dolomite, quartz, feldspar
1378.8	1384.9	Missing.
1384.9	1386.4	Oil shale: dark to medium brownish gray (10YR & 2.5Y 3/2-4/2, some 5/2 lower part). Very faint smooth streaked bedding to some faint laminae. Slightly irregular to some very irregular thick parting; irregular to slightly conchoidal fracture. Common very fine white crystalline streaks in upper part. Some 1-inch vugs with common fine to fairly coarse pyrite near top. A few diagonal fractures with some calcite and very rare pyrite in middle part.
		[Sample of shale with very fine crystalline streaks from 1385.0 feet: X-ray - feldspar, dolomite, quartz, calcite, illite
1386.4	1388.5	Oil shale: medium to dark brownish gray (2.5Y & 10YR 5/2-3/2). Very faint smooth streaked bedding. Very badly broken up and mixed up; some thick to thin shaly parting. Very common very fine buff streaks and blebs. Some very fine disseminated pyrite on parting surfaces. True length very doubtful.
1388.5	1390.9	Oil shale: medium to dark brownish gray (2.5Y & 10YR 4/2-3/2). Very faint smooth streaked bedding. Very badly broken up and mixed up. Very common very fine buff blebs. Some <u>very</u> fine disseminated pyrite. True length very doubtful.
1390.9	1392.0	Mudstone: buff to very light olive gray (2.5Y & 5Y 7/2). Massive to friable porous jumbled agglomerated chunks. Very badly broken up and mixed up. Some brecciated oil-shale inclusions near top. A large caving fragment of buff marlstone at base (bedding parallel to axis of curvature of core surface).
		[Sample of olive-buff mudstone from 1391.5 feet: X-ray - dolomite, feldspar, quartz
1392.0	1410.1	Missing.
1410.1	1411.1	Oil shale: dark brownish gray to some medium brown and black (10YR & 7.5YR 3/2-2/2, some 4/3 & 1/2); some satiny to resinous luster. Very faint to some moderately distinct, slightly distorted to smooth laminae; some fine loop structures and displacements. Slightly irregular thick to medium parting; irregular to conchoidal fracture. Some high angle fractures with very fine pyrite. Some very thin tan to buff tuff (?) streaks at 1410.9 feet.

Illustration No. SBR-4003P (Sheet 48 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1411.1	1414.2	Oil shale: dark brownish gray to tan and buff (10YR 3/2-6/3 & 7/2, rare 2/2 & 8/2). Very distinct smooth laminae. Very smooth to some very irregular, thick to medium parting; slightly irregular to very irregular fracture. Rare to very common natural high angle fractures with rare very fine pyrite. Some fine gray pyritic streaks in upper part. Some irregular mixed up core pieces in lower part; true length doubtful. Sample of distinctly laminated oil shale from 1412.0 feet: X-ray - dolomite, feldspar, calcite, quartz
1414.2	1415.3	Oil shale: dark to some medium brownish gray (10YR & 7.5YR 3/2-2/2, some 4/2); some satiny to resinous luster. Faint slightly distorted to smooth laminae and streaks; some loop structures and displacements. Slightly irregular thick parting; irregular fracture. Rare fine brown to tan streaks in upper part. A natural vertical fracture with rare pyrite extends from top to 1416.5 feet.
1415.3	1416.5	Oil shale: dark brownish gray to medium brown and rare black (7.5YR 3/2-5/3, some 2/2, rare 1/2); common satiny to some resinous luster. Faint to distinct smooth laminae; some loop structures and displacements. Fairly regular to very irregular thick parting; slightly irregular to irregular and conchoidal fracture. Rare fine orangish tan silty textured tuff (?) streaks. Uneven sample split.
1416.5	1418.5	Oil shale: dark brownish gray to medium brown and rare black (7.5YR 3/2-4/3, some 5/3 lower part, rare 2/2-1/2); rare satiny to resinous luster. Distinct smooth laminae; some fine loop structures and displacements. Very smooth thick parting; slightly conchoidal to fairly smooth fracture. Very rare fine orangish tan streaks and lenses. Some vertical to diagonal fractures with very fine crystalline calcite crusts in lower part.
1418.5	1419.5	Oil shale: dark to medium brownish gray and brown (10YR & 7.5YR 3/2-5/2 & 5/3, rare 3/2). Fairly distinct smooth to very slightly distorted laminae; some fine loop structures. Regular to some irregular thick parting; irregular to conchoidal fracture. Some irregular natural fractures with pyrite and calcite. Some thin discontinuous orangish tan to buff tuff stringers near top; rare fine streaks and lenses in other parts. Rare fine gray streaks.

Illustration No. SBR-4003P (Sheet 49 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1419.5	1420.1	Oil shale: medium and very rare dark brownish gray to tan and buff (10YR & 7.5YR 4/2-6/3 & 7/2, rare 3/2). Fairly distinct smooth laminae. Slightly irregular to very smooth, thick to medium parting; irregular to fairly smooth fracture. Some fairly tight natural high angle fractures with very fine crystalline calcite and rare pyrite. A 1-1/4-inch faintly bedded orangish buff tuff band and some thin stringers near top. <div style="margin-left: 2em;">Sample of orangish buff tuff band from 1419.6 feet: X-ray - feldspar, dolomite, quartz</div>
1420.1	1421.1	Oil shale: dark brownish gray to medium brown and very rare black (10YR & 7.5YR 3/2-5/3, rare 2/2-1/2); very rare resinous luster. Distinct smooth laminae; some fine loop structures and displacements. Slightly irregular to very smooth thick parting; irregular fracture. Common high angle to irregular fractures with very fine crystalline calcite and rare pyrite.
1421.1	1421.8	Oil shale: medium brown and brownish gray to tan and buff, rare dark brownish gray to black (10YR 4/3 & 4/2-6/3 & 7/2, rare 3/2-1/2). Distinct smooth and rare slightly distorted laminae; rare fine loop structures and displacements. Slightly irregular thick parting; irregular fracture. Some natural fractures with very fine crystalline calcite and some pyrite. Rare fine gray pyritic laminae, streaks, and blebs. Some small irregular buff dense massive crystalline lenses with fine gray pyritic specks and rims at 1421.3 feet. <div style="margin-left: 2em;">Sample of massive crystalline lens from 1421.3 feet: X-ray - pyrite, marcasite, feldspar, dolomite, quartz?</div>
1421.8	1422.6	Oil shale and tuff: medium to light and rare dark brownish gray and brown oil shale (10YR 4/2 & 4/3-6/2, rare 3/2), and orangish buff tuff (7.5YR 7/3-8/3). Fractured oil shale with fairly distinct to faint, smooth to contorted laminae in upper part; massive tuff in lower part. Irregular core pieces to badly broken up and mixed up; true length very doubtful.

Illustration No. SBR-4003P (Sheet 50 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1422.6	1424.0	Oil shale: dark to some light brownish gray and rare black (10YR 2/2-4/2, some 5/2-6/2 lower part, rare 1/2 upper part); rare satiny to resinous luster in upper part. Faint to moderately distinct, slightly distorted to smooth laminae; some fine loop structures in upper part. Slightly irregular to smooth, thick to thin parting; very irregular fracture. Common natural high angle fractures with fine pyrite and rare calcite. Some thin to fine tan to buff stringers and streaks in upper part. Very irregular mixed up core pieces in lower part; true length doubtful.
1424.0	1425.5	Oil shale: medium to dark brownish gray and brown (10YR & 7.5YR 4/2 & 4/3-3/2, some 4/1). Very faint to rare distinct smooth laminae and streaked bedding. Very badly broken up and mixed up; some thick to medium smooth parting. Some natural fracture surfaces with calcite and rare pyrite. True length very doubtful.
1425.5	1428.4	Marlstone and some oil shale: buff-white to medium and rare dark brownish gray and brown (10YR 9/2-5/2 & 5/3, some 4/2-4/3, rare 3/2). Very faint to some moderately distinct, distorted and displaced to smooth laminae. Very badly broken up and mixed up. Some pieces show very common tight irregular fractures. Marlstone is commonly earthy to chalky. True length very doubtful. Sample of buff-white earthy to chalky marlstone from 1427.3 feet: X-ray - dolomite, quartz, feldspar
1428.4	1430.1	Missing.
1430.1	1431.2	Oil shale: medium to rare light and dark brownish gray and brown (10YR & 2.5Y 5/2 & 5/3-4/2 & 4/3, rare 6/2 & 3/2). Faint to moderately distinct, slightly distorted to contorted streaks and stringers. Slightly irregular to very irregular thick parting; irregular to conchoidal fracture. Some very tight irregular natural fractures. Vuggy parting surfaces with fine boxworks and very fine drusy crystals near top.
1431.2	1432.2	Missing.
1432.2	1435.2	Oil shale: dark to light brownish gray and some brown to tan (10YR & 2.5Y 3/2-6/2, some 4/3-6/3 and 3/1-5/1). Fairly distinct to faint, slightly distorted to smooth laminae; some fine loop structures and displacements. Irregular to some very smooth thick parting; very irregular fracture. Common high angle fractures with fine crystalline calcite. Some <u>vuggy caving fragments</u> near top. Irregular mixed up core pieces; true length doubtful.

Illustration No. SBR-4003P (Sheet 51 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1435.2	1437.5	Oil shale: dark to some medium brownish gray (10YR 3/2-2/2, some 4/2). Very faint smooth to slightly distorted laminae and streaked bedding. Very badly broken up and mixed up. Very common irregular natural fracture surfaces with calcite and pyrite. True length doubtful.
1437.5	1440.0	Oil shale: dark to medium brownish gray (10YR 3/2-5/2, rare 2/2). Faint to moderately distinct, smooth and rare distorted laminae. Very badly broken up and mixed up. Rare vuggy to earthy fractured core pieces. True length very doubtful.
1440.0	1441.2	Oil shale: dark to medium brownish gray and rare buff (10YR 3/2-5/2, rare 6/2-7/2). Faint to rare distinct smooth laminae and streaked bedding. Very badly broken up and mixed up. Some natural fracture surfaces with pyrite. True length very doubtful.
1441.2	1442.3	Oil shale: dark to medium brownish gray (10YR 3/2-4/2). Faint smooth to slightly distorted streaked bedding. Irregular thick parting; irregular to conchoidal fracture. Some irregular natural fractures with rare pyrite. Some fine brown streaks and lenses.
1442.3	1443.5	Oil shale: dark to medium brownish gray and brown (10YR 3/2-4/2 & 4/3, some 5/2-5/3). Faint fairly smooth to distorted streaked bedding and rare laminae. Very irregular parting and fracture. Some <u>small to medium limonite stained vugs</u> with gritty porous fillings. A 0.1-foot light brownish gray earthy fractured zone near top. Some very irregular mixed up core pieces; true length doubtful.
1443.5	1444.5	Oil shale: dark to medium brownish gray and brown (10YR 3/2-4/2 & 4/3, rare 5/2-5/3). Faint to moderately distinct smooth laminae. Very regular thick to medium parting; fairly smooth to some irregular fracture. Some short tight natural high angle fractures with some blue-gray coatings and rare pyrite. <div style="margin-left: 2em;">Sample of oil shale from 1443.7 feet: X-ray - dolomite, quartz, feldspar, pyrite, and analcite</div>
1444.5	1445.5	Oil shale: medium to dark brownish gray (10YR 4/2-3/2, some 5/2). Faint to moderately distinct, smooth to slightly distorted laminae. Regular to irregular, thin to thick parting; hackly to very irregular fracture. Some irregular natural fractures with pyrite. Some thin gray gritty friable stringers in upper part. Some <u>limonite stained vugs</u> with gritty gray material in lower part.

Illustration No. SBR-4003P (Sheet 52 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of gritty gray friable stringer from 1444.9 feet: X-ray - pyrite, unidentified peak at 26° 20, analcite, feldspar?
1445.5	1446.6	Oil shale: medium and rare dark brownish gray (10YR 4/2-5/2, rare 3/2-2/2). Faint to rare moderately distinct, fairly smooth to distorted and displaced laminae. Regular to very irregular thick parting; slightly irregular to very irregular fracture. Common irregular natural fractures with some calcite. Some thin dense brown dolomite stringers in upper part. Vuggy parting surface with fine boxworks, gritty gray material, and very fine drusy crystals at base. Some very irregular mixed up core pieces; true length doubtful.
1446.6	1447.9	Oil shale: medium and rare dark brownish gray to buff (10YR & 2.5Y 5/2-7/2, some 4/2, rare 3/2). Fairly distinct to faint, smooth to distorted laminae and streaked bedding. Very badly broken up and mixed up. Some irregular natural fractures with calcite. <u>Rare vuggy</u> core pieces with fairly coarse boxworks. A thin zone of brecciated to crushed shale near base. True length very doubtful.
1447.9	1449.0	Oil shale: medium to dark brownish gray and very rare buff (10YR & 2.5YR 4/2-3/2, rare 5/2-7/2). Very faint slightly distorted to smooth streaked bedding. Irregular thick parting; fairly smooth to irregular fracture. Some tight high angle natural fractures. A 2-inch zone of crushed shale in middle. Common fine brown streaks and lenses in lower part.
1449.0	1453.8	Oil shale: medium to dark brownish gray and some brown (10YR 4/2-3/2, some 4/3, rare 5/3). Faint smooth to some distorted streaked bedding. Very irregular to some slightly irregular thick parting; irregular to conchoidal fracture. Some irregular natural fractures with rare calcite. Common small to fairly large limonite stained <u>vugs</u> with fine boxworks and gritty to powdery gray material in upper part.
1453.8	1455.0	Oil shale: medium to dark brownish gray (10YR 4/2-3/2). Faint distorted to smooth streaked bedding. Very badly broken up and mixed up. Some pieces show common very irregular natural fractures. Rare brown to tan stringers and lenses. True length very doubtful.

Illustration No. SBR-4003P (Sheet 53 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1455.0	1456.2	Oil shale: medium to dark brownish gray and brown, rare black (10YR 4/2 & 4/3-3/2, some 2/2, rare 1/2); some resinous to rare waxy luster. Faint smooth to distorted laminae and streaked bedding; some fine loop structures and displacements. Regular to very irregular, medium to thick parting; slightly conchoidal to very irregular fracture. Some very irregular natural fractures with rare calcite. Rare fine tan stringers and streaks.
1456.2	1458.9	Oil shale: medium and rare dark brownish gray to buff (10YR 5/2-7/2, rare 4/2-3/2). Faint to moderately distinct smooth laminae; rare fine loop structures and displacements. Very smooth to some very irregular, thick to medium parting; slightly conchoidal to very irregular fracture. Fairly common irregular natural fractures with calcite crusts. A thin gray limonite stained laminae with common small pale yellow to white chalky blebs at 1457.5 feet. Some very irregular mixed up core pieces; true length doubtful.
1458.9	1460.7	Oil shale: dark brownish gray and rare black to tan and buff (10YR 2/2-6/3 & 7/2, rare 1/2); rare resinous to waxy luster. Faint fairly smooth streaked bedding and rare laminae in upper and lower parts to very distinct contorted streaks and stringers in middle part. Very irregular to some slightly irregular, thick to medium parting; irregular fracture. Some natural high angle fractures with calcite. Some fine dense gray to white crystalline stringers in middle part.
1460.7	1461.6	Oil shale: medium brownish gray to tan and buff (10YR & 2.5Y 4/2-6/3 & 7/2). Faint distorted streaked bedding and some laminae. Very irregular parting and fracture. Some irregular natural fractures with calcite. Very irregular mixed up core pieces; true length doubtful.
1461.6	1462.5	Oil shale: dark brownish gray to some medium brown (10YR & 7.5YR 2/2-3/2, some 4/3). Faint smooth curved to flat streaked bedding. Slightly irregular to very irregular, thick to medium parting; irregular fracture. Vuggy parting surfaces at 1461.9 feet.
1462.5	1463.7	Missing.
1463.7	1466.1	Oil shale: dark to medium brownish gray (10YR 3/2-4/2, some 3/2 & 5/2). Very faint to faint, slightly distorted to smooth streaked bedding. Irregular parting and fracture. Some natural (?) irregular high angle fractures. Irregular mixed up core pieces; true length doubtful.
1466.1	1467.2	Oil shale: medium and some dark brownish gray to buff (10YR & 2.5YR 4/2-7/2, some 3/2). Moderately distinct to faint smooth laminae; very common fine loop structures

Illustration No. SBR-4003P (Sheet 54 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		and displacements. Regular thick parting; slightly irregular fracture. Rare very tight natural diagonal fractures.
1467.2	1469.2	<p>Sample of lean oil shale from 1466.7 feet: X-ray - dolomite, quartz, feldspar, pyrite</p> <p>Oil shale: dark to medium brownish gray and rare black (10YR 3/2-4/2, some 5/2 & 2/2, rare 1/2 middle part). Distinct to faint very distorted streaks and stringers to some smooth laminae; common fine loop structures. Irregular to fairly regular thick parting; irregular to slightly conchoidal fracture. A natural diagonal fracture with rare very fine pyrite in upper part. Some fine brownish gray silty-textured streaks in lower part.</p>
1469.2	1471.4	Oil shale: medium and rare dark brownish gray to buff (10YR 4/2-7/2, rare 3/2-2/2). Faint to some distinct smooth laminae. Badly broken up and mixed up; some very smooth medium to thin shaly parting. Some natural fracture surfaces with slight blue-gray coatings and rare pyrite. True length doubtful.
1471.4	1474.1	Marlstone: buff to rare medium brownish gray (10YR & 2.5Y 7/2-6/2, some 8/2, rare 5/2). Faint smooth laminae. Badly broken up and mixed; smooth thin shaly parting in lower part. Common tight natural fractures--some with pyrite. Some <u>small cavities to 1-inch vugs</u> with dull black pyritic material in upper part. A 1-1/2-inch porous crushed zone with some black pyritic material at base. True length doubtful.
1474.1	1475.3	Oil shale: dark and some medium brownish gray (7.5YR 3/2-2/2, some 4/2 upper part). Faint smooth to some curved and slightly distorted streaked bedding. Irregular thick parting; slightly irregular to irregular fracture. Some vuggy limonite stained parting surfaces with very irregular black pyritic rims. Some natural fractures with very common very fine pyrite in middle part.
1475.3	1476.7	Oil shale: dark brownish gray and rare black (7.5YR 2/2-3/2, rare 1/2); some satiny luster. Faint distorted to fairly smooth streaked bedding. Irregular parting and fracture. Some natural fractures with common pyrite. A large irregular vug with very irregular boxworks and black pyritic rims in upper part.
		<p>Sample of very dark brownish gray oil shale from 1476.4 feet: X-ray - dolomite, quartz, feldspar, pyrite, analcite?, ferroan?</p>

Illustration No. SBR-4003P (Sheet 55 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1476.7	1477.7	Oil shale: medium and very rare dark brownish gray to buff (10YR & 2.5Y 4/2-7/2, rare 3/2-2/2). Faint to distinct, slightly distorted to smooth laminae; some fine loop structures and displacements. Irregular thick parting; very irregular to fairly smooth fracture. Some tight natural fractures and small <u>irregular cavities</u> in upper part. A 3/4-inch irregular brownish gray very fine granular to dense crystalline stringer at 1477.5 feet. <p style="margin-left: 40px;">Sample of brownish gray stringer from 1477.5 feet: X-ray - albite, quartz, pyrite, analcite, dolomite?, nahcolite</p>
1477.7	1479.4	Oil shale: medium to rare dark brownish gray and some brown (10YR & 2.5Y 4/2-5/2, some 4/3-5/3, rare 3/2-2/2). Faint to rare distinct, smooth to some slightly distorted laminae. Regular to slightly irregular, thick to medium parting; slightly irregular to irregular fracture. A thick massive brownish gray band at 1478.2-1478.5 feet with common fine dark oil-shale streaks in upper part. Some 1-inch to fine, brownish gray to buff stringers in lower part (like 1477.5 feet). Rare tight natural fractures. <p style="margin-left: 40px;">Sample of thick massive brownish gray band from 1478.4 feet: X-ray - quartz, dolomite, calcite, feldspar, illite</p>
1479.4	1480.5	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2). Very faint very smooth laminae. Very regular thick parting; smooth and rare coarse hackly fracture. Some fine neutral gray laminae. A fine gray to buff granular lamina at 1479.8 feet.
1480.5	1481.5	Oil shale: dark brownish gray (7.5YR 3/2, rare 2/2). Very faint smooth laminae and streaked bedding. Slightly irregular to irregular thick parting; smooth fracture. Some fine neutral gray laminae.
1481.5	1483.0	Oil shale: dark brownish gray and some brown to rare black (7.5YR 3/2-2/2, some 3/3, rare 2/2); rare satiny to resinous luster. Faint to very faint slightly distorted streaked bedding. Slightly irregular to irregular thick parting; irregular to fairly smooth fracture. Some dense dark brown dolomite (?) lenses and streaks. A natural diagonal fracture with very rare pyrite at 1481.7-1482.1 feet. A fine wavy broken dark gray pyritic stringer at 1482.6 feet.

