



Scale: 4.41" / 100'  
Measured Depth Log

Well Name State Seventy Holes K21-O24-4HNB

Location NENW SEC 4 T4N R62W

State CO County WELD

Country USA Rig Number FRONTIER 4

API Number 05-123-39211-00 Field WATTENBERG

Region DJ BASIN

Spud Date 12/11/2014

Surface Coordinates 370' FNL x 1382' FWL (LAT: 40.34792, -104.33591)

Bottom Hole Coordinates 470' FSL x 2319' FWL (LAT: 40.33530, -104.33171) PROJECTED

Ground Elevation 4552' K.B. Elevation 4574'

Logged Interval 6100'

Formation NIOBRARA, B-CHALK

Type of Drilling Fluid H2O, LSND

Operator

Company Bonanza Creek Energy Inc.

Address 410 17th Street, Suite 1500  
Denver, CO 80202

Geologists

Name Paul McKay

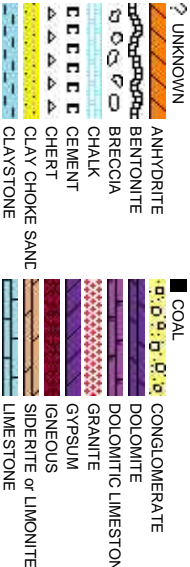
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Denver, CO 80202

Zone Color C



Rock Type



Accessories

	GASTROPOD		ARGILLITE GRAIN		HEAVY MINERAL
	INOCERAMUS		KAOLIN		ANHYDRITE STRINGER
	ALGAE		B BENTONITE		BENTONITE STRINGER
	AMPHIPORA		BITUMENOUS SUBSTANCE		COAL STRINGER
	BELEMNITE		BRECCIA FRAGMENTS		DOLOMITE STRINGER
	BIOCLASTIC		CALCAREOUS		GYPSUM STRINGER
	BRACHIOPOD		PELLET		LIMESTONE STRINGER
	BRYOZOA		PISULITE		MARLSTONE (CALC) STRG
	CEPHALOPOD		PLANT REMAINS		PYRITE
	CORAL		PLANT SPORES		SALT CAST
	GRINOID		SCAPHOPOD		SANDY
	ECHINOID		STROMATOPOROID		SILICEOUS
	FISH		FERRUGINOUS PELLET		SILTY
	FORAMINIFERA		FERRUGINOUS		TUFFACEOUS
	F FOSSIL		GLAUCONITE		
			ARGILLACEOUS		
			GYPSIFEROUS		

Stringer

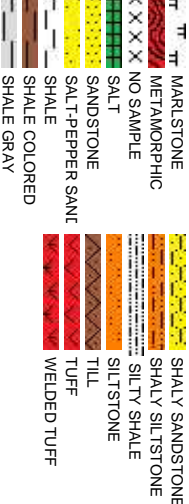
Other Symbols

	P PINPOINT		WIRELINE TESTED - LEFT		E EARTHY
	V VUGGY		WIRELINE TESTED - RT		FX FINELYXLN
	D DEAD		FORMATION TOP		GS GRAINSTONE
	EVEN		GAS SHOW		L LITHOGRAPHIC
	QUESTIONABLE		OIL SHOW		MX MICROXLN
	SPOTTED STAINING		BIT		MS MUDSTONE
	CONNECTION (UP)		MN DEPTH UP		
	CONNECTION (DOWN)		MN DEPTH (DOWN)		AS ANGULAR
	Porosity		NORMAL FAULT		RS ROUNDED
	E EARTHY		OVERTURNED STRATA		S SUBANG
	F FENESTRAL		REVERSE FAULT		S SUBRAND
	F FRACTURE		CASING		
	INTERCRYSTALLINE		SIDEWALL CORE (LEFT)		
	INTEROOLITIC		SIDEWALL CORE (RIGHT)		B\$ BOUNDSTONE
	MOLDIC		SLIDE		C CHALKY
	ORGANIC		CORE - LOST		CX CRYPTOXLN
			CORE - RECOVERED		
			DST INTERVAL		
			FAULT		
			DRILL STEM TEST		
			MN DEPTH		
			Rounding		
			PS PACKSTONE		
			WS WACKESTONE		
			Sorting		
			P POOR		
			W WELL		
			M MODERATE		

