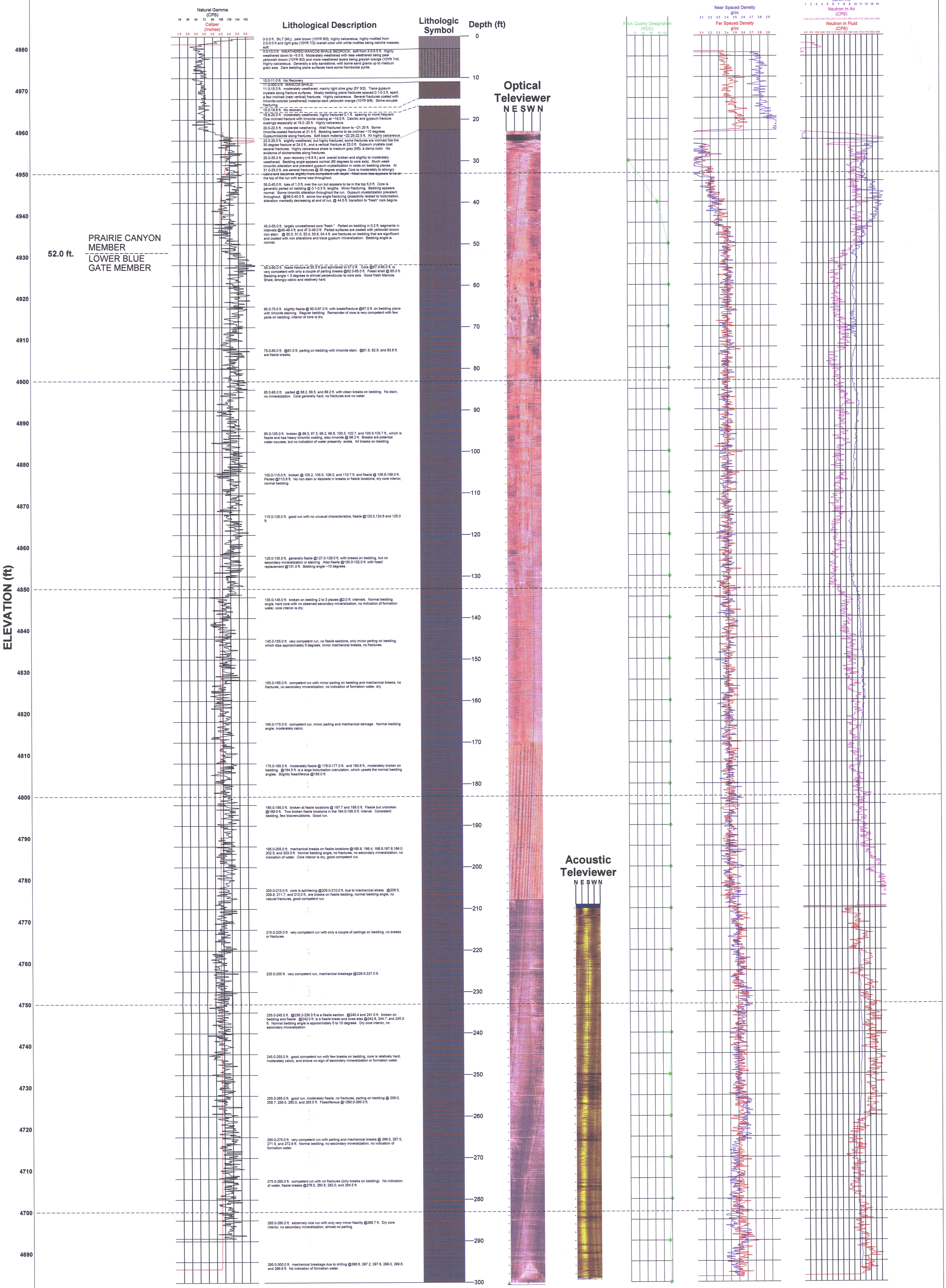
CRJ01-0204



0-3.0 ft. SILT (ML); pale brown (10YR 6/3), highly calcareous, highly mottled from 2.0-3.0 ft and light gray (10YR 7/2) overall color with white mottles being caliche masses, soft.