Illustration No. SBR-4003P (Sheet 56 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1483.0	1484.0	Oil shale: medium to rare dark brownish gray and brown (7.5YR & 10YR 4/2-4/3, rare 5/2 & 3/2). Very faint slightly distorted to smooth laminae; rare fine displacements. Regular to some irregular, thick to thin parting; coarse hackly to irregular fracture. Common natural fractures with slight buff earthy coatings and very rare pyrite. A 0.1-foot zone of crushed shale with some fine tarry black blebs at 1483.5 feet.
1484.0	1485.0	Oil shale: medium and rare dark brownish gray (10YR 4/2-5/2, rare 3/2). Very faint smooth laminae; some very fine loop structures. Regular thin to thick parting; coarse hackly to fairly smooth fracture. Some fine gray laminae and streaks. Some tight natural fractures in upper part.
1485.0	1487.0	Oil shale: medium and rare dark brown to tan and buff (10YR 5/3-6/3 & 7/2, rare 4/3-2/2), some medium to light brownish gray in upper part (2.5Y 5/2-6/2). Faint to distinct, slightly distorted to smooth laminae; some fine to small loop structures and displacements. Common fairly tight natural fractures with chalky white coatings in upper part. A 0.3-foot zone of very common fine <u>collapsed cavities</u> at top; a thin crushed zone at 1486.4 feet. Upper part badly broken up and mixed up; true length doubtful.
1487.0	1488.0	Oil shale: dark brownish gray and rare black to medium brown (10YR & 7.5YR 2/2-4/3, rare 1/2); rare satiny to resinous luster. Faint smooth to distorted streaked bedding in thick dark and light zones; faint laminae with common fine loop structures in lower part. Slightly irregular thick parting; slightly irregular fracture. A nearly vertical natural fracture with some fine crystalline calcite extends through interval.
1488.0	1489.8	Oil shale: dark brownish gray to black (7.5YR 3/2-1/2); common satiny to rare resinous luster. Very faint smooth laminae and streaked bedding. Regular thick to thin shaly parting; slight hackly to smooth fracture. A nearly vertical natural fracture with slight buff coatings and some very fine pyrite extends through most of interval. Some fine to thin brownish gray dense to silty-textured laminae, stringers, and rare small lenses in upper part.

Illustration No. SBR-4003P (Sheet 57 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1489.8	1491.8	Oil shale: medium brown to tan (10YR 4/3-6/3). Faint slightly distorted to smooth laminae and streaked bedding; common fine to small loop structures and displacements. Slightly irregular to some very irregular, thick to rare thin parting; fairly smooth to some very irregular fracture. Common irregular natural fractures with slight chalky white coatings from 1490.1 to 1490.8 and 1491.6 to 1491.8 feet. Rare fine gray pyritic (?) streaks in lower part. Fractured parts are badly broken up and mixed up; true length doubtful.
1491.8	1492.8	Oil shale: medium brown to tan and buff (10YR 5/3-6/3 & 7/2). Faint smooth to some distorted and broken laminae. Very badly broken up and mixed up. Some natural fracture surfaces with fairly common very fine pyrite. True length doubtful.
1492.8	1493.9	Oil shale: medium to light and some dark brownish gray and brown (10YR 4/2-6/2, some 3/2-2/2, and 4/3-6/3, rare 7/2). Faint smooth laminae and some moderately distinct streaked bedding. Smooth to some very irregular, thick to thin parting; very irregular fracture. Common fairly tight high angle natural fractures. A 2-inch buff earthy porous crushed zone near top.
1493.9	1495.0	Oil shale: medium brown to dark brownish gray and rare black (10YR & 7.5YR 4/3-3/2, some 5/3 & 2/2, rare 1/2); rare satiny to resinous luster. Moderately distinct very distorted to fairly smooth streaked bedding. Slightly irregular thick parting; slightly irregular fracture.
1495.0	1496.0	Oil shale: dark brownish gray to black (7.5YR 3/2-1/2); some satiny to resinous luster. Faint to very faint, smooth to slightly distorted streaked bedding and laminae. Regular to some very irregular, thin to thick shaly parting; very irregular to some hackly fracture. Some very irregular natural (?) fractures. Lower part badly broken up and mixed up; true length doubtful.
1496.0	1498.0	Oil shale: medium to dark brownish gray, rare tan and black (10YR 5/2-3/2, rare 6/3 & 2/2-1/2); rare resinous luster. Distinct to some faint fairly smooth laminae; common fine to small loop structures and displacements. Regular to some very irregular, thick to medium parting; irregular fracture. Some very irregular natural fractures with very fine disseminated pyrite.

Illustration No. SBR-4003P (Sheet 58 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1498.0	1499.0	Oil shale: medium to dark brownish gray and some brown (10YR 4/2-3/2, some 4/3, rare 5/2 & 2/2). Faint fairly smooth laminae; common fine to small loop structures. Regular to some irregular, thick to medium parting; irregular fracture. Some natural fractures with very fine pyrite. Rare fine buff to tan porous silty-textured streaks and lenses.
1499.0	1501.0	Oil shale: medium to dark brownish gray and some tan to buff (10YR 4/2-2/2, some 5/2-7/2). Faint smooth laminae. Badly broken up and mixed up. Common natural fracture surfaces with rare very fine pyrite. True length doubtful.
1501.0	1505.1	Marlstone: buff and rare medium brownish gray (10YR 8/2, some 7/2, rare 6/2-4/2). Very faint and rare distinct smooth laminae and streaked bedding. Very badly broken up and mixed up; few pieces larger than 2 inches. Fairly common fracture surfaces with very fine pyrite. Some oil shale mixed into upper part. True length very doubtful. [Sample of marlstone from 1503 to 1504 feet: X-ray - analcite, dolomite, feldspar, ferroan, quartz?
1505.1	1507.3	Oil shale: medium to light and rare dark brownish gray, some buff (10YR 4/2-6/2, some 7/2, rare 3/2). Faint to some moderately distinct smooth laminae and streaked bedding. Irregular to some regular, thick to medium parting; irregular fracture. Some natural fractures with rare fine pyrite. Middle part very badly broken up and mixed up; true length doubtful.
1507.3	1508.6	Oil shale: dark and some medium brownish gray (10YR & 7.5YR 3/2-2/2, some 4/2, rare 5/2). Moderately distinct to very faint, fairly smooth streaked bedding to contorted streaks and stringers; some loop structures in upper part. Slightly irregular to very irregular, thick parting; irregular fracture. Rare very fine buff crystalline streaks. Some fairly tight natural high angle fractures with rare pyrite in lower part.
1508.6	1509.6	Oil shale: dark brownish gray to some medium brown and black (7.5YR & 10YR 2/2-3/2, some 4/3 & 1/2); some satiny to resinous luster. Very faint to moderately distinct smooth laminae; common fine loop structures in lower part. Slightly irregular thin to thick shaly parting; slightly irregular and rare hackly fracture. A natural high angle fracture with some very fine pyrite in upper part.

Illustration No. SBR-4003P (Sheet 59 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1509.6	1511.2	Oil shale: dark brownish gray to some tan, rare black and buff (10YR 2/2-5/3, some 6/3, rare 1/2 & 7/2). Very distinct smooth laminae with common fine loop structures and displacements from top to 1510.5 feet; very faintly bedded medium brown oil shale from 1510.5 to 1510.9 feet; moderately distinct distorted laminae in lower part. Fairly regular thick parting and slightly irregular fracture in upper part; very irregular parting and fracture in lower part. Common very fine gray pyritic streaks in upper part. Some natural fractures with rare pyrite in lower part. A small massive brown to tan lens with common very fine black spots near base. { Sample of distinctly laminated shale with very fine gray streaks from 1509.8 feet: X-ray - dolomite, analcite, feldspar, pyrite, quartz?
1511.2	1511.9	Marlstone and oil shale: buff-white to medium brown (10YR 9/2-5/3). Very faint to moderately distinct, contorted and broken to fairly smooth laminae. Very irregular parting and fracture. Very common very irregular natural fractures with some very fine pyrite. Irregular mixed up core pieces; true length doubtful.
1511.9	1512.8	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2). Very faint slightly distorted to smooth streaked bedding. Irregular thick parting; slightly irregular to conchoidal fracture. A few small empty vugs at 1512.2 feet. Some medium to high angle natural fractures with rare pyrite in middle part.
1512.8	1513.5	Oil shale: very dark brownish gray to rare black (10YR & 7.5YR 2/2, some 3/2, rare 1/2); some satiny to rare resinous luster. Very faint smooth laminae and streaked bedding. Slightly irregular thick parting; irregular to slightly conchoidal fracture. Rare fine buff crystalline streaks. Some irregular natural fractures with very rare pyrite. Some fine hackly crystal casts at 1513.4 feet.
1513.5	1514.3	Oil shale: dark brownish gray (10YR 3/2). Very faint smooth bedding to massive. Very irregular parting and fracture. Common natural fractures with some very fine pyrite. Very dense and hard.

Illustration No. SBR-4003P (Sheet 60 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of very dense hard oil shale from 1514.1 feet:
1514.3	1515.4	X-ray - dolomite, quartz, analcite, feldspar Oil shale: very dark brownish gray to rare black (10YR & 7.5YR 2/2, some 3/2, rare 1/2); common satiny luster. Very faint smooth to distorted and wavy laminae; common fine loop structures and displacements. Very irregular parting and fracture. Some natural fractures with rare pyrite.
1515.4	1516.4	Oil shale: dark brownish gray and rare black (7.5YR 3/2-2/2, rare 1/2); some satiny luster in upper part. Very faint fairly smooth to some distorted laminae and streaked bedding. Irregular parting and fracture. Some to common irregular natural fractures with rare very fine pyrite.
1516.4	1517.4	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-2/2). Fractured to brecciated and crushed. Rare very fine pyrite on fracture surfaces. Very badly broken up and mixed up; true length very doubtful.
1517.4	1520.5	Oil shale: medium brown to buff and rare dark brownish gray (10YR & 7.5YR 5/3-8/2, some 4/3, rare 3/2). Very faint distorted and broken bedding. Very irregular parting and fracture. <u>Very</u> common natural fractures and earthy crushed zones. Some parts very badly broken up and mixed up; true length doubtful.
1520.5	1521.5	Oil shale: medium brownish gray to buff (10YR & 2.5Y 4/2-8/2). Fairly distinct very distorted and broken laminae, stringers, and streaks. Very irregular parting and fracture. <u>Very</u> common tight natural fractures--some with very fine slickensides.
		Sample of brownish gray to buff fractured shale from 1520.9 feet:
1521.5	1524.3	X-ray - dolomite, quartz, ferroan, analcite, feldspar Oil shale: medium brown to dark brownish gray, some black in lower part (7.5YR 4/3-2/2, some 1/2); some satiny luster in upper part; common satiny to resinous luster in lower part. Faint to moderately distinct, smooth to slightly distorted streaked bedding. Regular to some very irregular thick parting; slightly irregular to slight hackly fracture. Common <u>very fine cavities</u> and earthy porous streaks. Some very fine disseminated pyrite. Rare small dense brownish gray to brown lenses. Some fractured to brecciated shale in lower part.

Illustration No. SBR-4003P (Sheet 61 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of dark porous shale with very fine disseminated pyrite from 1522.7 feet: X-ray - feldspar, dolomite, quartz, pyrite, ferroan, illite
1524.3	1525.3	Oil shale: medium brown and rare dark brownish gray to tan (10YR 4/3-6/3, rare 3/2). Fairly distinct smooth laminae; common fine loop structures and displacements. Smooth to very irregular, thin to thick parting; very irregular fracture. Common natural fractures with rare chalky white coatings. Some brecciated shale near top. Badly broken up and mixed up; true length doubtful.
1525.3	1526.4	Oil shale: medium brown and rare tan to dark brownish gray (7.5YR & 10YR 5/3-3/2, rare 6/3 upper part, rare 2/2 lower part). Fairly distinct smooth laminae; common fine to small loop structures. Slightly irregular thick parting; slightly irregular fracture. Rare tight natural fractures.
1526.4	1527.4	Oil shale: dark brownish gray to brown and rare tan to buff (7.5YR 3/2-5/3, rare 6/3-7/2). Faint and rare distinct smooth laminae; some fine to small loop structures. Regular to irregular, thin to thick parting; irregular fracture. Some natural fractures with very slight chalky coatings. Upper part badly broken up and mixed up; true length doubtful.
1527.4	1529.4	Oil shale: dark to medium brownish gray and brown (7.5YR & 10YR 3/2-4/2 & 4/3, rare 2/2). Faint smooth laminae; rare fine loop structures. Smooth to very irregular thick parting; irregular to slightly conchoidal fracture. Several natural high angle fractures with patchy buff coatings and rare very fine pyrite.
1529.4	1531.1	Oil shale: dark brownish gray to medium brown and some tan (10YR 3/2-5/2 & 5/3, some 6/3). Moderately distinct smooth laminae. Very badly broken up and mixed up. Very common natural fracture surfaces with rare very fine pyrite. True length very doubtful.
1531.1	1531.4	Missing.
1531.4	1537.0	Oil shale: medium to dark brownish gray (10YR 4/2-3/2). Very faint smooth laminae and streaked bedding. Very badly broken up and mixed up; some very smooth thin shaly parting. Very common natural fracture surfaces with rare to common very fine pyrite. Some buff marlstone mixed through upper part. True length very doubtful.

Illustration No. SBR-4003P (Sheet 62 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1537.0	1538.0	Oil shale: medium brown to dark brownish gray (10YR & 7.5YR 4/3-2/2). Moderately distinct smooth laminae; very common fine loop structures and displacements. Irregular parting and fracture. Common natural fractures with very rare pyrite.
1538.0	1538.9	Oil shale: dark brownish gray to black (7.5YR 3/2-1/2); some satiny to rare resinous luster. Very faint smooth laminae and streaked bedding; some fine loop structures. Very irregular to slightly irregular, thick to medium parting; irregular fracture to very badly broken up and mixed up. Some natural fractures in upper part; some brecciated shale with earthy buff coatings in lower part. True length very doubtful.
1538.9	1544.5	Missing.
1544.5	1546.2	Oil shale: medium to dark brownish gray (10YR 5/2-3/2, rare 2/2). Moderately distinct distorted to contorted streaked bedding. Irregular parting and fracture. Common very irregular discontinuous fairly tight to open natural fractures with rare very fine pyrite. Some very small dense brown to gray pyritic lenses.
1546.2	1547.5	Oil shale: medium brownish gray and brown (10YR 4/2-5/2 & 5/3). Faint fairly smooth laminae; some fine loop structures. Regular to some irregular, thick to medium parting; slightly irregular and rare coarse hackly fracture. Some natural fractures to brecciated shale with very fine pyrite.
1547.5	1548.5	Oil shale: medium to rare dark brownish gray and brown (10YR 5/2 & 5/3-4/3, rare 3/2). Faint to moderately distinct, fairly smooth to distorted and wavy laminae. Irregular thick to thin wavy parting; very irregular to coarse hackly fracture. Common natural fractures with pyrite.
1548.5	1555.8	Oil shale: medium to dark brownish gray and brown, rare tan to buff (10YR 5/2 & 5/3-3/2, rare 6/3-7/2). Faint to moderately distinct smooth laminae and streaked bedding. Very badly broken up and mixed up. Very common natural fracture surfaces with rare to common very fine pyrite. True length very doubtful.
1555.8	1557.8	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2, rare 2/2). Faint smooth laminae; some fine loop structures. Very irregular to slightly irregular thick parting; irregular to slightly conchoidal fracture. Common natural fractures with very fine pyrite in upper part. Some irregular mixed up core pieces in upper part; true length doubtful.

Illustration No. SBR-4003P (Sheet 63 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1557.8	1558.8	Oil shale: medium to dark brown and brownish gray, rare tan to buff (7.5YR & 10YR 4/3 & 4/2-3/2, rare 5/3-7/2 lower part). Moderately distinct to faint smooth laminae. Slightly irregular to very irregular, thick to medium parting; fairly smooth to very irregular fracture. Common natural fractures with pyrite in lower part. Lower part badly broken up and mixed up; true length doubtful.
		{ Sample of oil shale from 1557.9 feet: X-ray - feldspar, dolomite, pyrite, illite
1558.8	1560.8	Oil shale: medium to dark brownish gray and some brown (10YR 5/2-3/2, some 5/3-4/3). Faint to fairly distinct smooth laminae; some fine loop structures. Irregular core pieces to very badly broken up and mixed up. Common fracture surfaces with very fine pyrite. True length very doubtful.
1560.8	1561.9	Oil shale: medium to dark brownish gray and brown (7.5YR & 10YR 4/2 & 4/3-3/2, rare 5/2-5/3). Faint smooth laminae; common fine loop structures and displacements. Slightly irregular thick parting; slightly conchoidal to irregular fracture. A fairly smooth diagonal fracture with very fine pyrite in upper part. Rare very fine gray pyritic streaks.
1561.9	1563.9	Oil shale: medium to dark brownish gray and brown, rare tan in upper part (7.5YR & 10YR 5/2 & 5/3-3/2, rare 6/3), some olive gray near base (2.5Y & 5Y 5/2-4/2). Moderately distinct smooth laminae to very faint streaked bedding; common fine loop structures in laminated parts; some irregular 1/2-inch displacements at 1563.1 feet. Some natural fractures with very fine pyrite.
		{ Sample of olive gray oil shale from 1563.8 feet: X-ray - feldspar, dolomite, pyrite, calcite?, quartz?
1563.9	1566.9	Oil shale: medium brown to tan and some buff, some dark brownish gray in upper half (10YR & 7.5YR 4/3-6/3, some 7/2-8/1 & 3/2). Faint to some very distinct, distorted to contorted and displaced streaks, stringers, and laminae. Very irregular parting and fracture. Light parts are very porous and earthy. Common fractured to finely crushed zones with rare very fine pyrite; some zones are slightly bleached. Good core; length reliable.

Illustration No. SBR-4003P (Sheet 64 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1566.9	1568.0	Oil shale: medium brownish gray and brown to rare tan (10YR & 2.5Y 4/2 & 4/3-5/2 & 5/3, rare 6/3). Faint smooth streaked bedding. Regular to some very irregular, thin to thick parting; hackly to irregular fracture. Common very fine disseminated pyrite. Some earthy porous shale. Common irregular high angle fractures with some fine slickensides in lower part.
1568.0	1569.3	Oil shale: medium brownish gray (10YR & 2.5Y 4/2-5/2). Very faint smooth streaked bedding. Very irregular parting and fracture; lower part badly broken up and mixed up. Common irregular natural high angle fractures with some very fine slickensides and rare pyrite. True length doubtful.
1569.3	1569.7	Missing.
1569.7	1571.3	Oil shale: medium and rare dark brownish gray (10YR & 2.5Y 4/2-5/2, rare 3/2 upper part). Very faint broken and displaced to smooth laminae and streaked bedding. Very irregular to slightly irregular thick parting; very irregular to fairly smooth fracture. Some very fine gray pyritic (?) streaks. Very common irregular natural fractures in upper part; some in lower part. Some irregular mixed up core pieces in upper part; true length doubtful. Sample of oil shale with fine gray streaks 1571.0 feet: X-ray - feldspar, analcite, dolomite, pyrite, illite
1571.3	1573.8	Oil shale: medium brownish gray and brown to tan and rare dark brownish gray (10YR & 2.5Y 5/2 & 5/3-6/2 & 6/3, rare 4/2-3/2). Moderately distinct to faint smooth laminae; some fine loop structures. Very irregular parting and fracture. Common natural fractures with very fine pyrite. A 3-inch zone of porous brecciated to finely crushed buff earthy shale at 1573.3 feet; laminae very distorted above and below. Common <u>very</u> fine dark gray specks. Common irregular mixed up core pieces; true length doubtful.
1573.8	1574.8	Oil shale: medium to dark brownish gray (10YR & 2.5Y 4/2-3/2, some 5/2 upper part, rare 2/2); rare satiny luster. Moderately distinct to very faint, smooth to slightly distorted laminae and streaked bedding. Some fine loop structures and displacements. Slightly irregular to very irregular, medium to thick parting; irregular to fairly smooth fracture. Some irregular natural fractures with very rare pyrite.