3.0-10.0 ft. WEATHERED MANCOS SHALE BEDROCK; soft from 3.0-5.5 ft. Highly weathered down to ~5.5 ft. Moderately weathered with less weathered being pale yellowish brown (10YR 6/2) and more weathered layers being grayish orange (10YR 7/4). Highly calcareous. Generally a silty sandstone, with some sand grains up to medium grain size. Dark bedding plane surfaces have some framboidal pyrite.

10.0-11.0 ft. No Recovery.

11.0-300.0 ft. MANCOS SHALE:
11.0-15.0 ft. moderately weathered, mainly light olive gray (5Y 5/2). Trace gypsum crystals along fracture surfaces. Mostly bedding plane fractures spaced 0.1-0.2 ft. apart; a few inclined (near vertical) fractures. Highly calcareous. Several fractures coated with limonite-colored (weathered) material-dark yellowish orange (10YR 6/6). Some arcuate fracturing.

15.0-16.8 ft. No recovery.

16.8-20.0 ft. moderately weathered, highly fractured 0.1 ft. spacing or more frequent. One inclined fracture with limonite coating at ~18.0 ft. Calcitic and gypsum fracture coatings especially at 19.0 -20 ft. Highly calcareous.

20.5-22.5 ft. moderate weathering. Well fractured down to ~21.25 ft. Some limonite-coated fractures at 21.5 ft. Bedding seems to be inclined ~10 degrees. Gypsum/calcite along fractures. Soft black material ~22.25-22.5 ft. All highly calcareous.

22.5-25.0 ft. slightly weathered, but highly fractured, some fractures are inclined like the 30 degree fracture at 24.0 ft., and a vertical fracture at 23.0 ft. Gypsum crystals coat several fractures. Highly calcareous shale is medium gray (N5), a damp color. No evidence of slickensides along fractures.

25.0-35.0 ft. poor recovery (~6.8 ft.) and overall broken and slightly to moderately weathered. Bedding angle appears normal (85 degrees to core axis). Much weak limonitic alteration and prevalent gypsum crystallization in voids on bedding planes. At 31.0-33.0 ft. are several fractures @ 30 degree angles. Core is moderately to strongly calcic and becomes slightly more competent with depth. Most core loss appears to be at the top of the run with some loss throughout.

35.0-45.0 ft. loss of 1.0 ft. over the run but appears to be in the top 5.0 ft. Core is generally parted on bedding @ 0.1-0.3 ft. lengths. Minor fracturing. Bedding appears normal. Some limonitic alteration throughout the run. Gypsum crystallization prevalent throughout. @39.0-40.0 ft. some low angle fracturing (possibility related to bioturbation, alteration markedly decreasing at end of run, @ 44.5 ft. transition to "fresh" rock begins.

45.0-55.0 ft. largely unweathered core "fresh." Parted on bedding in 0.2 ft. segments in intervals @45-46.4 ft. and 47.0-48.0 ft. Parted surfaces are coated with yellowish brown iron stain. @ 50.5, 51.0, 52.4, 53.8, 54.4 ft. are fractures on bedding that are significant and coated with iron alterations and trace gypsum mineralization. Bedding angle is normal.

55.0-65.0 ft. fissile fracture at 55.3 ft and splintered to 57.0 ft. Core @57.0-65.0 ft. is very competent with only a couple of parting breaks @62.0-65.0 ft. Fossil shell @ 65.0 ft. Bedding angle < 3 degrees to almost perpendicular to core axis. Good fresh Mancos Shale, strongly calcic and relatively hard.

65.0-75.0 ft. slightly fissile @ 65.0-67.0 ft. with break/fracture @67.0 ft. on bedding plane with limonite staining. Regular bedding. Remainder of core is very competent with few parts on bedding; interior of core is dry.

75.0-85.0 ft. @81.0 ft. parting on bedding with limonite stain. @81.8, 82.8, and 83.6 ft. are fissile breaks.

85.0-95.0 ft. parted @ 88.2, 88.5, and 89.2 ft. with clean breaks on bedding. No stain, no mineralization. Core generally hard, no fractures and no water.