Illustration No. SBR-4003P (Sheet 65 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1574.8	1575.8	Oil shale: medium brown to dark brownish gray (10YR & 2.5Y 5/3-3/2). Faint to moderately distinct smooth laminae; common irregular displacements in lower part. Very irregular parting and fracture. Very common irregular high angle fractures with slight buff earthy coatings and very rare pyrite. Rare very fine gray pyritic (?) streaks.
1575.8	1577.8	Oil shale: medium to dark brownish gray and brown (10YR & 2.5Y 4/2 & 4/3-3/2, some 2/2). Very faint to moderately distinct, smooth to some distorted laminae and streaked bedding; very common small and rare large loop structures and displacements. Smooth to some irregular thick parting; slightly irregular to irregular and conchoidal fracture. Rare natural fractures with very fine slickensides. Common fine buff-white porous crystalline blebs near base. [Sample of oil shale with white crystalline blebs from 1577.8 feet: X-ray - feldspar, dolomite, calcite
1577.8	1581.5	Marlstone: very light buff to some light brownish gray (10YR & 7.5 YR 8/2 & 8/1-7/2, some 6/2-6/1). Very faint bedding. Very badly fractured; some crumbly. Rare medium brownish gray oil shale with common fine white chalky to crystalline blebs. Very badly broken up and mixed up; true length very doubtful. [Sample of crumbly fractured marlstone from 1578.5 feet: X-ray - feldspar, dolomite, calcite, quartz, pyrite
1581.5	1583.8	Oil shale: medium brownish gray to buff (2.5Y & 10YR 5/2-7/2, rare 4/2). Faint smooth to contorted and broken laminae and streaked bedding. Slightly irregular to very irregular, medium to thick parting; irregular fracture. Very common fine white crystalline specks and streaks to rare small patches. Some brecciated jumbled shale in lower part.
1583.8	1585.0	Oil shale breccia: medium to light brownish gray (2.5Y 5/2-6/2). Very faintly bedded fractured to jumbled fragments. Some very small fine grained pyrite blebs. Rare fine tan silty-textured streaks.

Illustration No. SBR-4003P (Sheet 66 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1585.0	1586.0	Oil shale: medium to rare dark brownish gray, some light brownish gray to tan in upper part (2.5Y 5/2-4/2, some 6/2-6/3, rare 3/2). Faint contorted and broken to smooth streaked bedding. Very irregular parting and fracture. Some very fine black acicular flecks. Rare fine tan earthy streaks and stringers. Very irregular mixed up core pieces; true length doubtful.
1586.0	1586.8	Oil shale: medium brownish gray (2.5Y & 10YR 4/2-5/2). Very faint smooth streaked bedding and some laminae. Smooth to some irregular, medium to thin shaly parting; very coarse hackly fracture. Some fine neutral gray to black streaks and laminae. Some natural fractures with rare pyrite.
		Sample of oil shale from 1586.2 feet: X-ray - feldspar, dolomite, pyrite, illite
1586.8	1588.1	Oil shale: medium to light brownish gray (10YR & 2.5Y 5/2-6/2, rare 4/2 upper part). Very faint smooth bedding. Regular thick parting; irregular fracture. Very common fine white to buff porous crystalline specks. Some very fine pyrite.
1588.1	1591.0	Marlstone and oil shale: buff to medium brownish gray (10YR & 2.5Y 7/2-5/2, very rare 4/2). Very faint distorted to contorted and broken bedding. Very badly fractured. Common fine white crystalline blebs. Badly broken up and mixed up; true length doubtful.
1591.0	1592.0	Oil shale: buff to medium brownish gray and brown (10YR & 2.5Y 7/2-4/2 & 4/3). Faint slightly distorted to smooth streaked bedding and some laminae; rare fine loop structures and displacements. Slightly irregular thick parting; irregular fracture. Very common fine buff to white crystalline specks.
1592.0	1594.0	Oil shale: medium and rare dark brownish gray and brown to some tan (2.5Y & 10YR 4/2 & 4/3-5/2 & 5/3, some 6/3, rare 3/2). Faint to some moderately distinct, smooth to distorted and displaced laminae. Very smooth to some irregular thick parting; irregular fracture. Common buff to white, crystalline to chalky specks and small patches. Some neutral gray laminae and streaks. Lower part badly broken up and mixed up; true length doubtful.

Illustration No. SBR-4003P (Sheet 67 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1594.0	1595.0	Oil shale: medium to dark brownish gray; some medium brown to tan in middle part (2.5Y & 10YR 4/2-3/2, some 5/3-6/3). Very faint smooth to distorted and displaced laminae and streaked bedding. Fairly smooth to very irregular, medium to thick parting; irregular to conchoidal fracture. Distorted shale in middle part appears to be bleached.
1595.0	1597.5	Oil shale: medium to rare dark olive gray (5Y 4/2 & 4/1-5/2 & 5/1, rare 3/2). Very faint smooth streaked bedding and some laminae. Irregular thick to medium parting; irregular fracture. Fairly common natural high angle fractures--some very tight.
1597.5	1598.7	Sample of olive gray oil shale from 1596.3 feet: X-ray - dolomite, feldspar, quartz, pyrite Oil shale: medium to light olive gray and brownish gray, rare tan (5Y & 2.5Y 4/2 & 4/1-6/2, rare 6/3). Very faint smooth to distorted and broken streaked bedding. Badly broken up and mixed up. Common irregular natural fractures to some brecciated shale. Some fine cavities to <u>small vugs</u> with radiating box-works and rare pyrite. True length doubtful.
1598.7	1601.3	Oil shale: medium to dark olive gray and some brownish gray (5Y 4/1 & 4/2-3/1 & 3/2, some 2.5Y 3/2 lower part).. Very faint smooth bedding and rare laminae. Slightly irregular to very irregular, thin to thick parting; irregular fracture. Rare to common very fine buff earthy streaks. Some natural (?) diagonal fractures.
1601.3	1604.5	Oil shale and marlstone: medium brownish gray and brown to buff and gray-buff (2.5Y 4/2 & 4/3-7/2 & 7/1, rare 8/1). Very faint smooth to some distorted laminae and streaked bedding. Slightly irregular to very irregular thick parting; irregular fracture. Common fine buff to white, earthy to crystals specks and rare small irregular patches. A thin broken tan to buff tuff (?) stringer with some fine black pyritic blebs at 1601.4 feet.
1604.5	1606.0	Oil shale: medium to dark brownish gray and olive gray (2.5Y & 5Y 4/2 & 4/1-3/2 & 3/1). Very faint smooth streaked bedding. Irregular parting and fracture. Very common very fine yellowish buff earthy streaks and blebs.

Illustration No. SBR-4003P (Sheet 68 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1606.0	1608.0	Oil shale: medium to dark olive gray and brownish gray, rare tan to buff (5Y & 2.5Y 5/1 & 5/2-3/1 & 3/2, rare 6/3-7/2). Very faint smooth streaked bedding and rare laminae. Very badly broken up and mixed up. Common very fine cavities and buff earthy streaks and blebs. True length very doubtful.
1608.0	1610.0	Oil shale and marlstone: medium to light olive gray and brownish gray, some buff lower part (5Y & 2.5Y 4/2-6/2, some 7/2-8/2). Fractured shale with very faint distorted and displaced streaked bedding in upper part grading to brecciated and jumbled oil shale and marlstone in lower part. Very irregular parting and fracture.
1610.0	1613.8	Marlstone: buff to gray-buff (2.5Y & 5Y 8/2 & 8/1-7/2 & 7/1), slightly calcareous, earthy. Massive to very faint distorted bedding; some marlstone breccia near top. Very badly broken up and mixed up. Some thin gray stringers in middle part. Some light to medium olive gray oil shale near base; rare oil-shale fragments in other parts. True length very doubtful.
1613.8	1621.0	<p>Sample of massive buff mudstone from 1610.7 feet: X-ray - dolomite, feldspar, quartz, pyrite.</p> <p>Oil shale: medium to dark and rare light olive gray and brownish gray (5Y & 2.5Y 4/1 & 4/2-3/1 & 3/2, rare 6/1-6/2; some almost neutral gray). Very faint smooth to contorted and brecciated streaked bedding. Very badly broken up and mixed up. Common fine buff earthy streaks. True length very doubtful.</p>
1621.0	1623.0	Oil shale and mudstone: medium brownish gray to buff (2.5Y 5/2-8/2). Very faint smooth streaked bedding and rare laminae to brecciated. Badly broken up and mixed up; true length doubtful.
1623.0	1625.0	Oil shale: medium to dark olive gray and some buff (5Y 5/2 & 5/1-3/2 & 3/1, some 6/2-8/2 upper part). Very faint smooth to distorted streaked bedding and some laminae. Very irregular thick to thin parting; very irregular to some hackly fracture. Common very fine buff earthy spots and some very fine cavities. Some irregular mixed up core pieces; true length doubtful.

Illustration No. SBR-4003P (Sheet 69 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from ZuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1625.0	1629.2	Oil shale: medium to dark olive gray (5Y 5/2 & 5/1-3/2 & 3/1). Very faint smooth to some distorted and displaced laminae and streaked bedding. Very irregular parting and fracture; some parts badly broken up and mixed up. Very common fine white disseminated crystals in some parts. True length doubtful. Sample of dark olive gray oil shale with common fine white crystals from 1625.9 feet: X-ray - dolomite, feldspar, calcite, quartz, pyrite
1629.2	1632.2	Mudstone, marlstone, and some oil shale: buff to some medium olive gray and brownish gray (5Y & 2.5Y 8/2-6/2 & 6/1, some 5/2-5/1). Very faint fairly smooth to distorted and displaced streaked bedding. Very irregular parting and fracture. Common very fine buff to white specks and <u>very fine cavities</u> in some parts. Some parts badly broken up and mixed up; true length doubtful.
1632.2	1634.9	Mudstone: buff and gray-buff (5Y 8/2 & 8/1-7/2 & 7/1). Massive to faint distorted and displaced streaks and stringers. Very badly broken up and mixed up. Some neutral gray streaks and stringers. True length very doubtful.
1634.9	1638.3	Missing.
1638.3	1642.0	Oil shale: dark to rare medium olive gray (5Y 3/2-3/1, rare 4/1-5/1). Very faint smooth streaked bedding and some laminae. Very badly broken up and mixed up; some irregular thin shaly parting. Common fine buff to orangish tan earthy porous blebs in some parts. Common very fine white disseminated crystals near base (like 1625.9 feet). True length very doubtful.
1642.0	1645.0	Oil shale: dark to medium and rare light olive gray (5Y 3/1-5/1, rare 6/1; commonly almost neutral gray). Contorted and displaced streaks and stringers to some jumbled breccia. Very irregular parting and fracture; some parts badly broken up and mixed up. Common very fine disseminated white crystals. Some very irregular tan to buff earthy stringers and inclusions. True length doubtful.
1645.0	1649.9	Mudstone, marlstone, and oil shale: buff and gray-buff to medium brownish gray and brown (2.5Y 8/2 & 8/1-5/2 & 5/3). Very faint contorted and displaced to some slightly distorted streaks, stringers, and rare laminae. Very irregular parting and fracture. Some parts badly broken up and mixed up. Common <u>very fine cavities</u> in some parts. True length doubtful.

Illustration No. SBR-4003P (Sheet 70 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of gray-buff mudstone from 1648.3 feet: X-ray - dolomite, feldspar, quartz, pyrite
1649.9	1655.2	Oil shale: medium to dark olive gray and rare brown to buff (5Y 5/1 & 5/2-3/1 & 3/2, rare 2.5Y 4/3-7/2). Very faint contorted and displaced streaked bedding to some faint smooth laminae. Very badly broken up and mixed up. Some very fine buff earthy streaks. True length very doubtful.
1655.2	1657.4	Mudstone and some oil shale: buff-white to yellowish tan and some medium to dark olive gray (5Y 9/2-6/3, some 5/2-3/2). Coarse jumbled breccia to massive. Very badly broken up and mixed up; true length doubtful.
1657.4	1660.1	Missing.
1660.1	1663.0	Oil shale: medium to dark olive gray and rare brownish gray (5Y 4/2 & 4/1-3/1, rare 2.5Y 4/2). Very faint contorted and displaced to fairly smooth streaked bedding. Very badly broken up and mixed up; some thin shaly parting. Some very fine yellowish buff earthy streaks. A <u>large irregular vug</u> with flat platy boxworks near top. True length very doubtful.
1663.0	1665.0	Oil shale: medium to light brownish gray and tan in upper part (2.5 5/2-6/2 & 6/3), medium to dark neutral gray and some brownish gray in lower part (5-3N, some 2.5Y 4/2-3/2). Brecciated to crushed shale in upper part; fractured and displaced faintly laminated shale in lower part. Very irregular parting and fracture; some parts very badly broken up and mixed up. Very common <u>very fine cavities</u> . True length very doubtful.
1665.0	1668.0	Oil shale: medium to dark gray and olive gray (5-3N and 5Y 5/1-3/1), rare dark brownish gray to tan (2.5Y 3/2-6/3). Very faint distorted to smooth bedding; some faint smooth laminae in lower part. Very irregular parting and fracture. Very common very fine chalky white speck and <u>very fine cavities</u> . Common fairly tight natural fractures near base.
1668.0	1671.2	Oil shale, marlstone, and mudstone: medium brownish gray to buff-white (2.5Y 5/2-9/2) and some medium olive gray (5Y 4/1-5/1; almost neutral). Faint smooth laminae and streaked bedding near top; very faint distorted and displaced to brecciated and jumbled bedding in other parts. Very badly broken up and mixed up; true length very doubtful.

Illustration No. SBR-4003P (Sheet 71 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1671.2	1673.0	Missing.
1673.0	1676.0	Oil shale: medium to dark olive gray (5Y 4/1-3/1; almost neutral) and medium brownish gray to tan and buff (2.5Y 4/2-6/3 & 7/2). Very faint distorted to fairly smooth streaked bedding. Very badly broken up and mixed up. Some fractured to porous earthy crushed shale. Some very fine buff-white earthy streaks. True length very doubtful. Sample of olive gray shale with fine buff-white streaks from 1673.9 feet: X-ray - feldspar, dolomite, ferroan, pyrite, illite
1676.0	1679.8	Oil shale: dark brownish gray to medium brown and some tan to buff (2.5Y 3/2-5/3, some 6/3-7/2 near top; some slight olive tint in middle part). Contorted to brecciated and jumbled bedding in upper and lower parts; faint distorted streaked bedding in middle part (inclined 20-40°). Very irregular parting and fracture. Common very fine buff earthy streaks in some parts. Sample of dark brownish gray oil shale from 1676.9 feet: X-ray - dolomite, feldspar, quartz, pyrite
1679.8	1685.4	Mudstone and marlstone: medium olive gray to gray-buff and buff (5Y 5/1-8/1 & 8/2, some 5/2 upper part; some almost neutral). Very faint distorted and displaced to brecciated and jumbled bedding. Very irregular parting and fracture. Common fine white earthy specks and streaks in some parts. Some parts very badly broken up and mixed up; true length very doubtful.
1685.4	1692.6	Missing.
1692.6	1694.0	Oil shale: dark brownish gray (2.5Y 3/2, rare 3/1). Very faint fractured and displaced to brecciated and jumbled bedding. Very irregular parting and fracture. Common fine buff earthy streaks and blebs.
1694.0	1695.3	Oil shale: very dark brownish gray and rare black (2.5Y & 10YR 2/2, some 3/2, rare 1/2); some very slight satiny luster. Very faint distorted and displaced to brecciated and jumbled streaked bedding. Slightly irregular to very irregular thick parting; hackly to very irregular fracture. Some resinous black organic material in breccia in lower part (peculiar odor).

Illustration No. SBR-4003P (Sheet 72 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1695.3	1700.0	<p>Sample of very dark brownish gray shale from 1694.1 feet: X-ray - feldspar, dolomite, pyrite Oil shale (?): medium to light brownish gray and some buff (2.5Y 5/2 & 5/1-6/2 & 6/1, some 7/2 lower part; some slight olive tint). Very faint slightly distorted and commonly displaced bedding in upper and lower parts to brecciated and jumbled in middle part. Very irregular to some slightly irregular thick parting; very irregular fracture. Common <u>very fine cavities</u> and white earthy to crystalline specks in upper and lower parts. Rare fine orangish tan to buff porous streaks in upper part.</p>
1700.0	1702.3	<p>Marlstone and rare oil shale: very light buff to light and rare medium brownish gray (2.5Y & 10YR 8/2-6/2 & 6/1, rare 5/2-5/1). Very faint slightly distorted to contorted and displaced bedding. Very badly broken up and mixed up; true length doubtful.</p>
1702.3	1704.4	<p>Oil shale and some marlstone: medium brown to buff (10YR 5/3-7/2, some 8/2 upper part, rare 4/3). Very faint distorted to rare brecciated bedding. Very irregular parting and fracture; middle part badly broken up and mixed up. Very common <u>very fine cavities</u>. Rare <u>very fine pyrite</u>. True length doubtful.</p>
1704.4	1706.8	<p>Sample of brown to tan porous oil shale from 1703.9 feet: X-ray - dolomite, quartz, feldspar, magnesite Oil shale: dark brownish gray (10YR & 7.5YR 3/2-2/2); rare very slight satiny luster. Very faint smooth to slightly distorted streaked bedding; some fractured and displaced near base. Very irregular to slightly irregular thick parting; irregular to some hackly fracture. Rare <u>small vugs</u> with irregular to radiating boxworks and orange limonite stains. Some fine to thin, buff-white to pale yellow, earthy to very fine crystalline streaks and blebs. Some <u>very fine disseminated crystals</u>.</p>
		<p>Sample of dark brownish gray shale with very fine disseminated crystals from 1705.5 feet: X-ray - dolomite, feldspar, quartz, pyrite, magnesite</p>
		<p>Sample of <u>very fine</u> grained pale yellow porous friable crystalline streak from 1706.4 feet: X-ray - <u>magnesite</u></p>

Illustration No. SBR-4003P (Sheet 73 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1706.8	1708.4	Oil shale: medium brown to tan and some buff, some medium brownish gray in upper part (10YR 4/3-6/3, some 4/2-5/2 & 7/2). Very faint distorted and displaced bedding. Irregular thick parting; irregular fracture. Very common <u>fine collapsed cavities</u> with some black pyritic blebs.
1708.4	1709.5	Oil shale: medium brown and brownish gray to buff (10YR 5/3 & 5/2-7/2; some 8/2 middle part). Very faint distorted and displaced to fairly smooth streaked bedding. Irregular parting and fracture; middle part badly broken up and mixed up. Common <u>fine collapsed cavities</u> with black pyritic blebs. True length doubtful.
1709.5	1714.0	Oil shale: dark brownish gray (10YR & 7.5YR 3/2-2/2); some very slight satiny luster. Very faint smooth to distorted streaked bedding. Slightly irregular to irregular thick parting; slightly irregular fracture. Some <u>large empty nahcolite vugs</u> with limonite stained boxworks. Rare fine vitreous black organic streaks. <div style="margin-left: 2em;">Sample of oil shale from 1711.7 feet: X-ray - feldspar, dolomite, quartz, pyrite, ferroan</div>
1714.0	1715.5	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-2/2, some 5/2). Very faint smooth to slightly distorted streaked bedding. Very irregular to some regular, thick to medium parting; very irregular to slightly irregular fracture. Common irregular natural fractures to brecciated and crushed shale in upper part. A few moderately large empty nahcolite vugs in lower part.
1715.5	1721.2	Oil shale: medium to light brownish gray and tan (10YR & 2.5Y 5/2-6/2 & 6/3, rare 4/2). Faint smooth laminae and streaks. Very irregular to rare regular, thick to medium parting; very irregular fracture. Common high angle fractures with chalky white coatings. Very badly broken up and mixed up; true length doubtful. (1717.0-1720.2 missing.)
1721.2	1722.5	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2, very rare 2/2); rare fine resinous stringers and streaks. Very faint smooth to slightly distorted streaked bedding. Slightly irregular to very irregular thick parting; slightly irregular to conchoidal fracture. Some very thin porous zones with pyrite in upper part. Some very small pyrite blebs in middle part. Some <u>small empty nahcolite vugs</u> and vuggy fractured zones in middle and lower parts.