95.0-105.0 ft. broken @ 96.3, 97.3, 98.2, 98.6, 100.3, 102.7, and 103.3-103.7 ft., which is fissile and has heavy limonitic coating, also limonite @ 98.2 ft. Breaks are potential water courses, but no indication of water presently exists. All breaks on bedding.

105.0-115.0 ft. broken @ 105.2, 105.5, 108.0, and 110.7 ft. and fissile @ 108.8-109.0 ft. Parted @113.8 ft. No iron stain or deposits in breaks or fissile locations, dry core interior, normal bedding.

115.0-125.0 ft. good run with no unusual characteristics, fissile @120.0,124.8 and 125.0 ft.

125.0-135.0 ft. generally fissile @127.0-129.0 ft. with breaks on bedding, but no secondary mineralization or staining Also fissile @130.0-132.0 ft. with fossil replacement @131.0 ft. Bedding angle ~10 degrees.

135.0-145.0 ft. broken on bedding 2 to 3 places @2.0 ft. intervals. Normal bedding angle; hard core with no observed secondary mineralization, no indication of formation water, core interior is dry.

145.0-155.0 ft. very competent run, no fissile sections, only minor parting on bedding, which dips approximately 5 degrees, minor mechanical breaks, no fractures.

155.0-165.0 ft. competent run with minor parting on bedding and mechanical breaks, no fractures, no secondary mineralization, no indication of formation water, dry.

165.0-175.0 ft. competent run, minor parting and mechanical damage. Normal bedding angle, moderately calcic.

175.0-185.0 ft. moderately fissile @ 178.0-177.0 ft. and 180.6 ft., moderately broken on bedding. @184.5 ft. is a large bioturbation crenulation, which upsets the normal bedding angles. Slightly fossiliferous @185.0 ft.

185.0-195.0 ft. broken at fissile locations @ 187.7 and 188.0 ft. Fissile but unbroken @189.0 ft. Two broken fissile locations in the 194.0-195.0 ft. interval. Consistent bedding, few biocrenulations. Good run.

195.0-205.0 ft. mechanical breaks on fissile locations @195.8, 196.4, 196.8,197.6,198.0, 202.5, and 203.3 ft. Normal bedding angle, no fractures, no secondary mineralization, no indication of water. Core interior is dry, good competent run.

205.0-215.0 ft. core is splintering @205.0-210.0 ft. due to mechanical stress. @206.5, 209.8, 211.7, and 212.0 ft., are breaks on fissile bedding, normal bedding angle, no natural fractures, good competent run.

215.0-225.0 ft. very competent run with only a couple of partings on bedding, no breaks or fractures.

225.0-235 ft. very competent run, mechanical breakage @226.0-227.0 ft.

235.0-245.0 ft. @236.2-236.3 ft is a fissile section. @240.4 and 241.0 ft. broken on bedding and fissile. @242.0 ft. is a fissile break and ones also @242.6, 244.7, and 245.0 ft. Normal bedding angle is approximately 5 to 10 degrees. Dry core interior, no secondary mineralization.

245.0-255.0 ft. good competent run with few breaks on bedding, core is relatively hard, moderately calcic, and shows no sign of secondary mineralization or formation water.

255.0-265.0 ft. good run, moderately fissile, no fractures, parting on bedding @ 258.0, 258.7, 259.5, 260.0, and 263.5 ft. Fossiliferous @~260.0-265.0 ft.

265.0-275.0 ft. very competent run with parting and mechanical breaks @ 266.0, 267.5, 271.5, and 272.8 ft. Normal bedding, no secondary mineralization, no indication of formation water.

275.0-285.0 ft. competent run with no fractures (only breaks on bedding). No indication of water, fissile breaks @276.5, 280.8, 282.0, and 284.5 ft.

285.0-295.0 ft. extremely nice run with only very minor fissility @286.7 ft. Dry core interior, no secondary mineralization, almost no parting.

295.0-300.0 ft. mechanical breakage due to drilling @296.6, 297.2, 297.8, 299.0, 299.6, and 299.8 ft. No indication of formation water.

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