Illustration No. SBR-4003P (Sheet 74 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1722.5	1723.5	Oil shale: medium to dark brownish gray (10YR & 7.5YR 5/2-3/2). Very faint streaked bedding. Fractured to brecciated. Very badly broken up and mixed up; true length doubtful.
1723.5	1724.2	Oil shale: medium brownish gray to black (10YR & 7.5YR 4/2-1/2); common resinous luster in lower part. Very faint distorted to fairly smooth streaked bedding and some laminae. Irregular thick to medium parting; very irregular to some coarse hackly fracture. Some fractured to brecciated shale with pyrite in upper part. A few tight vertical fractures in lower part.
1724.2	1725.6	Oil shale: medium brown and brownish gray to tan and buff (10YR 4/3 & 4/2-6/3 & 7/2, rare 8/2). Faint to some distinct, very distorted and displaced streaks, stringers, and rare laminae. Very irregular parting and fracture. Very common very irregular tight fractures with chalky white coatings. Some fine irregular cavities. Tan and buff stringers are commonly porous and silty-textured to earthy. <div style="margin-left: 2em;">Sample of buff silty to earthy stringer from 1725.4 feet: X-ray - dolomite</div>
1725.6	1729.0	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2). Very faint smooth to some distorted streaked bedding. Slightly irregular to irregular thick parting; slightly irregular to conchoidal fracture. A few large to small <u>empty nahcolite vugs</u> . Rare small pyrite blebs. Some fractured to brecciated shale with chalky white fracture coatings in lower part.
1729.0	1730.5	Oil shale: as above. Very badly broken up and mixed up. Very common very fine white to buff chalky specks in lower 0.5 foot. True length doubtful.
1730.5	1731.2	Missing.
1731.2	1733.5	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2). Very faint fairly smooth to distorted streaked bedding. Very irregular thick parting; irregular fracture. Very common very fine white to buff chalky specks. Some <u>large vugs</u> with paper-thin radial boxworks in upper part; rare small vugs in lower part. <div style="margin-left: 2em;">Sample of oil shale with white to buff specks from 1733.3 feet: X-ray - dolomite, quartz, feldspar, pyrite</div>

Illustration No. SBR-4003P (Sheet 75 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1733.5	1735.5	Oil shale: dark to medium brownish gray (7.5YR & 10YR 3/2-4/2). Very faint smooth to some distorted streaked bedding. Irregular thick to medium parting; slightly irregular to rare hackly fracture. Common very fine white to buff specks. <u>Rare small vugs with common pyrite.</u>
1735.5	1739.5	Oil shale: medium to dark and rare light brownish gray (7.5YR & 10YR 4/2-3/2, some 5/2, rare 6/2). Faint smooth to some distorted streaked bedding. Slightly irregular to irregular thick parting; slightly irregular to some very irregular fracture. Very common very fine white to buff specks and some thin buff silty-textured streaks and stringers (like 1725.4 feet). Some irregular fractures and vuggy breccia zones with chalky white coatings. Rare fine pyrite blebs. Sharp irregular contact with richer shale below.
1739.5	1740.5	Oil shale: dark brownish gray in upper part to medium and light brownish gray in lower part (10YR & 7.5YR 3/2-2/2 upper part, 4/2-6/2 lower part). Faint distorted streaked bedding to some mottled. Very irregular parting and fracture. Fractured to brecciated with common chalky white coatings and some <u>fine cavities.</u>
1740.5	1742.0	Oil shale: medium brown and brownish gray to some tan and buff (10YR 4/4 & 4/2-5/4 & 5/2, some 6/3-7/2). Faint distorted to fairly smooth streaked bedding. Very irregular to some regular, thick to medium parting; very irregular fracture. Common irregular natural fractures with chalky white coatings.
1742.0	1745.0	Oil shale: medium to light brownish gray and some buff (10YR 4/2-6/2, some 7/2). Very faint smooth to distorted streaked bedding. Very irregular parting and fracture. Very common white coated fractures and large irregular <u>porous breccia masses</u> with irregular pyrite blebs.
1745.0	1748.0	Oil shale: medium brown to tan and rare buff (10YR 4/4-6/4, some 4/3, rare 7/2-8/2). Very faint fairly smooth streaked bedding and rare laminae. Very irregular thick parting to some regular thin parting; very irregular fracture. Common white coated fractures and <u>vuggy breccia masses.</u>

Illustration No. SBR-4003P (Sheet 76 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1748.0	1751.8	Oil shale: medium brown (10YR 4/3-4/4). <u>Very</u> faint fairly smooth streaked bedding. Irregular thick parting; slightly irregular fracture. Very common fine cavities with buff fillings and some pyrite. [Sample of oil shale from 1748.9 feet: X-ray - quartz, dolomite, feldspar, calcite, pyrite
1751.8	1752.8	Oil shale: medium brown to tan and some buff (10YR 4/3 & 4/4-6/3, some 7/2). Faint slightly distorted to contorted streaked bedding. Irregular thick parting; slightly irregular to very irregular fracture. Common fine cavities with buff to white fillings. Lower half is brecciated to crushed and jumbled.
1752.8	1754.1	Oil shale: medium to some dark brown (10YR 4/4-5/4, some 3/3). Very faint distorted to smooth streaked bedding. Very irregular parting and fracture. Common medium to high angle fractures with chalky white coatings. Common irregular buff to tan earthy porous stringers (crushed shale?). Some irregular vugs with blebby pyrite and yellow-orange stains.
1754.1	1755.8	Oil shale: medium brown and rare tan (10YR 5/4, rare 4/4 & 6/4). Very faint smooth to distorted streaked bedding and rare laminae. Very irregular thick parting; very irregular to conchoidal fracture. Common low to high angle fractures with chalky white coatings. Some thin orange-buff earthy porous stringers. A few very small vugs with pyrite in lower part. [Sample of porous buff stringer from 1755.5 feet: X-ray - dolomite, quartz, feldspar, ferroan [Sample of brown oil shale from 1755.6 feet: X-ray - dolomite, quartz, feldspar, ferroan
1755.8	1757.3	Oil shale: dark to medium brownish gray and brown (10YR & 7.5YR 3/2-4/2 & 4/3, rare 4/4). Very faint distorted to smooth streaked bedding. Very irregular thick parting; very irregular to conchoidal fracture. Some small to large vugs and vuggy fracture zones with black pyritic blebs and yellow-orange stains.
1757.3	1758.0	Missing.
1758.0	1760.8	Oil shale: medium and rare dark brown to tan and buff (10YR & 7.5YR 4/3-6/3 & 7/2, rare 3/3). Fairly distinct contorted to some smooth laminae and streaks. Very irregular thick parting; very irregular to slightly conchoidal fracture. Common brecciated to earthy porous crushed zones.

Illustration No. SBR-4003P (Sheet 77 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of porous crushed shale with black pyritic blebs and yellow-orange stains from 1760.5 feet: X-ray - quartz, dolomite, feldspar, pyrite
1760.8	1761.5	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2). Faint slightly distorted to smooth streaked bedding. Irregular to fairly regular, thick to medium parting; slightly irregular fracture. Common very fine buff to white specks. Some fine pyrite streaks and blebs. Rare thin earthy buff stringers.
1761.5	1762.0	Oil shale: tan to some medium brown and brownish gray (10YR 6/3, some 5/3-5/2). Faint slightly distorted streaks and stringers. Slightly irregular thick parting; slightly irregular fracture.
1762.0	1765.2	Oil shale: medium to dark brownish gray and brown (10YR & 7.5YR 4/2 & 4/3-3/2, rare 5/3). Very faint smooth to slightly distorted streaked bedding. Slightly irregular thick to thin shaly parting; irregular to some coarse hackly fracture. Common very fine buff to white earthy specks. Some thin to fine, light brownish gray to yellowish tan earthy porous stringers and streaks. Some fine pyrite blebs and streaks in upper part. Occasional tight high to low angle fractures with white coatings.
1765.2	1767.7	Oil shale: dark to medium brownish gray and brown (7.5YR & 10YR 3/2-4/2 & 4/3, some 4/4); some very fine resinous streaks. Very faint smooth to some distorted streaked bedding. Slightly irregular to irregular thick parting; slightly irregular fracture. Rare large vugs with blebby pyrite and yellow orange stains. Some badly broken up and mixed up core in lower part.
1767.7	1769.0	Oil shale: dark to medium brownish gray and brown (10YR & 7.5YR 3/2-4/2 & 4/3, rare 4/4); common very fine resinous to waxy streaks in lower part. Very faint smooth streaked bedding. Slightly irregular thick parting; slightly irregular fracture. Rare fine buff crystalline streaks. Some tight diagonal fractures with chalky white coatings in lower part.
1769.0	1770.1	Oil shale: dark to medium brownish gray and brown (7.5YR 3/2-4/2 & 4/3); common satiny to resinous luster. Faint smooth to distorted laminae and streaks. Very irregular parting and fracture. Some natural irregular high angle fractures in upper part to vuggy brecciated shale in lower part. Very irregular core pieces; true length doubtful.

Illustration No. SBR-4003P (Sheet 78 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1770.1	1771.0	Oil shale: medium to light brownish gray and brown (10YR 4/2 & 4/3-6/3). Faint distorted to smooth streaked bedding and some laminae. Very irregular parting and fracture. Common buff to tan earthy porous stringers with broken oil-shale fragments in upper part. Common irregular fractures with chalky white coatings in lower part. Very irregular core pieces; true length doubtful.
1771.0	1772.0	Oil shale: dark to medium brownish gray and brown (10YR 3/2-5/2 & 5/3). Very faint smooth to slightly distorted streaked bedding. Slightly irregular to very irregular thick parting; irregular fracture. Some high angle fractures with chalky white coatings. Some vuggy parting surfaces in lower part. Sample of shale and chalky white coatings scraped from fracture surfaces from 1770.5 to 1771.8 feet:
1772.0	1774.0	X-ray - halloysite, quartz, dolomite, feldspar Oil shale: dark brownish gray (10YR 3/2, some 2/2). Very faint smooth streaked bedding. Slightly irregular thick parting; slightly irregular and very rare coarse hackly fracture. A thin medium to light brownish gray silty-textured stringer with some very fine disseminated pyrite at 1772.9 feet. Rare fine dark gray pyritic streaks and blebs in lower part. Sample of oil shale from 1773.3 feet: X-ray - feldspar, quartz, dolomite, ferroan, pyrite
1774.0	1778.0	Oil shale: dark brownish gray and some dark brown (10YR & 7.5YR 3/2, some 3/3). Very faint smooth streaked bedding. Slightly irregular thick parting; fairly smooth fracture. A 1-inch dark to medium brownish gray, silty textured to very fine crystalline nodule with fine pyrite rims at 1774.5 feet. Rare fine resinous black streaks (gar scales?). Rare fine gray silty-textured streaks and blebs in lower part.
1778.0	1779.3	Oil shale: dark brownish gray (10YR & 7.5YR 3/2). Very faint smooth streaked bedding. Slightly irregular thick parting; slightly irregular fracture. Rare fine resinous to vitreous black streaks. Rare small to fine gray silty-textured blebs.

Illustration No. SBR-4003P (Sheet 79 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of oil shale with very small gray silty-textured blebs from 1778.3 and 1778.7 feet: X-ray - marcasite, pyrite; some quartz, feldspar, dolomite, dawsonite?, calcite?
1779.3	1780.5	Oil shale: dark brownish gray and some dark to rare medium brown (10YR & 7.5YR 3/2-2/2, some 3/3, rare 4/3); common satiny to resinous luster. Very faint to faint smooth streaks and laminae. Very irregular to rare smooth, thick to medium parting; very irregular fracture. Common irregular natural fractures with chalky white coatings. Some irregular masses of brecciated and crushed shale with pyrite.
1780.5	1781.5	Oil shale and some marlstone: dark to medium brownish gray and some buff (10YR 3/2-5/2, rare 2/2 upper part, some 7/2 lower part. Faint smooth laminae to distorted streaked bedding. Very irregular and rare smooth, thick to thin parting; very irregular fracture. Common high to low angle fractures with glossy surfaces and white coatings in upper part. <u>Brecciated shale</u> in middle part. Irregular pieces of marlstone in lower part.
1781.5	1784.2	Oil shale: dark to medium brownish gray (10YR & 7.5YR 3/2-4/2). Very faint smooth to some distorted streaked bedding. Slightly irregular to irregular thick parting; fairly smooth to some irregular fracture. Occasional moderately large vugs with pyrite rims and associated <u>brecciated to crushed shale</u> . Some small pyrite blebs in lower part.
1784.2	1788.0	Missing.
1788.0	1789.6	Oil shale: dark to medium brownish gray and brown (10YR & 7.5YR 3/2-4/2 & 4/3). Very faint smooth to some distorted streaked bedding. Slightly irregular to very irregular thick parting; fairly smooth to very irregular fracture. Some small to large vugs with pyrite rims and earthy white porous fillings; <u>one small vug at 1788.4 feet has drusy dolomite (?)</u> linings. Common irregular fractures with white coatings in middle part. Some very irregular core pieces in middle part; true length doubtful.
1789.6	1792.1	Oil shale: medium to dark brownish gray and brown, rare tan to light brownish gray in lower part (10YR & 7.5YR 4/2 & 4/3-3/2, some 5/3 and 2/2, rare 6/3-6/1 lower part); some to common satiny to resinous luster.

Illustration No. SBR-4003P (Sheet 80 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Faint to some distinct, distorted to smooth streaks and laminae. Very irregular parting and fracture. Common irregular fractures with white coatings to vuggy brecciated shale with pyrite and yellow-orange stains. Some very irregular mixed up core pieces; true length doubtful.
1792.1	1796.2	Oil shale: dark to rare medium brownish gray and brown (10YR & 7.5YR 3/2-3/3, rare 4/3); very common satiny to resinous luster. Very faint smooth to some slightly distorted streaked bedding. Irregular thick parting; slightly irregular to irregular fracture. Some irregular tight natural fractures with white coatings. Occasional small pyrite blebs. Rare vuggy parting surfaces with yellow-orange stains.
		Sample of dark brown satiny to resinous shale from 1796.1 feet: X-ray - dolomite, quartz, feldspar, pyrite, ferroan?, dawsonite?
1796.2	1797.5	Oil shale: medium and rare dark brown (10YR 4/3-5/3 & 5/4, rare 3/3); some satiny luster. Very faint fairly smooth to distorted streaked bedding. Very irregular parting and fracture. A thick brecciated to finely crushed zone at 1796.6 to 1796.9 feet; common porous earthy crushed stringers in lower part.
1797.5	1799.5	Oil shale: medium brown to tan (10YR 4/3-7/3). Very faint streaked bedding. Common fractures and brecciated shale. Very badly broken up and mixed up; true length very doubtful; grab sampled.
1799.5	1801.7	Oil shale: dark to medium brownish gray and brown (10YR & 7.5YR 3/2-4/2 & 4/3, rare 5/3 upper part). Very faint to faint, smooth to very distorted streaked bedding. Slightly irregular to very irregular thick parting; very irregular fracture. Some small to fine pyrite blebs. <u>Rare small vugs.</u> Some irregular high angle fractures with chalky white coatings in lower part. Some lighter colored streaks show irregular internal laminae.
1801.7	1805.0	Missing.
1805.0	1808.0	Oil shale: dark to medium brownish gray and some brown (10YR & 7.5YR 3/2-4/2, some 4/3, rare 5/2-5/3). Very faint to faint, distorted to some smooth streaked bedding. Irregular parting and fracture. Common small to <u>large empty vugs.</u> Rare thin buff porous earthy to <u>silty-textured</u> stringers and streaks.

Illustration No. SBR-4003P (Sheet 81 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1808.0	1809.0	Oil shale: dark to medium brownish gray (10YR & 7.5YR 2/2-4/2, some 5/2); some satiny luster. Faint distorted laminae and streaks. Very irregular parting and fracture. Some irregular natural fractures and porous crushed zones.
1809.0	1810.0	Oil shale: medium to rare dark brown and brownish gray (10YR 4/3 & 4/2-5/2 & 5/3, rare 3/2). Moderately distinct to very faint, smooth to some distorted laminae and streaks. Slightly irregular to very irregular thick parting; very irregular fracture. Some natural tight high to low angle fractures with white coatings; some brecciated shale in lower part.
1810.0	1812.0	Oil shale: dark to medium brownish gray (7.5YR & 10YR 3/2-4/2). Very faint fairly smooth streaked bedding. Slightly irregular to irregular thick parting; irregular fracture. Common very fine buff earthy specks and <u>very fine cavities</u> in upper part. Some thin buff porous pyritic streaks in lower part. A thin dense tan dolomite lens at 1811.1 feet.
1812.0	1816.0	Oil shale: dark to medium brownish gray (7.5YR & 10YR 3/2-4/2). Very faint smooth to slightly distorted streaked bedding; some fine to thin buff streaks with irregular internal laminae. Slightly irregular to irregular thick parting; slightly irregular fracture. Common very fine disseminated pyrite and rare small pyrite blebs. Some fairly large massive fine grained nahcolite nodules. Common fine crystalline streaks and very fine disseminated crystals in lower part. [Sample of fine grained crystalline nodule from 1812.3 feet: X-ray - <u>nahcolite</u> , dolomite, ferroan? Sample of oil shale with fine disseminated crystals and crystalline streaks from 1815.6 feet: X-ray - quartz, dolomite, dawsonite, nahcolite, feldspar
1816.0	1817.0	Oil shale: dark to medium brownish gray (7.5YR & 10YR 3/2-4/2, some 2/2 lower part); some satiny luster. Very faint smooth streaked bedding. Slightly irregular thick parting; slightly irregular to irregular fracture. <u>A 2-inch band of fine grained nahcolite</u> with very fine interstitial oil shale partings at top. Sharp slightly irregular contact with leaner shale below.

Illustration No. SBR-4003P (Sheet 82 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1817.0	1820.0	Oil shale: medium to some very dark brown and brownish gray, rare tan and black (10YR 5/3 & 5/2-4/2, some 3/2-2/2, rare 6/3 & 1/2); some satiny to resinous luster in dark parts. Moderately distinct to faint, smooth to intricately contorted and displaced laminae and streaks; some thin to thick dark zones with very faint streaked bedding. Slightly irregular to very irregular thick parting; irregular and rare slight hackly fracture. Some very short very tight natural vertical fractures with dark brown varnish-like coatings. Rare thin buff earthy porous stringers in lower part. Sample of smoothly laminated oil shale from 1817.0 feet: X-ray - dolomite, quartz, feldspar, dawsonite
1820.0	1821.5	Oil shale: dark to medium brownish gray and brown (7.5YR & 10YR 3/2-4/2 & 4/3, some 2/2 upper part, some 5/3 middle part). Very faint smooth to distorted streaked bedding. Slightly irregular to very irregular thick parting; slight hackly to very irregular fracture. Some thin to thick yellowish buff earthy streaks and stringers. Some vuggy fractured shale. Common very fine disseminated pyrite in lower part. Sample of thick buff earthy stringer from 1821.1 feet: X-ray - dolomite; some quartz, dawsonite
1821.5	1822.5	Oil shale: dark brownish gray to medium brown and rare tan (7.5YR & 10YR 3/2-5/3, rare 6/3). Faint to moderately distinct, distorted to smooth streaked bedding and some laminae. Irregular to slightly irregular, thick to medium parting; slight to rare coarse hackly fracture. Common fine disseminated pyrite. Some thin buff earthy porous stringers. Rare small empty vugs.
1822.5	1825.4	Oil shale: buff to medium brown (10YR 8/2-5/3, rare 4/3). Earthy porous crushed oil shale with some angular breccia fragments in upper part grading to vuggy fractured shale with faint distorted to smooth laminae and streaks in lower part. Very badly broken up and mixed up; true length very doubtful.

Illustration No. SBR-4003P (Sheet 83 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1825.4	1827.0	Oil shale: medium brown to tan (10YR 5/3-6/3, rare 4/3). Very faint smooth to slightly distorted streaked bedding. Irregular thick parting; irregular to conchoidal fracture. Common thin to thick buff earthy porous zones in upper part; some fine buff streaks and blebs in lower part.
1827.0	1828.1	Oil shale: medium brown and tan to some dark brownish gray (10YR 5/3-6/3, some 4/3-2/2 lower part). Very faint smooth streaked bedding in upper part to moderately distinct smooth laminae with fine loop structures in lower part. Very irregular to some regular, thick to medium parting; conchoidal to irregular fracture. <u>Some empty vugs</u> with fine platy boxworks in upper part. Occasional natural high to low angle fractures with slight chalky white coatings.
1828.1	1832.1	Missing.
1832.1	1835.0	Oil shale: dark to medium brownish gray and brown, some tan in upper part (7.5YR 3/2-4/2 & 4/3, some 5/3-6/3 upper part). Very faint smooth to distorted streaked bedding; some moderately distinct laminae in upper part. Irregular parting and fracture. Rare small to <u>large irregular vugs</u> . Some tight bedding plane fractures with white coatings.
1835.0	1836.9	Oil shale: dark to medium brownish gray and brown, some tan to buff in lower part (7.5YR & 10YR 3/2-5/2 & 5/3, some 6/3-7/2 lower part). Very faint smooth to distorted streaked bedding. Irregular parting and fracture. Some low to high angle fractures with white coatings. A very large irregular vug with common pyrite and yellowish orange stains in middle part. Very irregular mixed up core pieces in lower part; true length doubtful.
1836.9	1838.0	Oil shale: dark brownish gray to some medium brown (7.5YR & 10YR 3/2-2/2, some 4/4); common satiny to some waxy luster. Very faint smooth to distorted streaked bedding. Very irregular parting and fracture. Fractured to brecciated shale with white fracture coatings in lower half. Badly broken up and mixed up; some tan to buff marlstone fragments mixed in from above; true length doubtful.

Illustration No. SBR-4003P (Sheet 84 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1838.0	1839.0	Oil shale: medium to dark brownish gray (7.5YR & 10YR 4/2-2/2); common resinous to waxy luster. Very faint smooth to slightly distorted streaked bedding. Irregular thick parting; irregular to conchoidal fracture. Rare short tight natural fractures with white coatings. [Sample of dark resinous oil shale from 1838.8 feet: X-ray - feldspar, quartz, dolomite, ferroan, pyrite
1839.0	1841.0	Oil shale: dark brownish gray to rare medium brown (10YR 3/2, rare 4/2-5/3 lower part); common satiny luster and some fine resinous to waxy streaks. Very faint smooth to slightly distorted streaked bedding. Slightly irregular to irregular thick parting; slightly irregular fracture.
1841.0	1844.0	Oil shale: dark brownish gray to medium brown and some tan (10YR 3/2-4/3, some 5/3-6/3); some fine resinous to waxy streaks. Very faint smooth to broadly curved and rare distorted streaked bedding. Irregular thick to medium parting; irregular to conchoidal fracture. Rare <u>large irregular vugs</u> with blebby black pyritic rims and yellowish orange stains. Some fractured shale near top. [Sample of oil shale with black pyritic material from 1843.7 feet: X-ray - pyrite, quartz, feldspar, dolomite, siderite?
1844.0	1845.5	Oil shale: dark brownish gray and very rare medium brown (10YR 3/2-2/2, rare 4/3-5/3); common satiny luster and some fine resinous to waxy streaks. Very faint smooth streaked bedding. Slightly irregular thick parting; slightly irregular fracture. Very rare fine crystalline streaks. A natural vertical fracture with some very fine pyrite in upper half.
1845.5	1847.8	Oil shale: dark brownish gray to some medium brown and rare tan (10YR 2/2-3/2, some 4/3-5/3, rare 6/3); very common satiny luster with some fine resinous to waxy streaks. Very faint smooth streaked bedding; medium brown to tan laminated zones at 1845.5-1845.7 and 1847.3-1847.5 feet; common medium brown streaks at 1846.0-1846.3 feet. Slightly irregular thick parting and some very regular medium parting (in laminated zones); fairly smooth to some irregular fracture. Some <u>vuggy parting</u>

Illustration No. SBR-4003P (Sheet 85 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		surfaces with black pyritic material and yellow-orange stains in lower part (may be out of place). Common tight bedding fractures and some high angle fractures with white coatings near base.
1847.8	1849.0	Oil shale: tan to medium and rare dark brown (10YR 6/3-5/3, rare 4/3-3/3). Moderately distinct to very faint, smooth to slightly distorted laminae and streaks. Very irregular parting and fracture. Common natural high to low angle fractures with white coatings. Some vuggy brecciated zones with black pyritic material in lower part.
		[Sample of medium brown oil shale from 1848.2 feet: X-ray - dolomite, feldspar, quartz, nahcolite, ferroan
1849.0	1850.7	Oil shale: dark brownish gray to some medium brown (10YR 3/2, some 4/3, rare 5/3 upper part); rare fine satiny to resinous streaks. Very faint smooth streaked bedding. Slightly irregular to irregular, thick to medium parting; conchoidal to irregular fracture. Fairly common fine silty-textured crystalline streaks and blebs. A nearly vertical fracture with patchy white coatings runs from top to bottom.
		[Sample of shale with very fine silty-textured streaks from 1849.5 feet: X-ray - ferroan, quartz, dolomite, feldspar, pyrite
1850.7	1852.0	Oil shale: dark brownish gray to black (10YR 3/2-1/2); some satiny to resinous luster. Very faint smooth streaks and laminae; rare fine loop structures. Irregular to slightly irregular thick parting; slightly irregular fracture. Some very fine disseminated crystals and crystalline streaks. Rare fine irregular pyrite stringers in lower part.
1852.0	1856.3	Oil shale: dark to rare medium brownish gray (7.5YR & 10YR 3/2-3/1, rare 4/2-4/1). Very faint very smooth laminae and streaked bedding. Slightly irregular thick parting; fairly smooth to conchoidal fracture; dense and heavy. A 1/4-inch brown earthy band with common short tight vertical fractures at 1854.9 feet. Common 1/4-inch gar (?) scales on parting surface at 1856.0 feet.
		[Sample of thin brown fractured band from 1854.9 feet: X-ray - ferroan, quartz, feldspar
1856.3	1857.4	Missing.

Illustration No. SBR-4003P (Sheet 86 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1857.4	1858.6	Oil shale: dark to rare medium brownish gray (10YR 3/2 & 3/1, rare 4/2 & 4/1). Very faint very smooth laminae and streaked bedding. Slightly irregular to very regular thick parting; irregular to fairly smooth fracture; very dense and heavy. Some fine neutral gray laminae and streaks.
		Sample of dense heavy oil shale with some gray laminae from 1858.3 feet: X-ray - quartz, dawsonite, dolomite, feldspar, pyrite, illite
1858.6	1860.0	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2, rare 5/2 & 2/2); rare satiny luster near base. Very faint to some moderately distinct, smooth to slightly distorted laminae; common fine loop structures in lower part. Regular to some irregular thick parting; slightly irregular fracture. Some fine neutral gray laminae. A very thin brown silty to earthy stringer at 1859.6 feet.
1860.0	1860.9	Oil shale: dark to some medium brownish gray (7.5YR 3/2-2/2, some 4/2 lower part); common resinous to waxy luster. Faint contorted and broken laminae to very faint distorted streaked bedding. Very irregular parting and fracture. Some very irregular tight fractures with pyrite fillings. Some small irregular vugs near base.
1860.9	1863.0	Oil shale: medium to dark brownish gray and brown (7.5YR & 10YR 4/2 & 4/3-3/2, some 5/3). Moderately distinct to very faint distorted streaked bedding. Very irregular parting and fracture. Very common <u>very fine cavities</u> and some <u>brecciated shale</u> .
1863.0	1865.2	Oil shale: medium to dark brownish gray and brown (7.5YR & 10YR 4/2 & 4/3-3/2, rare 2/2). Very faint smooth to distorted streaked bedding. Slightly irregular to very irregular, thick to medium parting; very irregular fracture. Common <u>very fine cavities</u> and some fractured shale. Some irregular pieces of buff marlstone in lower part. Lower part very badly broken up and mixed up; true length very doubtful.
1865.2	1872.0	Oil shale: very dark brownish gray to rare medium brown (7.5YR & 10YR 2/2-3/2, rare 4/3-5/3); very common satiny luster. Very faint smooth to distorted streaked bedding. Very irregular thick parting; very irregular to some conchoidal fracture. Very common <u>vuggy brecciated zones</u> with buff earthy crushed shale and some pyrite.

Illustration No. SBR-4003P (Sheet 87 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1872.0	1875.7	Oil shale: medium to dark brownish gray and brown (7.5YR & 10YR 4/3-3/2, some 5/3, rare 2/2). Very faint fairly smooth to distorted streaked bedding. Very irregular parting and fracture. Common fractured to brecciated zones. Most of section is very badly broken up and mixed up; true length very doubtful.
1875.7	1882.1	Missing.
1882.1	1884.2	Oil shale: dark brownish gray (7.5YR & 10YR 3/2); some fine resinous to waxy streaks. Very faint distorted streaked bedding. Commonly fractured to brecciated. Very irregular mixed up core pieces; true length very doubtful.
1884.2	1886.2	Oil shale: very dark brownish gray to black (7.5YR & 10YR 2/2-1/2); almost all has waxy luster. Very faint contorted and broken laminae and streaks. Fractured to brecciated and crushed. Very irregular mixed up core pieces; true length very doubtful. Sample of waxy black fractured shale from 1885.0 feet: X-ray - feldspar, dolomite, pyrite, ferroan?, illite
1886.2	1888.2	Oil shale: medium to dark brownish gray and brown, some tan to buff (10YR & 7.5YR 5/2 & 5/3-3/2, some 6/3-7/2). Very faint distorted to smooth streaked bedding and some laminae. Rare small vuggy cavities. Very badly broken up and mixed up; true length very doubtful.
1888.2	1889.6	Mudstone (?) and some oil shale: buff to tan and some medium brown (10YR 8/2-6/3, some 5/3), earthy. Very faint slightly distorted streaked bedding to massive. Common fine chalky white to buff specks in upper part. Very badly broken up and mixed up; true length very doubtful. Sample of tan to brown oil shale with very common fine chalky specks from 1889.0 feet: X-ray - dolomite, feldspar, quartz, illite
1889.6	1890.8	Oil shale: dark to medium brownish gray and brown (7.5YR & 10YR 3/2-4/2 & 4/3). Very faint slightly distorted to smooth streaked bedding. Irregular thick parting; irregular to slight hackly fracture. Some small vugs with tan to buff, earthy to silty porous fillings.
1890.8	1893.0	Missing.

Illustration No. SBR-4003P (Sheet 88 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1893.0	1896.5	Oil shale: dark to medium brownish gray and brown (7.5YR 3/2-4/2 & 4/3). Very faint slightly distorted to smooth streaked bedding. Irregular to some fairly regular thick parting; slightly irregular to irregular and some slight hackly fracture. Common small to moderately large vugs with associated fractures and very porous crushed shale (some vugs are thin and flat). Some fine black pyritic streaks and blebs.
1896.5	1897.7	Oil shale: dark brownish gray to rare medium brown (7.5YR 3/2, rare 4/2-4/3). Very faint fairly smooth to distorted streaked bedding. Irregular thick parting; irregular to slight hackly fracture. Common fine to medium irregular fine-grained nahcolite blebs, stringers, and lenses; a 1-1/4- x 2-inch coarsely crystalline radiating nahcolite mass at 1897.2 feet. Common very fine pyrite blebs and disseminated crystals. Sample of oil shale with fine nahcolite blebs from 1896.6 feet: X-ray - quartz, dolomite, feldspar, nahcolite, dawsonite, ferroan?
1897.7	1899.0	Oil shale: tan to medium brown and rare dark brownish gray (7.5YR & 10YR 6/3-4/3, rare 3/2 lower part). Faint to very faint, smooth to slightly distorted streaked bedding and rare laminae. Irregular to rare regular, thick to medium parting; irregular to some coarse hackly fracture. Some large to small partly dissolved radiating nahcolite masses in upper part; common fine disseminated nahcolite in lower part.
1899.0	1899.6	Oil shale: dark to rare medium brownish gray and brown (7.5YR 3/2, rare 4/2-4/3). Very faint slightly distorted to smooth streaked bedding. Irregular thick parting; irregular coarse hackly fracture. Some fine cavities. A fairly large very fine-grained massive nahcolite nodule near top.
1899.6	1901.1	Oil shale: dark brownish gray to some medium brown (7.5YR & 10YR 3/2-3/1, some 4/2-4/3, rare 2/2); some satiny to resinous luster in upper part; very common resinous to some waxy luster in lower 0.4 foot. Faint to very faint, slightly distorted to very smooth laminae; rare fine to small loop structures. Irregular to some regular thick parting; hackly to irregular fracture. A very irregular buff to white earthy to chalky mass at 1900.1 feet. Some very tight irregular natural fractures in lower part.

Illustration No. SBR-4003P (Sheet 89 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1901.1	1902.1	<p>Sample of buff to white earthy to chalky mass from 1900.1 feet: X-ray - sanidine, albite, ferroan.</p> <p>Oil shale: medium brownish gray and brown (10YR & 2.5Y 5/2-4/2 & 4/3). Very faint smooth bedding. Slightly irregular thick parting; very smooth to some irregular fracture. Some thin zones with very common very fine cavities and black pyritic blebs.</p>
1902.1	1904.8	<p>Sample of very faintly bedded medium brown oil shale from 1901.6 feet: X-ray - quartz, dolomite, dawsonite, feldspar, pyrite</p> <p>Oil shale: medium to rare dark brown (10YR & 7.5YR 4/3-5/3, rare 3/3). Very faint smooth to distorted bedding. Slightly irregular to irregular thick parting; irregular to rare hackly fracture. Very common very fine cavities with brownish black organic blebs and rare pyrite.</p>
1904.8	1905.9	<p>Oil shale: medium brown to very rare tan (10YR 4/3 & 4/4-5/4, rare 6/4). Very faint slightly distorted bedding. Slightly irregular thick parting; slightly irregular fracture. Very common very fine cavities with rare brownish black blebs and pyrite.</p>
1905.9	1907.0	<p>Sample of very porous brown shale from 1905.5 feet: X-ray - quartz, dolomite, feldspar, dawsonite, pyrite</p> <p>Oil shale: medium brownish gray and brown to buff (10YR 5/2 & 5/3-7/2). Very faint distorted streaked bedding; some moderately distinct broadly curved laminae near top. Very irregular parting and fracture. Some large irregular vugs with porous fillings and black pyritic blebs; rare drusy quartz. Some very irregular tight to open fractures. Lower part very badly broken up and mixed up; true length doubtful.</p>
1907.0	1908.0	<p>Sample of drusy quartz from 1906.6 feet: X-ray - quartz</p> <p>Oil shale: dark to medium brownish gray and rare brown (10YR 3/2-4/2, rare 2/2 and 4/3). Very faint smooth to slightly distorted streaked bedding. Irregular thick parting; irregular fracture. Some <u>small to large vugs</u> with black pyritic rims.</p>

Illustration No. SBR-4003P (Sheet 90 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1908.0	1910.0	Oil shale: medium to dark brownish gray and brown (10YR & 7.5YR 4/2 & 4/3-3/2). Very faint smooth to distorted streaked bedding. Irregular thick parting; slightly irregular to very irregular fracture. Common <u>small to large vugs</u> with radiating boxworks and pyritic rims.
1910.0	1910.7	Oil shale: dark to medium brownish gray and rare brown (10YR & 7.5YR 3/2-4/2, rare 4/3). Very faint slightly distorted streaked bedding. Irregular parting and fracture. Common thin irregular black pyritic streaks and small hackly blebs.
1910.7	1911.3	Oil shale: medium to dark brownish gray and rare black (10YR 4/2-2/2, rare 1/2); some satiny to resinous luster. Very faint to moderately distinct very smooth laminae; rare fine loop structures. Regular thick parting; irregular to smooth fracture.
		Sample of oil shale from 1911.2 feet: X-ray - quartz, dolomite, feldspar, ferroan, dawsonite
1911.3	1912.3	Oil shale: medium to rare dark brown and brownish gray (10YR 5/3 & 5/2-4/3 & 4/2, rare 3/2). Moderately distinct to faint smooth laminae. Irregular parting and fracture. Some high to low angle natural fractures in upper part. Vuggy brecciated shale at 1911.9-1912.1 feet.
1912.3	1913.2	Oil shale: very dark brownish gray to some medium brown (10YR 2/2-3/2, some 4/3); some satiny luster in upper part. Very faint smooth to distorted laminae and streaks. Irregular parting and fracture. Some tight natural high to low angle fractures. A thin porous zone with fine black pyritic blebs near base.
1913.2	1914.3	Oil shale: medium to rare dark brown and brownish gray (10YR 5/3 & 5/2-4/3 & 4/2, rare 3/2). Moderately distinct smooth laminae to very faint distorted streaked bedding. Very badly broken up and mixed up; true length doubtful.
1914.3	1916.3	Missing.
1916.3	1917.6	Oil shale: very dark brownish gray to medium brown (10YR 2/2-4/3); rare satiny luster. Very faint smooth to distorted streaked bedding; some faint distorted laminae in lower part. Very irregular parting and fracture. Some <u>irregular vugs</u> and porous <u>crushed zones</u> . Common irregular tight natural fractures. Upper part badly broken up and mixed up; true length doubtful.

Illustration No. SBR-4003P (Sheet 91 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1917.6	1922.2	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2). Very faint smooth to distorted streaked bedding. Irregular thick parting; very irregular to slightly conchoidal fracture. Fairly common fine to small black pyritic blebs. Some irregular tight natural fractures. Rare <u>large vugs</u> in middle part.
1922.2	1924.2	Oil shale: dark brownish gray (10YR & 7.5YR 3/2). Very faint slightly distorted to smooth streaked bedding. Irregular thick parting; irregular to conchoidal fracture. Fairly common fine black pyritic blebs. Rare small cavities.
1924.2	1925.0	Oil shale: dark brownish gray (10YR & 7.5YR 3/2, some 2/2). Very faint distorted streaked bedding. Very irregular parting and fracture. Common very irregular natural fractures. Some porous zones with rare irregular vugs.
1925.0	1926.1	Oil shale: medium to rare dark brownish gray and brown (10YR 5/2 & 5/3-4/2 & 4/3, rare 3/2-2/2). Faint slightly distorted to smooth laminae. Very irregular to some regular thick parting; very irregular to slightly irregular fracture. Some irregular tight natural fractures in upper part. Some large irregular vugs with very common black pyritic material in middle part.
1926.1	1927.2	Oil shale: medium to dark brownish gray and brown (10YR & 7.5YR 4/2 & 4/3-3/2). Faint to moderately distinct, distorted to smooth laminae. Irregular parting and fracture. Some very irregular fine black pyritic stringers and blebs.
1927.2	1928.2	Oil shale: medium to dark brownish gray and brown (10YR & 7.5YR 4/2 & 4/3-3/2, rare 5/3). Moderately distinct smooth to slightly distorted laminae; rare fine loop structures and displacements. Slightly irregular thick to medium parting; irregular to slightly conchoidal fracture. Rare tight high angle natural fractures.
1928.2	1931.1	Oil shale: medium to rare dark brownish gray and brown (10YR & 2.5Y 5/2 & 5/3-4/2 & 4/3, rare 3/2). Very faint to some moderately distinct smooth laminae; rare fine loop structures and displacements. Irregular to some very regular, thick to thin parting; irregular fracture. Some irregular natural fractures. Lower part very badly broken up and mixed up; true length doubtful.
1931.1	1934.1	Missing.

Illustration No. SBR-4003P (Sheet 92 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1934.1	1935.2	Oil shale: medium to dark brownish gray and rare brown (10YR & 7.5YR 4/2-3/2, rare 4/3 & 2/2). Very faint smooth to distorted streaked bedding. Very irregular parting and fracture. Some irregular natural (?) fractures in upper part; some brecciated to porous crushed shale in lower part. Badly broken up and mixed up; true length doubtful.
1935.2	1936.3	Oil shale: dark reddish brown in upper half (5YR & 7.5YR 3/3), buff to tan and some medium brownish gray in lower half (10YR 7/2-6/3, some 5/2). Very faint slightly distorted to smooth streaked bedding. Irregular to regular, thick to thin parting and irregular to fairly smooth fracture in upper part; very irregular parting and fracture in lower part. <u>Very common very fine cavities</u> in upper part. Some thin zones with common fine cavities and black pyritic blebs in lower part. Lower part very badly broken up and mixed up; true length doubtful.
1936.3	1939.0	Oil shale: medium brownish gray and brown (10YR & 7.5YR 4/2 & 4/3-5/2 & 5/3). Very faint smooth to slightly distorted streaked bedding. Very irregular parting and fracture. Common fine black pyritic blebs and streaks. <u>Some fine cavities</u> in upper part.
1939.0	1940.2	Oil shale: medium brownish gray and brown (10YR 4/2 & 4/3-5/2 & 5/3). Very faint distorted streaked bedding. Very irregular parting and fracture. Common <u>fine cavities</u> and porous crushed shale with fine gray to black pyritic blebs. Upper part badly broken up and mixed up; true length doubtful.
1940.2	1942.4	Oil shale: buff to medium brownish gray (10YR & 2.5Y 7/2-5/2, some 4/2 lower part). Very faint distorted streaked bedding. Irregularly fractured to brecciated. Some black pyritic material. Very badly broken up and mixed up; true length very doubtful.
1942.4	1943.2	Missing.
1943.2	1947.0	Oil shale: medium to dark brownish gray, some brown to tan lower part (10YR 4/2-3/2, some 5/2 & 5/3-6/3 lower part). Very faint smooth to slightly distorted streaked bedding; some faint laminae lower part. Very irregular parting and fracture. Badly broken up and mixed up; true length doubtful.

Illustration No. SBR-4003P (Sheet 93 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1947.0	1950.2	Oil shale: dark to some medium brownish gray and brown (10YR & 7.5YR 3/2, some 4/2-4/3). Very faint smooth to slightly distorted streaked bedding. Fairly regular to irregular thick parting; irregular to conchoidal fracture. Some fine to small black pyritic blebs and streaks. Rare porous crushed shale in lower half. Sample of oil shale with some fine black blebs from 1948.2 feet: X-ray - quartz, dolomite, dawsonite, feldspar, ferroan, pyrite
1950.2	1951.4	Oil shale: medium to dark brownish gray (10YR & 2.5Y 4/2-3/2). Very faint smooth streaked bedding. Regular to irregular thick parting; slightly irregular to conchoidal fracture. Common very fine disseminated crystals in upper part. A diagonal fracture with very fine slickensides at 1951.0 feet. Dense and heavy. Sample of dense heavy shale with very fine disseminated crystals from 1950.5 feet: X-ray - quartz, dolomite, dawsonite, feldspar, ferroan, pyrite.
1951.4	1952.3	Oil shale: medium to dark brownish gray (10YR 4/2-3/2, some 2/2); some satiny to resinous luster. Very faint contorted streaked bedding; some small overturned folds. Slightly irregular to very irregular thick parting; slightly irregular fracture. Some small irregular black silty-textured masses in upper part. Some slightly open high angle fractures in lower part.
1952.3	1953.0	Oil shale: medium to dark brown and brownish gray (10YR & 7.5YR 4/3-3/2, rare 2/2). Very faint distorted to fairly smooth streaked bedding and some laminae. Very irregular to slightly irregular thick parting; slightly irregular fracture. Some irregular slightly open to tight natural fractures in upper part.
1953.0	1953.9	Oil shale: medium to very dark brown and brownish gray (10YR & 7.5YR 4/3-2/2); rare resinous to waxy luster. Very faint distorted streaks and some laminae. Very irregular parting and fracture. Common very irregular natural fractures and some porous brecciated shale.

Illustration No. SBR-4003P (Sheet 94 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1953.9	1956.5	Oil shale: medium to dark brown and brownish gray (10YR & 7.5YR 4/3-3/2). Very faint smooth to some distorted streaked bedding. Very irregular parting and fracture. Some small black pyritic blebs in upper part. Occasional <u>small to medium vugs</u> with black pyritic rims in lower part. Most of section is very badly broken up and mixed up; true length very doubtful.
1956.5	1960.1	Missing.
1960.1	1961.6	Oil shale: dark to medium brownish gray and brown (10YR & 7.5YR 3/2-4/3, rare 2/2 & 5/3). Very faint slightly distorted to smooth streaked bedding and rare laminae. Irregular thick parting; very irregular to slightly irregular and conchoidal fracture. Common large empty vugs with fine boxworks. Some natural high angle fractures near top.
1961.6	1963.8	Oil shale: dark brownish gray to rare medium brown (7.5YR 3/2, rare 4/3). Very faint smooth to slightly distorted streaked bedding. Slightly irregular thick parting; slightly irregular fracture. Some fine black pyritic blebs. A few small vugs with boxworks and pyritic rims in upper part. Some small to moderately large coarsely crystalline nahcolite masses in lower part.
1963.8	1964.5	Oil shale and nahcolite: medium to dark brown and brownish gray oil shale (7.5YR 4/3-3/2). Very faint distorted streaked bedding. Very irregular parting and fracture. Very common large irregular masses of dark brown to black, coarse to some fine <u>crystalline nahcolite</u> . <div style="margin-left: 2em;">Sample of coarsely crystalline nahcolite from 1964.4 feet: X-ray - nahcolite; some dawsonite, quartz, dolomite</div>
1964.5	1969.5	Oil shale: medium brown to dark brownish gray (7.5YR 4/3-3/2). Very faint smooth to some distorted streaked bedding. Slightly irregular to very irregular thick parting; slightly irregular to very irregular fracture. Common large empty vugs with fine boxworks and some pyrite in upper part; common vuggy brecciated masses in lower part. Common tan to buff earthy porous streaks near base.

Illustration No. SBR-4003P (Sheet 95 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1969.5	1970.5	Oil shale: dark brown to black (7.5YR 3/3-1/2). Very faint distorted and broken to some smooth streaked bedding. Very irregular parting and fracture. Mostly coarsely brecciated to finely crushed porous shale. Some small vugs with pyrite near base.
1970.5	1973.0	Oil shale: medium brown to rare tan and buff (7.5YR & 10YR 4/3-5/3, rare 6/3-7/2). Very faint slightly distorted to very smooth streaked bedding. Slightly irregular thick to medium and rare thin parting; slightly irregular fracture. Very common very fine collapsed to some open cavities (<u>some cavities are flat spear shaped dawsonite molds</u>).
1973.0	1978.0	<p>Sample of porous oil shale from 1972.8 feet: X-ray - quartz, dolomite, feldspar, dawsonite</p> <p>Oil shale: dark brownish gray and brown (7.5YR 3/2-3/3). Very faint smooth streaked bedding. Slightly irregular thick parting; slightly irregular fracture. Some very fine disseminated crystals and thin gray crystalline lenses and streaks. Some fairly large <u>coarsely crystalline nahcolite masses</u> from 1974.2 to 1974.9 feet. Some diagonal fractures with patchy nahcolite crusts from 1974.5 to 1975.1 feet.</p> <p>Sample of oil shale with gray crystalline lenses and some very fine disseminated crystals from 1973.8 feet: X-ray - quartz, dawsonite, dolomite, feldspar, pyrite</p>
1978.0	1979.0	Oil shale: dark brownish gray and brown (7.5YR 3/2-3/3). Very faint distorted to smooth streaked bedding. Irregular parting and fracture. Some small to large massive fine-grained nahcolite nodules near top. A few fairly large coarsely crystalline radiating nahcolite nodules at 1978.4 feet. Fairly common fine <u>nahcolite blebs</u> in lower part.
1979.0	1984.2	Oil shale: medium brown and rare dark brownish gray (10YR & 7.5YR 4/3-5/3, rare 3/2). Very faint distorted streaked bedding. Very irregular parting and fracture. Common small irregular cavities to rare large vugs. Common irregular natural fractures to some brecciated and finely crushed zones. Some small gray to black gritty blebs in lower part.

Illustration No. SBR-4003P (Sheet 96 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1984.2	1985.0	Oil shale: medium to dark brownish gray (10YR & 7.5YR 4/2-3/2). Very faint smooth streaked bedding. Slightly irregular to irregular thick parting; fairly smooth fracture.
1985.0	1985.9	Oil shale: medium brown (10YR 4/3, rare 5/3). Very faint distorted streaked bedding. Irregular thick parting; slightly irregular to irregular fracture. Some <u>very large vugs</u> with coarse irregular boxworks and gray to black gritty material. Some irregular natural fractures. <div style="border-left: 1px solid black; padding-left: 20px; margin-left: 20px;"> Sample of boxworks with gray to black gritty material from 1985.1 feet: X-ray - pyrite, quartz, dolomite, dawsonite, feldspar </div>
1985.9	1986.4	Oil shale: dark brownish gray (7.5YR & 10YR 3/2); rare very fine dark resinous streaks. Very faint slightly distorted streaked bedding. Irregular thick parting; slightly irregular fracture.
1986.4	1987.4	Oil shale: medium to dark brownish gray and very rare medium brown (10YR 4/2-3/2, some 2/2, rare 4/3); some satiny to rare resinous luster. Moderately distinct to very faint slightly distorted streaks and some laminae. Slightly irregular thick parting; slightly irregular fracture. Some natural (?) diagonal fractures.
1987.4	1989.5	Oil shale: medium brown (10YR & 7.5YR 5/3-4/3). Very faint slightly distorted to smooth streaked bedding. Very irregular to some slightly irregular thick parting; very irregular to slightly irregular fracture. Some irregular natural fractures to <u>brecciated</u> and crushed shale. Lower part badly broken up and mixed up; true length doubtful.
1989.5	1990.8	Missing.
1990.8	1992.0	Oil shale: dark to rare medium brownish gray (7.5YR 3/2-2/2, rare 4/2). Very faint smooth to slightly distorted streaked bedding. Irregular to regular thick parting; smooth to slightly irregular and some very slight hackly fracture. Vuggy brecciated shale at 1991.0-1991.1 feet. Very common very fine collapsed cavities and rare <u>small irregular vugs</u> in lower 0.3 foot. A 0.2-foot dense medium to light pinkish gray caving fragment at top (cylindrical concave surface indicates piece fell out of corehole wall). <div style="border-left: 1px solid black; padding-left: 20px; margin-left: 20px;"> Sample of dense pinkish gray caving fragment from 1990.9 feet: X-ray - dolomite, quartz </div>

Illustration No. SBR-4003P (Sheet 97 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
1992.0	1997.8	Oil shale: dark brownish gray (7.5YR 3/2). Very faint smooth to some slightly distorted streaked bedding. Slightly irregular to irregular thick parting; slightly irregular to slight hackly fracture. Common very fine <u>disseminated crystals</u> and occasional fine-grained crystalline stringers, streaks, and blebs. Some very fine disseminated pyrite. <div style="margin-left: 2em;">Sample of oil shale with very fine disseminated crystals from 1993.3 feet: X-ray - quartz, nahcolite, dolomite, dawsonite, feldspar, ferroan</div>
1997.8	1998.5	Nahcolite: medium brownish gray and brown, fine grained, massive. Some thin oil-shale stringers.
1998.5	2000.8	Oil shale: dark to medium brownish gray (7.5YR & 10YR 3/2-4/2). Very faint smooth to very distorted streaked bedding. Slightly irregular to very irregular, thick to medium parting; slight hackly to very irregular fracture. Very common very fine disseminated crystals in upper part. Common very fine black pyritic blebs in lower part. Some irregular natural fractures in lower part. Lower part badly broken up and mixed up; true length doubtful.
2000.8	2002.2	Missing.
2002.2	2003.1	Oil shale: dark brownish gray, some black near top (7.5YR 3/2, some 2/2-1/2 upper part); common satiny and some resinous to waxy luster. Very faint distorted streaked bedding. Very irregular parting; very irregular to conchoidal fracture. Common very irregular open vuggy fractures with yellowish orange stains and some black to gray gritty pyritic material.
2003.1	2005.3	Oil shale: medium to dark brownish gray and brown (10YR & 7.5YR 4/2 & 4/3-3/2, some 5/3 upper part). Faint slightly distorted to smooth streaked bedding. Slightly irregular to irregular thick parting; slightly irregular fracture. <u>Vuggy parting surfaces</u> with yellowish orange stains and black pyritic blebs at 2003.8 feet.
2005.3	2006.3	Oil shale: dark brownish gray and some black (10YR & 7.5YR 3/2-2/2, some 1/2); some resinous to waxy luster. Very faint distorted to smooth streaked bedding; some laminae with fairly large loop structures. Very irregular parting; very irregular to some conchoidal fracture. Some irregular open fractures and zones with very common very fine <u>cavities</u> .

Illustration No. SBR-4003P (Sheet 98 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2006.3	2007.8	Oil shale: dark to medium brownish gray and brown (10YR & 7.5YR 3/2-4/2 & 4/3, some 5/3). Very faint slightly distorted to smooth streaked bedding and some laminae. Irregular thick parting; irregular to very conchoidal fracture. Common open diagonal fractures. Some vuggy breccia zones with very common gray to black pyritic blebs. Some shale slightly bleached adjacent to fractures.
2007.8	2009.0	Oil shale: dark to medium brownish gray (10YR & 7.5YR 3/2-4/2). Very faint smooth to slightly distorted streaked bedding. Slightly irregular thick parting; slightly irregular fracture. Occasional <u>small to medium vugs</u> with black pyritic rims.
2009.0	2011.0	Oil shale: medium and some dark brownish gray (10YR & 2.5Y 4/2-5/2, some 3/2). Very faint very smooth streaked bedding and some very fine laminae. Regular thick parting; fairly smooth to slight hackly fracture. Rare very fine disseminated pyrite. A nearly vertical tight natural fracture at 2010.1-2010.4 feet. <div style="margin-left: 2em;">Sample of oil shale from 2009.2 feet: X-ray - quartz, dawsonite, dolomite, ferroan, feldspar, pyrite</div>
2011.0	2015.4	Oil shale: medium brown to dark brownish gray (10YR & 7.5YR 5/3-3/2, some 2/2). Very faint distorted streaked bedding to fairly distinct wavy laminae. Very irregular parting; very irregular to some conchoidal fracture. Common vuggy fractured to brecciated zones with black pyritic material and yellowish orange stains. Very irregular to badly broken up and mixed up core pieces; true length doubtful.
2015.4	2016.3	Missing.
2016.3	2017.0	Oil shale: medium brown to dark brownish gray (10YR & 7.5YR 5/3-3/2). Very faint distorted to smooth streaked bedding. Some gray to black pyritic material. Very badly broken up and mixed up; true length doubtful.
2017.0	2020.0	Oil shale: dark to medium brownish gray and brown (7.5YR & 10YR 3/2-4/2 & 4/3, rare 5/3 lower part); rare fine black resinous to waxy streaks. Very faint to faint, slightly distorted to smooth streaked bedding. Irregular to fairly regular thick parting; irregular to slight hackly fracture. Some fine black pyritic blebs. Rare <u>small vugs</u> with black pyritic rims. Some irregular tight natural fractures near base.

Illustration No. SBR-4003P (Sheet 99 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2020.0	2022.9	Oil shale: medium brown to rare tan and dark brownish gray (10YR & 7.5YR 4/3-5/3, rare 6/3 & 3/2). Faint to fairly distinct, smooth to slightly distorted streaked bedding. Irregular thick parting; slightly irregular to slight hackly fracture. Some fine cavities and <u>rare small vugs</u> with black pyritic material. <u>Porous brecciated</u> to finely crushed shale in lower part.
2022.9	2024.9	Oil shale: dark and some medium brownish gray (7.5YR & 10YR 3/2, some 4/2 upper part); common very fine black resinous to waxy streaks. Very faint smooth streaked bedding. Slightly irregular to irregular thick parting; slightly irregular to slightly conchoidal fracture. Some fairly tight natural diagonal fractures in lower part.
2024.9	2025.7	Oil shale: medium brown to some tan and dark brownish gray (10YR 4/3-5/3, some 6/3 & 3/2, rare 2/2 lower part). Very faint distorted to fairly smooth streaked bedding; some faint smooth laminae near base. Irregular thick parting; irregular to slight hackly fracture. Some small to <u>large vugs</u> with radial boxworks and black pyritic rims near top.
2025.7	2026.9	Oil shale: dark brownish gray in upper part, medium brownish gray and brown to some tan and buff in lower part (10YR 3/2-2/2 upper part, 4/2 & 4/3-6/3 & 7/2 lower part). Very faint distorted streaked bedding. Brecciated to finely crushed. Very irregular mixed up core pieces; true length doubtful.
2026.9	2028.7	Oil shale: medium brownish gray and brown (10YR 4/2-4/3); common very fine satiny to resinous streaks. Faint fairly smooth streaked bedding. Irregular thick parting; irregular to some hackly fracture. A thin zone of porous crushed shale near top. Some irregular natural (?) fractures near base.
2028.7	2029.4	Missing.
2029.4	2033.7	Oil shale: medium to dark brownish gray and brown (10YR 4/2 & 4/3-3/2); some to very common fine satiny to waxy streaks. Faint fairly smooth to rare distorted streaked bedding. Irregular thick parting; irregular to hackly fracture. A 5-inch fairly coarse crystalline <u>radiating nahcolite</u> nodule at 2032.4 feet; some very irregular fine-grained nahcolite patches and stringers at 2032.7-2033.0 feet.

Illustration No. SBR-4003P (Sheet 100 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of oil shale from 2033.2 feet: X-ray - quartz, dawsonite, dolomite, feldspar, pyrite
2033.7	2034.9	Oil shale: dark brownish gray to black (7.5YR 3/2-1/2); very common satiny to some waxy luster. Faint smooth to slightly distorted streaked bedding. Irregular to slightly irregular thick parting; irregular to some smooth fracture. Some fine cavities near base.
2034.9	2037.0	Oil shale: medium brown and brownish gray to tan (10YR & 7.5YR 4/3 & 4/2-6/3, rare 3/2 upper part). Very faint to faint smooth to distorted streaked bedding. Very irregular parting and fracture. Some large irregular vugs and very irregular natural fractures. Common <u>fine cavities</u> and some black to gray pyritic blebs in lower part. Upper part badly broken up and mixed up; true length doubtful.
2037.0	2039.4	Oil shale: medium to dark brown and brownish gray (7.5YR & 10YR 4/3 & 4/2-3/2, rare 2/2 lower part); common very fine satiny to waxy streaks. Faint fairly smooth streaked bedding. Slightly irregular thick parting; slightly irregular and rare hackly fracture. Some <u>fine cavities</u> and rare small vugs with black pyritic material in upper part. Rare small to fine black pyritic blebs in lower part. Some fine nahcolite blebs near base.
2039.4	2043.7	Oil shale and nahcolite: medium to dark brown and brownish gray oil shale (7.5YR & 10YR 4/3 & 4/2-3/2, some 5/3 upper part); common very fine satiny to waxy streaks. Faint distorted to smooth streaked bedding. Irregular thick parting; irregular to some slight hackly fracture. Common very large irregular medium to coarse crystalline nahcolite masses and some coarse disseminated crystals. (Estimated nahcolite: 2039.4-2041.0, 35-45%; 2041.0-2042.0, 5-10%; 2042.0-2043.7, 30-40%.)
2043.7	2047.6	Oil shale and nahcolite: dark brownish gray to some medium brown oil shale (7.5YR 3/2, some 4/3); common very fine satiny to resinous streaks. Very faint smooth to some distorted streaked bedding. Slightly irregular to irregular thick parting; irregular to some hackly fracture. Two very large coarsely crystalline <u>nahcolite masses</u> in middle part;

Illustration No. SBR-4003P (Sheet 101 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		a very irregular medium to coarse crystalline mass at 2046.6 feet. Vuggy parting surface with black pyritic material and yellowish orange stains at base.
		[Sample of coarse nahcolite from 2046.3 feet: X-ray - nahcolite; some quartz
2047.6	2048.6	Oil shale: medium brown to dark brownish gray (7.5YR & 10YR 4/3-3/2, some 4/4-5/3); some very fine satiny to resinous streaks. Very faint distorted to contorted streaked bedding. Fractured to brecciated; vuggy. Very irregular mixed up core pieces; true length doubtful.
2048.6	2050.0	Oil shale: dark brownish gray to some medium brown (7.5YR & 10YR 3/2, some 4/2-4/3); common fine satiny to resinous streaks. Very faint slightly distorted to smooth streaked bedding. Irregular to slightly irregular thick parting; irregular hackly fracture. Some fine cavities with gray to black gritty material and rare very fine drusy crystals in middle part. A thin crushed zone at 2049.7 feet.
2050.0	2054.9	Oil shale: dark brownish gray (7.5YR 3/2-2/2); very common very fine black satiny to waxy streaks. Very faint smooth to some slightly distorted streaked bedding. Slightly irregular thick parting; fairly smooth to some irregular and conchoidal fracture.
2054.9	2055.4	Oil shale: very dark brownish gray (10YR & 7.5YR 2/2-2/1, some 3/2). Very faint smooth to some distorted laminae. Regular to irregular thick parting; slight hackly fracture; dense and heavy. Some very thin irregular fine-grained crystalline streaks at 2055.2 feet. Some vertical fractures with vitreous black organic coatings near base.
		[Sample of very dark dense heavy shale with fine crystalline streaks from 2055.2 feet: X-ray - quartz, calcite, dawsonite, pyrite, feldspar
2055.4	2057.3	Oil shale: medium to dark brownish gray (10YR 5/2-3/2). Very faint smooth streaked bedding and very fine laminae. Very irregular to some very smooth, thick to medium parting; very irregular fracture. Common irregular high angle natural fractures--some with vitreous black gilsonite-like crusts. Common very fine disseminated crystals. Some badly broken up and mixed up core pieces; true length doubtful.

Illustration No. SBR-4003P (Sheet 102 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2057.3	2058.3	Oil shale: dark brownish gray to rare black (10YR & 7.5YR 3/2-2/2, rare 1/2); common satiny to rare waxy luster in lower half. Very faint smooth laminae and streaked bedding. Irregular to regular, thick to medium parting; very irregular to fairly smooth fracture. Some irregular natural high angle fracture with gilsonite-like crusts in upper part.
2058.3	2059.9	Oil shale, <u>very rich</u> : very dark brownish gray to black (10YR 2/2-1/2); nearly all has waxy luster. Very faint smooth laminae; common fine to small loop structures and displacements. Very irregular parting in upper part to very smooth thick parting in lower part; very conchoidal fracture. Upper part badly broken up and mixed up; true length doubtful. Sample of very rich waxy black shale from 2059.3 feet: X-ray - quartz, dawsonite, feldspar, pyrite, dolomite Carbon-hydrogen analysis of shale from 2059.3 feet (average weight percent of two runs): C-46.64 (mineral - 1.30, organic - 45.34), H - 6.27, CO ₂ - 4.76, Ash - 39.46. Estimated oil yield from conversion constant - 96-97 gallons per ton.
2059.9	2060.9	Oil shale: dark brownish gray to black (10YR & 7.5YR 2/2-1/2, some 3/2); very common resinous to waxy luster. Faint to very faint smooth laminae and streaked bedding; some fine loop structures. Very smooth to some irregular thick parting; fairly smooth to irregular fracture. Some smooth diagonal natural (?) fractures.
2060.9	2062.9	Oil shale: dark brownish gray to some black (10YR & 7.5YR 2/2-3/2, some 1/2); very common resinous to some waxy luster. Very faint smooth streaked bedding. Slightly irregular thick parting; fairly smooth to slightly irregular and some slight hackly fracture.
2062.9	2063.9	Oil shale, very rich: dark brownish gray to some black (7.5YR 2/2-3/2, some 1/2); nearly all has resinous to waxy luster. Faint smooth to some slightly distorted streaked bedding; some very fine distinct medium brown streaks. Irregular to slightly irregular thick parting; slightly irregular to some coarse hackly fracture. Two very thin irregular black

Illustration No. SBR-4003P (Sheet 103 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		stringers composed of very fine adamantine iridescent crystals and some fine tan to buff blebs at 2063.1 and 2063.4 feet. Very rare fine dense buff crystal-line streaks in lower part.
		Sample of black stringer with some tan to buff blebs from 2063.1 feet:
2063.9	2064.8	X-ray - pyrite, dawsonite, dolomite, quartz Oil shale, very rich: dark brownish gray to some medium brown and rare black (7.5YR & 10YR 2/2-3/3, some 4/3, rare 1/2 upper part); nearly all has resinous to waxy luster. Faint smooth to slightly distorted streaked bedding. Irregular thick parting; irregular hackly fracture. Some fine <u>crushed cavities</u> and yellowish orange stains in lower half.
2064.8	2066.0	Oil shale, very rich: dark to medium brown (7.5YR & 10YR 3/3-4/3 & 4/4, some 5/3 lower part); very common resinous to waxy luster. Very faint to some moderately distinct streaked bedding. Irregular parting and fracture. Very common very fine crushed cavities and some breccia in upper part. Common very irregular natural fractures and rare <u>small vugs</u> in lower part. Colors are much darker on freshly broken surfaces.
		Sample of dark to medium brown, resinous to waxy shale from 2065.6 feet:
		X-ray - quartz, dolomite, dawsonite, calcite, feldspar
2066.0	2067.0	Oil shale: medium and rare dark brown (10YR & 7.5YR 5/3, some 4/3-3/3 near top). Very faint distorted bedding and some faint laminae with common fine loop structures and displacements. Irregular thick parting; irregular to conchoidal fracture. Some irregular natural fractures. Some thin buff earthy porous zones near base.
2067.0	2068.2	Oil shale: dark brownish gray and rare medium brown (7.5YR & 10YR 3/2, rare 4/3-5/3 upper part); some very fine satiny to resinous streaks. Very faint smooth to slightly distorted streaked bedding. Slightly irregular to irregular thick parting; slightly irregular fracture. A <u>large empty vug</u> with irregular boxworks and black pyritic rims near top. A 4-inch very coarsely crystalline nahcolite mass near base.

Illustration No. SBR-4003P (Sheet 104 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2068.2	2069.2	Oil shale: dark to medium brownish gray and brown (7.5YR 3/2-4/2 & 4/3). Faint smooth to distorted streaked bedding; common very small distinct tan to buff blebs and streaks. Irregular parting and fracture. Some large irregular coarsely crystalline <u>nahcolite masses</u> .
2069.2	2071.5	Oil shale: dark brownish gray and brown (7.5YR 3/2-3/3). Very faint slightly distorted to smooth streaked bedding; rare small distinct tan blebs and lenses. Irregular to fairly regular thick parting; slightly irregular fracture. A 4-inch very coarsely crystalline <u>nahcolite mass</u> at base.
2071.5	2072.4	Oil shale: dark to medium brownish gray and brown, some tan to buff (7.5YR & 10YR 3/2-5/2 & 5/3, some 6/3-7/2, very rare 2/2); rare resinous to waxy luster. Moderately distinct to some very distinct, smooth to slightly distorted laminae; rare very fine loop structures and displacements. Slightly irregular to regular thick parting; slight hackly fracture. Common <u>very</u> fine disseminated crystals. Occasional thin blebby pyrite streaks. A thick light brownish gray to yellowish buff (2.5Y 6/2-7/2) mudstone band with common very fine disseminated pyrite at 2071.6-2071.8 feet; some tight vertical fractures with <u>very fine white nahcolite (?) fillings</u> ; some tight <u>irregular fractures</u> with gray pyritic fillings. Sample of buff mudstone from 2071.6 to 2071.8 feet: X-ray - quartz, dolomite, dawsonite, feldspar, pyrite. Sample of laminated shale with very fine disseminated crystals from 2071.9 feet: X-ray - quartz, dawsonite, feldspar, dolomite, ferroan.
2072.4	2075.0	Oil shale: dark to some medium brownish gray and brown (7.5YR 3/2-3/3, some 4/2-4/3). Faint smooth to some distorted streaked bedding; rare small to fine distinct tan blebs and streaks. Slightly irregular to irregular thick parting; slightly irregular to slight hackly fracture. Common small to large, fine to coarse crystalline <u>nahcolite masses</u> with very pyritic rims from 2073.8 to 2074.4 feet; rare in upper part. A large irregular buff marlstone inclusion with very faint contorted laminae near base.

Illustration No. SBR-4003P (Sheet 105 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2075.0	2077.0	Oil shale: dark brownish gray (7.5YR 3/2). Very faint smooth streaked bedding; some very small distinct tan lenses in lower part. Irregular to slightly irregular thick parting; slightly irregular fracture.
2077.0	2079.0	Oil shale: dark brownish gray and brown (7.5YR 3/2-3/3). Faint smooth to slightly distorted streaked bedding; some very small tan lenses and streaks. Irregular to slightly irregular thick parting; slightly irregular to some slight hackly fracture. A 1-inch coarsely <u>crystalline radiating nahcolite</u> nodule at 2078.5 feet.
2079.0	2085.2	Oil shale: dark to rare medium brownish gray and brown (7.5YR 3/2-3/3, rare 4/3). Faint smooth to some distorted streaked bedding; common small distinct brown to tan lenses and streaks. Slightly irregular to irregular thick parting; slight hackly fracture. Common very fine disseminated crystals in some parts. Large <u>coarsely crystalline nahcolite</u> masses at 2080.2, 2080.9, 2082.2, and 2083.8 feet. <div style="margin-left: 2em;">Sample of shale with very fine disseminated crystals and some very small tan lenses from 2079.0 feet: X-ray - quartz, dolomite, dawsonite, feldspar</div>
2085.2	2086.3	Oil shale and <u>nahcolite</u> : medium to very dark brown and brownish gray oil shale (7.5YR 5/3 & 5/2-2/2); common resinous to waxy luster in lower part. Faint to distinct slightly distorted laminae; some fine to small loop structures. Irregular parting and fracture. Three very large very coarsely <u>crystalline nahcolite</u> masses (estimated 40-50% of sample).
2086.3	2088.2	Oil shale: medium brown to very dark brownish gray (7.5YR & 10YR 5/3-2/2); common resinous to waxy luster. Distinct to faint, slightly distorted to contorted laminae; common fine to small loop structures. Regular to some very irregular, thick to medium parting; hackly to some very irregular and conchoidal fracture. A thin buff mudstone band at 2086.5 feet. Some irregular tight natural fractures near base.

Illustration No. SBR-4003P (Sheet 106 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2088.2	2088.8	Oil shale: medium brown to very light buff (10YR 4/3-8/2). Very distinct to faint fairly smooth laminae; very common fine loop structures and displacements. Slightly irregular medium to thin parting; slightly irregular to slight hackly fracture. Some very short tight to slightly open natural fractures near top.
		Sample of brown to buff laminated shale from 2088.5 feet:
		X-ray - dolomite, quartz, dawsonite, feldspar
2088.8	2089.8	Oil shale: medium brown to dark brownish gray (7.5YR & 10YR 4/3-3/2). Very faint smooth bedding. Slightly irregular thick parting; slightly irregular fracture. Some <u>very</u> fine disseminated crystals.
2089.8	2092.5	Oil shale: dark brownish gray (7.5YR 3/2, some 2/2). Very faint smooth streaked bedding. Regular to some irregular thick parting; slight hackly to irregular and conchoidal fracture. A large irregular vug with yellow stains and black pyritic blebs at 2092.2 feet.
2092.5	2093.8	Oil shale: medium to very dark brown and brownish gray (7.5YR & 10YR 4/3-2/2, rare 5/3). Faint to very faint distorted streaked bedding. Irregular parting and fracture. Some small very irregular vugs with very common black pyritic material and rare nahcolite (?) crystals in upper part. Very common fine crushed cavities with some pyrite in lower part. Some very irregular core pieces; true length doubtful.
		Sample of <u>vuggy shale</u> with black pyritic material and nahcolite (?) from 2092.6 feet:
		X-ray - pyrite, quartz, cryolite, dolomite, feldspar, dawsonite
2093.8	2095.6	Oil shale: buff and tan to medium brown (10YR & 2.5Y 7/2 & 6/3-5/3, rare 4/3). Faint to very faint, smooth to contorted streaked bedding. Slightly irregular parting and fracture in upper part; badly broken up and mixed up vuggy fractured shale with common black pyritic material in lower part. True length very doubtful.
2095.6	2097.0	Oil shale: medium brown to some dark brownish gray (10YR & 7.5YR 5/3-4/3, some 3/2 lower part). Very faint distorted streaked bedding and rare distinct laminae. Very irregular parting and fracture. Very common <u>vuggy fractured to brecciated zones</u> with black pyritic material and yellowish orange stains. Very irregular to some broken up and mixed up core pieces; true length doubtful.

Illustration No. SBR-4003P (Sheet 107 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2097.0	2098.1	Oil shale: medium brown and brownish gray (10YR & 7.5YR 4/3 & 4/2-5/3). Faint slightly distorted to smooth streaked bedding. Very irregular to slightly irregular thick parting; irregular to fairly smooth fracture. Common short tight natural vertical fractures with very fine orange-brown vitreous crusts in upper part. <u>A 2-inch vug with fine radiating box-works at 2097.8 feet.</u>
2098.1	2105.0	Oil shale: very dark brownish gray (10YR 2/2, some 3/2). Very faint smooth streaked bedding. Fairly regular to some irregular thick parting; smooth to slightly irregular fracture. Common <u>very fine disseminated crystals</u> . A 2 x 4-inch medium crystalline radiating <u>nahcolite nodule</u> with very pyritic rims at 2099.3 feet; some small radiating pyrite and nahcolite blebs at 2099.8-2100 feet; a thin flat medium to fine crystalline nahcolite mass at 2102.7 feet; some small <u>nahcolite patches</u> and disseminated crystals at 2104.4-2104.5 feet.
2105.0	2108.8	Oil shale: dark brownish gray (10YR 2/2-3/2). Very faint smooth streaked bedding. Fairly regular to some irregular thick parting; fairly smooth to slightly irregular fracture. Common <u>very fine disseminated crystals</u> . A 3-inch fine to coarse crystalline <u>nahcolite mass</u> with pyritic rims at 2106.1 feet; a 3-inch coarsely crystalline radiating nahcolite nodule with pyritic rims at 2108.3 feet. <div style="margin-left: 40px;"> { Sample of shale with very fine disseminated crystals from 2107.8 feet: X-ray - quartz, dolomite, dawsonite, feldspar, ferroan, pyrite </div>
2108.8	2110.0	Oil shale: very dark brownish gray to rare medium brown (7.5YR & 10YR 2/2-3/2, rare 4/3 lower part); common satiny to resinous luster. Very faint slightly distorted streaked bedding. Very irregular parting and fracture. Common <u>very open diagonal fractures</u> in upper part. Some <u>vuggy fractured shale</u> with yellowish orange stains and black pyritic material in lower part.

Illustration No. SBR-4003P (Sheet 108 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2110.0	2111.4	Oil shale: medium brown to rare dark brownish gray and tan to buff (7.5YR & 10YR 4/3-5/3 & 5/4, rare 3/2 & 6/3-7/2); very rare satiny to resinous luster. Faint smooth to some distorted laminae; common fine to small loop structures. Very irregular to slightly irregular thick parting; irregular to some slight hackly fracture. Common very fine disseminated crystals. Some irregular tight natural fractures in upper part.
2111.4	2116.7	Oil shale: dark brownish gray to rare medium brown (7.5YR & 10YR 3/2, rare 4/3). Very faint smooth and rare distorted streaked bedding. Slightly irregular to irregular thick parting; slightly irregular to slight hackly fracture. Very common very fine disseminated crystals. A fairly large <u>nahcolite</u> mass with black pyritic rims at 2113.2 feet. Some fairly large friable black pyritic masses with rare nahcolite at 2113.8-2114.2 and 2116.4 feet. <div style="margin-left: 2em;">Sample of black pyritic material from 2113.8 feet: X-ray - pyrite, marcasite?</div>
2116.7	2117.8	Nahcolite and oil shale: dark brown to black very coarsely crystalline radiating nahcolite; some dark brownish gray to brown oil shale at top and bottom (7.5YR & 10YR 3/2-4/3). (Estimated 70-80% nahcolite.)
2117.8	2119.1	Oil shale: dark brownish gray and rare medium brown (7.5YR 3/2, rare 4/3). Very faint smooth streaked bedding. Spiral to conical fracture; no prominent parting. Common very fine disseminated crystals. Some irregular curved natural fractures with slight white coatings in lower part. <div style="margin-left: 2em;">Sample of oil shale from 2118.3 feet: X-ray - quartz, dolomite, dawsonite, feldspar, ferroan, pyrite</div>
2119.1	2125.6	Oil shale: dark to rare medium brownish gray (7.5YR & 10YR 3/2, rare 4/2). Very faint smooth streaked bedding. Slightly irregular to some irregular thick parting; slight hackly to fairly smooth fracture. Very common very fine disseminated crystals in upper part. Part of a large very coarsely crystalline <u>nahcolite</u> mass with pyritic rims on edge of core at 2122.4 feet.

Illustration No. SBR-4003P (Sheet 109 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of oil shale from 2120.6 feet: X-ray - quartz, dolomite, dawsonite, feldspar, pyrite, ferroan
2125.6	2127.0	Oil shale and <u>nahcolite</u> : dark brownish gray and rare medium brown oil shale (7.5YR & 10YR 3/2, rare 4/3). Very faint distorted streaked bedding. Irregular parting and fracture. Common very large irregular very coarse to some fine crystalline nahcolite masses. (Estimated 40-50% nahcolite.)
2127.0	2128.0	Oil shale: very dark brownish gray (7.5YR 2/2, some 3/2); very common satiny to rare resinous and waxy luster. Very faint smooth streaked bedding and rare laminae; rare fine to small loop structures. Slightly irregular thick parting; slightly irregular fracture. Common small broken <u>buff to white clam shells on parting surfaces at base.</u> *
2128.0	2129.1	Oil shale: dark brownish gray (7.5YR & 10YR 2/2-3/2). Very faint very smooth laminae. Very regular to rare irregular thick parting; slightly irregular to very smooth fracture. Common very fine disseminated crystals in some parts. Rare very fine dark gray laminae and streaks.
2129.1	2130.1	Oil shale: dark brownish gray and rare black (7.5YR & 10YR 2/2-3/2, rare 1/2); common satiny to some resinous and rare waxy luster. Very faint smooth laminae and streaked bedding; some very small overturned folds at 2129.4 feet. Slightly irregular thick parting; smooth to some very slight hackly fracture.
2130.1	2131.1	Oil shale: dark to medium brownish gray and brown (10YR 2/2-4/2 & 4/3); some satiny to resinous luster. Faint to very faint, slightly distorted to smooth streaked bedding and rare laminae; some fine to small irregular loop structures. Slightly irregular to irregular thick parting; coarse hackly to slightly irregular fracture. Some very fine irregular fractures with very fine prismatic <u>nahcolite</u> crystals perpendicular to sides at 2130.7 feet.
2131.1	2132.3	Oil shale: medium and rare dark brownish gray and brown to some tan (10YR 4/2 & 4/3-5/2 & 5/3, some 6/3, rare 3/2-2/2). Very faint to faint smooth streaked bedding and some laminae. Irregular thick parting; irregular to slight hackly fracture. Some thin

Illustration No. SBR-4003P (Sheet 110 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2132.3	2137.0	irregular diagonal fractures with prismatic to silky nahcolite fillings in upper 0.3 foot. Very rare very fine crystalline streaks in middle part. Oil shale: very dark brownish gray (7.5YR 2/2, rare 3/2). Very faint smooth streaked bedding. Slightly irregular thick parting; slightly irregular fracture. Some very fine disseminated crystals in lower part.
2137.0	2139.3	Oil shale: dark to some medium brownish gray and brown (7.5YR & 10YR 3/2 & 3/3, some 4/3, rare 2/2). Faint slightly distorted to smooth streaked bedding. Irregular to slightly irregular thick parting; slightly irregular to some slight hackly fracture. Common very fine disseminated crystals in some parts.
2139.3	2141.0	Sample of shale with very fine disseminated crystals from 2138.9 feet: X-ray - quartz, dolomite, feldspar, dawsonite Oil shale: dark and rare medium brownish gray (10YR 3/1-2/1, rare 4/1, some 3/2-4/2 near top; commonly almost neutral gray). Very faint very smooth laminae and streaked bedding. Very regular thick parting; some thin shaly parting near top; hackly to fairly smooth fracture. Very common very fine disseminated dawsonite (flat platy crystals).
2141.0	2142.2	Sample of dark grayish shale with very common dawsonite from 2140.3 feet: X-ray - quartz, feldspar, dawsonite, pyrite Oil shale: very dark brownish gray and rare black (10YR & 7.5YR 2/2, rare 3/2 & 1/2); some satiny to rare resinous and waxy luster. Very faint smooth laminae and streaked bedding; some fine loop structures in upper part. Irregular thick parting; fairly smooth fracture. Common <u>very</u> fine disseminated crystals.
2142.2	2145.5	Oil shale: dark to some medium brownish gray (10YR 3/2, some 4/2, rare 2/2); very common satiny to resinous luster. Very faint to faint, smooth to some distorted streaked bedding. Slightly irregular to irregular thick parting; slightly irregular to irregular fracture. Rare fine brown to tan streaks and lenses. Common very fine disseminated crystals and rare very small crystalline patches in lower part.

Illustration No. SBR-4003P (Sheet 111 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2145.5	2147.0	Oil shale: very dark brownish gray and rare black (7.5YR & 10YR 2/2, some 3/2-3/1, rare 1/2). Very faint slightly distorted to smooth streaked bedding. Irregular thick parting; slightly irregular to irregular fracture. Very common very fine disseminated crystals.
2147.0	2149.2	Oil shale: very dark to rare medium brownish gray and black (10YR 2/2 & 2/1-3/2 & 3/1, rare 4/2 & 1/2). Faint to very faint, slightly distorted to very smooth laminae and streaked bedding. Slightly irregular to irregular thick parting; fine to some coarse hackly fracture in upper part; irregular fracture in lower part. Some very fine disseminated crystals in upper part. Occasional very fine irregular tight vertical fractures with brownish black tarry fillings and rare very fine crystals in upper part. Common irregular natural (?) vertical fractures in lower part.
2149.2	2149.4	Missing.
2149.4	2151.0	Oil shale: dark to medium brownish gray (10YR 3/1-4/2, rare 2/1 lower part). Very faint very smooth laminae and streaked bedding. Irregular to fairly smooth thick parting; slightly irregular to very smooth fracture. Common very fine disseminated crystals. Some irregular natural fractures near top. A very thin black stringer with fine broken columnar pyrite streaks at 2151.0 feet. Dense and heavy. <div style="margin-left: 40px;">Sample of oil shale from 2150.7 feet: X-ray - quartz, dawsonite, ferroan, dolomite, feldspar, pyrite</div>
2151.0	2154.0	Oil shale: dark brownish gray (10YR 3/2 & 3/1-2/2). Very faint very smooth streaked bedding and some laminae. Very regular to slightly irregular thick parting; smooth to some very slight hackly fracture. Common very fine disseminated crystals. Some fine dark gray laminae and streaks.
2154.0	2156.0	Oil shale: very dark brownish gray (10YR 2/1-2/2). Very faint very smooth streaked bedding; rare fine displacements. Smooth to some irregular thick parting; slightly irregular and conchoidal to very smooth fracture. Rare very thin dark gray laminae and streaks. A very thin brown fine-grained non-calcareous crystal-line streak at 2154.9 feet. Rare very short very tight vertical fractures with brownish black organic coatings in lower part.

Illustration No. SBR-4003P (Sheet 112 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
		Sample of oil shale with very fine-grained crystalline streak from 2154.9 feet: X-ray - quartz, dawsonite, cryolite, ferroan, feldspar, pyrite
2156.0	2158.0	Oil shale: dark brownish gray (10YR 2/1 & 2/2-3/1 & 3/2). Very faint very smooth streaked bedding and some laminae; rare fine loop structures and displacements. Slightly irregular to irregular thick parting; smooth to slightly irregular fracture. Some very fine dark gray streaks and laminae. Rare very short tight vertical fractures with brownish black coatings.
2158.0	2161.0	Oil shale: dark to some medium brownish gray (10YR 3/1-3/2, some 2/1 and 4/1-4/2). Faint very smooth laminae and streaked bedding; rare fine loop structures and displacements. Slightly irregular thick parting; smooth to slightly irregular fracture. Some fine dark to medium gray laminae and streaks.
2161.0	2163.6	Oil shale: dark to medium brownish gray (10YR & 7.5YR 3/2-4/2). Very faint smooth laminae; very common fine loop structures. Fairly regular to irregular thick parting; slightly irregular to smooth fracture. Rare fine gray laminae. A 1-inch massive medium to light brownish gray band at 2163.4 feet (has some very fine tight smooth vertical fractures with white crystalline fillings).
		Sample of massive band with crystalline fracture fillings from 2163.4 feet: X-ray - quartz, dawsonite, dolomite, ferroan, feldspar
2163.6	2164.1	Oil shale: medium to rare dark brownish gray and brown (10YR 4/2 & 4/3, some 5/2-5/3, rare 3/2). Faint slightly distorted to very distorted laminae; very common fine to large loop structures. Irregular parting and fracture. Some small feathery masses and very irregular fine stringers of gritty black pyritic material.
		Sample of oil shale from 2163.8 feet: X-ray - quartz, ferroan, feldspar, dolomite, dawsonite
2164.1	2165.1	Oil shale: medium to some dark brownish gray and rare tan to buff (10YR & 7.5YR 4/2-5/2, some 3/2, rare 6/3-7/2). Fairly distinct to very faint, smooth to slightly distorted laminae; common fine loop structures

Illustration No. SER-4003P (Sheet 113 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2165.1	2166.5	and displacements. Irregular to slightly irregular thick parting; fairly smooth fracture; dense and heavy. Rare fine black pyritic stringers and streaks. Oil shale: medium to rare dark brownish gray and brown (10YR & 7.5YR 4/2-4/3, rare 3/2). Very faint to faint smooth laminae; very common fine to some fairly large loop structures. Slightly irregular thick parting; smooth to slightly irregular fracture. Rare fine black pyritic stringers.
2166.5	2167.8	Oil shale: medium brown to some dark brownish gray (10YR & 7.5YR 4/3-5/3, some 3/2, rare 2/2); rare dark resinous laminae. Very faint to some moderately distinct, fairly smooth to some very distorted laminae; very common fine to small loop structures; very peculiar "horsetail flexures" (cymoidal?) with very distinct buff and dark brownish gray laminae in lower 0.3 foot. Irregular thick parting; irregular fracture. Some very irregular fine lacy black pyritic stringers.
2167.8	2168.4	Marlstone and nahcolite: very light buff to rare tan and medium brownish gray marlstone (10YR 3/2-7/2, rare 6/3-5/2). Very faint and rare distinct distorted and broken laminae. Very irregular parting and fracture. Very coarsely crystalline brown to black nahcolite filling variously oriented discontinuous fine to 1/4-inch fractures. Some marlstone fracture fragments are displaced and slightly dis-oriented.
		[Sample of marlstone and nahcolite from 2168.1 feet: X-ray - quartz, nahcolite, dolomite, feldspar, dawsonite
2168.4	2169.6	Oil shale: medium to some dark brownish gray and brown and some tan to buff (10YR & 7.5YR 4/2 & 4/3-5/2 & 5/3, some 3/2 & 6/3-8/2, rare 4/1-3/1). Very faint to some very distinct, distorted to smooth laminae; rare fine loop structures. Very irregular to regular, thick to medium parting; very irregular fracture. Common short tight natural vertical fractures--some with very fine nahcolite fillings. Some small irregular fine-grained nahcolite masses in upper part. Common fine variously oriented nahcolite filled fractures at 2168.9-2169.0 feet.

Illustration No. SBR-4003P (Sheet 114 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2169.6	2170.6	Oil shale: medium to some dark brownish gray and brown, rare tan to buff (10YR & 7.5YR 4/2 & 4/3, some 5/2-5/3 & 3/2 rare 6/3-8/2). Moderately distinct to very faint smooth laminae; common fine loop structures and displacements. Regular thick parting; slightly irregular to smooth fracture.
2170.6	2171.6	Oil shale: medium to dark brownish gray, some medium brown to tan in lower part (10YR & 2.5Y 4/2-3/2, some 5/2 & 5/3-6/3). Very faint to some distinct, smooth and rare distorted laminae; common fine loop structures. Regular to very irregular thick parting; fairly smooth to some irregular fracture. Some large masses of lacy black pyritic stringers with very <u>rare nahcolite</u> in lower part.
2171.6	2174.3	Oil shale: dark to some medium brownish gray (10YR & 7.5YR 3/2, some 3/1-4/1 & 4/2). Very faint to faint very smooth laminae and streaked bedding; rare fine loop structures. Very regular to some irregular thick parting; slightly irregular to smooth fracture; dense and heavy. Some fine medium to dark gray laminae and streaks in lower part. Some fine black pyritic streaks at 2173.6 feet. } Sample of dense heavy shale with some very fine dark gray laminae from 2173.4 feet: X-ray - quartz, dolomite, feldspar, ferroan, dawsonite, pyrite
2174.3	2175.8	Oil shale: medium to dark brownish gray and brown (10YR & 7.5YR 4/2 & 4/3-3/2); black resinous to waxy shale at 2175.3-2175.4 feet. Very faint smooth to distorted laminae; common fine to small loop structures. Slightly irregular to very irregular thick parting; fairly smooth to irregular fracture. Some large to small irregular coarsely crystalline nahcolite nodules, blebs, and streaks. Some very fine disseminated crystals in lower part.
2175.8	2179.5	Oil shale and nahcolite: medium to dark brownish gray and brown oil shale (7.5YR & 10YR 4/2 & 4/3-3/2, rare 2/2); some black satiny to waxy laminae. Very faint to some moderately distinct, smooth to very distorted laminae; very common fine to small loop structures. Irregular thick parting; slightly irregular to irregular fracture. Common 2- to 4-inch coarsely crystalline <u>radiating nahcolite nodules</u> ; occasional thick medium grained massive nahcolite stringers in lower part (estimated 20-40% nahcolite).

Illustration No. SBR-4003P (Sheet 115 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2179.5	2180.8	Nahcolite and oil shale: medium to dark brown and brownish gray oil shale (7.5YR 4/3-3/2, rare 2/2). Very faint distorted to contorted laminae. Irregular parting and fracture. Common 3- to 5-inch brown to black coarsely crystalline radiating nahcolite nodules (estimated <u>70-80% nahcolite</u>).
2180.8	2181.6	Oil shale and nahcolite: dark to rare medium brownish gray and brown oil shale (7.5YR 3/2, rare 4/2-4/3); rare black resinous laminae. Very faint distorted to some smooth laminae. Irregular thick parting; irregular to slightly conchoidal fracture. Common 1- to 2-inch coarse radiating nahcolite nodules. (Estimated <u>20-30% nahcolite</u> .)
2181.6	2184.0	Oil shale and nahcolite: dark to rare medium brownish gray and brown oil shale (7.5YR & 10YR 3/2-3/3, some 2/2 upper part, rare 4/3). Very faint smooth to very distorted laminae. Slightly irregular to irregular thick parting; smooth to slightly irregular fracture. Some to very common irregular 1/2- to 2-inch dark brownish gray to buff fine-grained nahcolite stringers. (Estimated nahcolite: 2181.6-2183.0, <u>20-30%</u> ; 2183.0-2184.0, 50-60%.) <div style="margin-left: 40px;"> Sample of massive fine-grained nahcolite from 2183.4 feet: X-ray - nahcolite, dolomite, dawsonite, quartz, feldspar </div>
2184.0	2185.0	Oil shale and nahcolite: dark brownish gray to rare medium brown oil shale (7.5YR 3/2, rare 4/3). Very faint to faint, smooth to very distorted streaked bedding. Slightly irregular to irregular thick parting; smooth to irregular fracture. Common thin fine-grained nahcolite stringers and streaks; rare 1-inch radiating nodules. (Estimated 10-20% nahcolite.)
2185.0	2186.0	Oil shale and nahcolite: dark brownish gray to medium brown oil shale (7.5YR 3/2-4/3, rare 5/3). Very faint distorted streaked bedding and some laminae. Irregular thick parting; irregular fracture. Common very irregular thin to thick fine-grained nahcolite stringers; some dense brown to tan nahcolite stringers. (Estimated <u>20-30% nahcolite</u> .)

Illustration No. SER-4003P (Sheet 116 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2186.0	2187.6	Oil shale and nahcolite: dark and rare medium brownish gray and brown, some black in lower part (7.5YR 3/2-3/3, some 2/2-1/2, rare 4/3); some resinous to waxy luster in lower part. Very faint smooth to some distorted laminae. Irregular thick parting; fairly smooth to irregular and some very slight hackly fracture. Common 1/2- to 2-inch fine-grained nahcolite bands and rare large irregular coarse grained masses; common fine disseminated crystals in lower 0.2 foot. (Estimated 30-40% nahcolite.) <div style="margin-left: 40px;">Sample of dark brown to black resinous shale with disseminated nahcolite from 2187.5 feet: X-ray - nahcolite, quartz, dolomite, calcite, feldspar, dawsonite</div>
2187.6	2188.9	Oil shale and nahcolite: dark to rare medium brownish gray and brown oil shale (7.5YR 3/2-3/3, rare 2/2 & 4/3). Very faint distorted to some smooth laminae and streaked bedding. Irregular thick parting; slightly irregular fracture. Common 1/2- to 1-inch dark to medium brownish gray fine-grained nahcolite stringers; some brown to tan dense massive stringers. (Estimated 30-40% nahcolite.) <div style="margin-left: 40px;">Sample of dense tan nahcolite stringer from 2188.4 feet: X-ray - dolomite, nahcolite</div>
2188.9	2189.9	Oil shale and nahcolite: medium to dark brown and some tan oil shale (7.5YR & 10YR 4/3-3/3 & 3/2, some 5/3-6/3). Very faint to rare distinct distorted streaked bedding. Irregular parting and fracture. Some large irregular dense to fine crystalline nahcolite masses. (Estimated 20-30% nahcolite.)
2189.9	2191.1	Oil shale and nahcolite: dark to medium brownish gray and brown oil shale (7.5YR & 10YR 3/2-4/2 & 4/3). Very faint distorted streaked bedding. Irregular thick parting; slightly irregular to irregular fracture. Common small to 2-inch, medium to coarse crystalline nahcolite masses and some disseminated crystals. (Estimated 20-30% nahcolite.)
2191.1	2192.7	Oil shale and nahcolite: medium to rare dark brownish gray and brown oil shale (7.5YR & 10YR 4/2-4/3, rare 3/2 & 5/3). Very faint fairly smooth to distorted streaked bedding. Irregular thick parting; slightly

Illustration No. SBR-4003P (Sheet 117 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2192.7	2194.2	irregular fracture. Common fine disseminated nahcolite and some small irregular fine-grained blebs and stringers. (Estimated 5-10% nahcolite.) Nahcolite and oil shale: medium brown to very dark brownish gray oil shale (7.5YR & 10YR 5/3-2/2); rare resinous luster. Very large very coarsely crystalline radiating dark brown to black nahcolite masses with some very irregular oil-shale stringers. Irregular parting and fracture. (Estimated 80-90% nahcolite.)
2194.2	2195.5	Oil shale and nahcolite: medium to some dark brown and brownish gray oil shale (7.5YR & 10YR 4/2-4/3, some 3/2). Very faint slightly distorted to smooth streaked bedding and rare laminae. Irregular to slightly irregular thick parting; irregular to slightly irregular fracture. Common thin to thick, fine to moderately coarse crystalline nahcolite stringers and bands; some very fine disseminated crystals. (Estimated 40-50% nahcolite.)
2195.5	2198.6	Oil shale and nahcolite: medium to rare dark brownish gray and brown oil shale (10YR & 7.5YR 4/2-4/3, some 5/3 middle part, rare 3/2-3/3); rare satiny luster. Very faint distorted streaked bedding and some laminae. Irregular thick parting; irregular to some conchoidal and rare slight hackly fracture. Common 1- to 3-inch coarsely crystalline radiating nahcolite masses. (Estimated 20-30% nahcolite.) Sample of medium to dark brownish gray oil shale from 2198.5 feet: X-ray - quartz, dawsonite, dolomite, calcite
2198.6	2200.3	Oil shale and nahcolite: medium to dark brownish gray and brown oil shale (10YR & 7.5YR 4/2-4/3, some 3/2). Very faint distorted to fairly smooth streaked bedding and some laminae. Irregular to some slightly irregular thick parting; irregular to slightly irregular fracture. Common irregular thin to thick stringers and bands of moderately coarse to fine-grained nahcolite; some fine disseminated crystals and rare coarsely crystalline nodules. (Estimated 30-40% nahcolite.)
2200.3	2201.3	Oil shale: medium brown and brownish gray (10YR 4/3-4/2). Very faint smooth to slightly distorted streaked bedding. Irregular thick parting; slightly irregular to conchoidal fracture. Some very fine disseminated pyrite. Rare very fine disseminated nahcolite.

Illustration No. SBR-4003P (Sheet 118 of 119)

LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR A SSAY

Core samples from BuMines-AEC Colorado Corehole No. 2--Continued

From	To	Description
2201.3	2202.6	Oil shale and nahcolite: tan to dark brownish gray oil shale (10YR 6/3-3/2). Very faint distorted streaked bedding in thick light and dark zones. Irregular parting and fracture. Very common fine disseminated nahcolite. (Estimated 10-20% nahcolite.) [Sample of tan shale with disseminated nahcolite from 2201.9 feet: X-ray - dolomite, nahcolite, cryolite, quartz, dawsonite
2202.6	2207.0	Oil shale and nahcolite: medium to rare dark brown and brownish gray oil shale (10YR & 7.5YR 4/3-4/2, rare 3/2). Very faint slightly distorted streaked bedding. Irregular to slightly irregular thick parting; slightly irregular to irregular hackly fracture. Common disseminated nahcolite and some small to large, medium to fine crystalline masses. (Estimated nahcolite: 2202.6-2204.0, 5-15%; 2204.0-2206.0, 5-10%; 2206.0-2207.0, 15-25%.)
2207.0	2209.2	Oil shale and nahcolite: medium to rare dark brown and brownish gray oil shale (10YR 4/3-4/2, rare 3/2). Very faint slightly distorted to some smooth streaked bedding. Irregular thick parting; irregular to some coarse hackly fracture. Some disseminated nahcolite and small to large coarsely crystalline masses. (Estimated 5-15% nahcolite.) Some very fine pyrite blebs. [Sample of oil shale from 2208.9 feet: X-ray - quartz, dolomite, dawsonite, feldspar, calcite
2209.2		Bottom of recovered solid core.
2209.2	2209.7	Missing.
		Fire at bottom of hole at 2214.1 feet. Recovered some spent shale from core barrel. [Sample of spent shale from 2209.7-2214.1 feet: X-ray - acid leaching indicates the presence of carbonate--probably calcite; small peaks left after acid leaching could be feldspar, augite and/or diopside; dolomite peak could be hidden but is probably not present; no quartz nor dawsonite.
2214.1		Bottom of hole.

Illustration No. SBR-4003P (Sheet 119 of 119)

Laramie Petroleum Research Center, Laramie, Wyoming

October 11, 1966

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LITHOLOGIC DESCRIPTION OF SAMPLES SUBMITTED FOR ASSAY^{1/}

Core samples of the Green River Formation from Bureau of Mines-Atomic Energy Commission Colorado Corehole No. 2 drilled in 1966 in SW1/4 NW1/4NE1/4 sec 14 (710.4 ft S of N line and 2005.1 ft W of E line), T 1 S, R 99 W, Rio Blanco County, Colorado

Elevation KB: 6607.7 feet (10.7 feet above ground level)
Cored interval: 805.4-2214.1 feet
Mahogany marker: 1252.2 feet

From	To	Description
805.4	809.4	Siltstone: medium brownish gray to buff and gray-buff (2.5Y 5/2 & 5/1-7/2 & 7/1), slightly calcareous. Faint distorted to contorted streaks and stringers. Irregular thick parting; slightly irregular fracture. Some thin sandy stringers.
809.4	813.1	Siltstone and mudstone: medium and light brownish gray in upper part to buff and gray-buff in lower part (2.5Y 5/2 & 5/1-7/2 & 7/1). Very faint bedding with occasional faint distorted stringers to massive. Very irregular parting and fracture.
813.1	816.9	Siltstone and sandstone: medium to light brownish gray and gray-buff (2.5Y 5/2-7/1), slightly calcareous. Fairly distinct fairly regular stringers and bands. Slightly irregular to irregular thick parting; regular to some irregular fracture.
816.9	820.4	Siltstone and some sandstone: light to medium brownish gray and some gray-buff (2.5Y 6/1-4/1, some 7/1). Very faint fairly regular bands and laminae. Slightly irregular to irregular thick parting; slightly irregular fracture. A 1/2-inch zone with very common fine vitreous black streaks at 819.9 feet.
820.4	822.4	Siltstone and sandstone: light to medium brownish gray and neutral gray (10YR 6/1-5/1 & 7-6N). Very faintly bedded to massive. Very irregular parting and fracture.
822.4	825.3	Sandstone and siltstone: very light gray to gray-buff (8N to 10YR 7/1). Massive to very faintly bedded. Badly broken up and mixed up; true length doubtful.
825.3	827.1	Missing.
827.1	829.7	Siltstone and some sandstone: medium brownish gray to gray-buff (10YR 5/2 & 5/1-7/1). Faint to moderately distinct distorted streaks and stringers. Irregular thick parting; slightly irregular fracture.
829.7	831.9	Siltstone and some oil shale: medium to light brownish gray (2.5Y 5/1 & 5/2-6/1 & 6/2). Faint distorted streaks, stringers, and rare laminae. Irregular parting and fracture. Very rare fine vitreous black organic streaks.

^{1/} By L. G. Trudell