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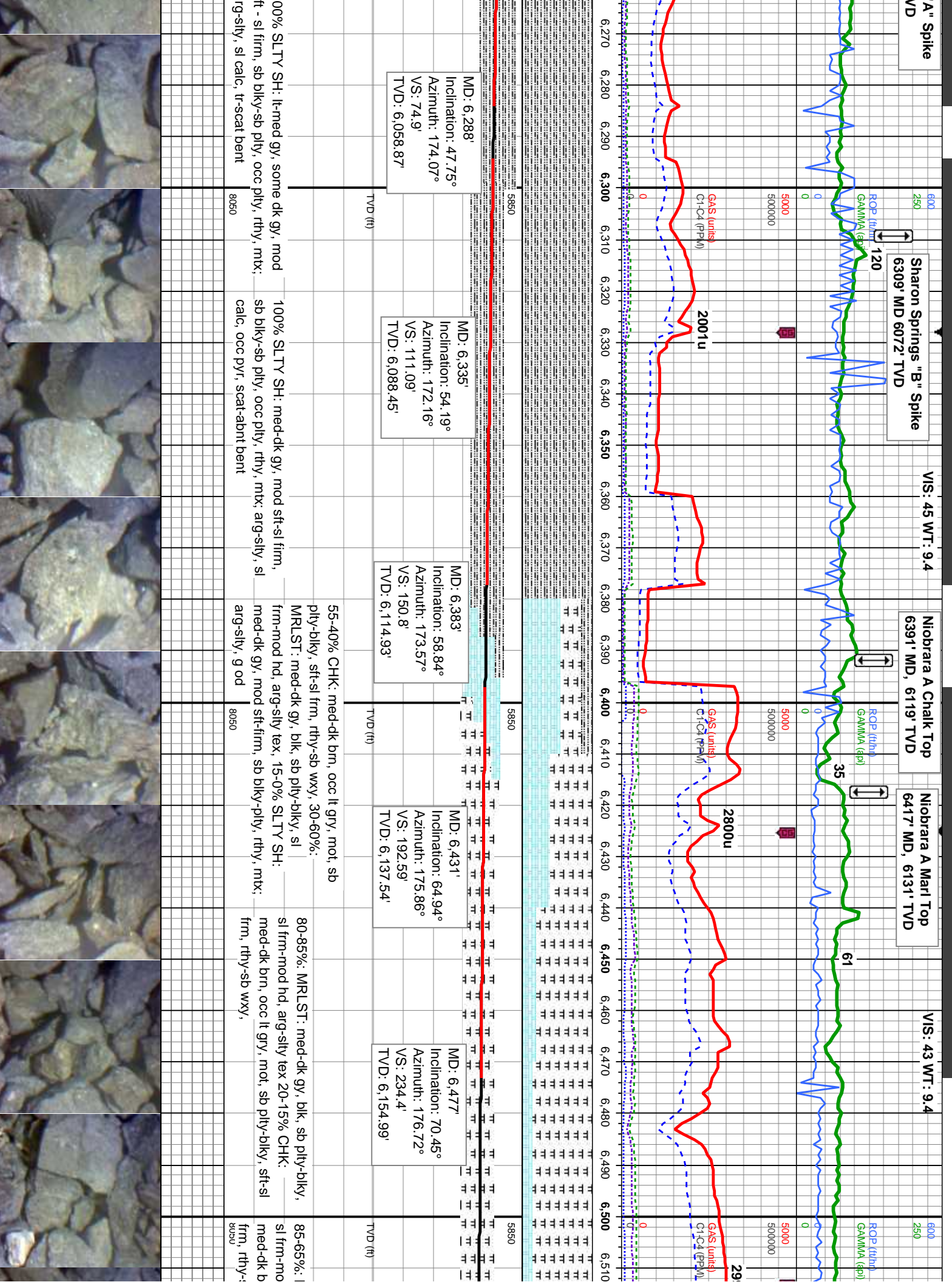


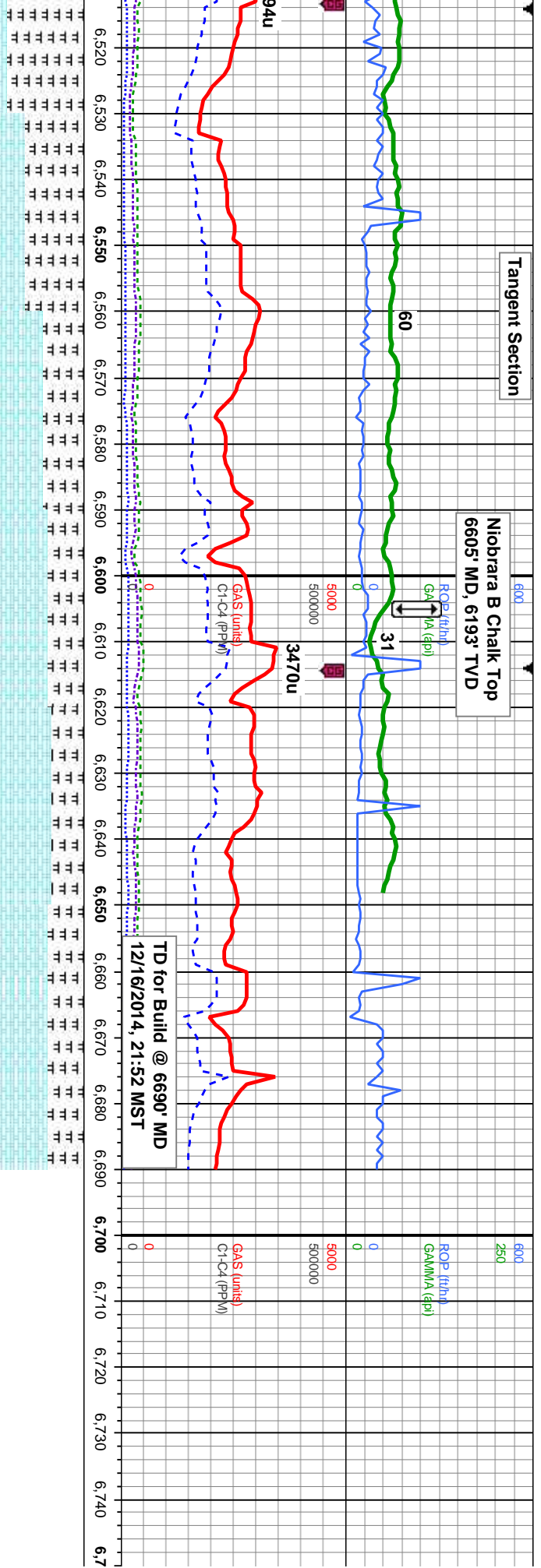
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MD: 6,524'	MD: 6,571'	MD: 6,591'	MD: 6,618'	MD: 6,648'
Inclination: 70.79°	Inclination: 72.85°	Inclination: 76.2°	Inclination: 81.15°	Inclination: 87.77°
Azimuth: 176.66°	Azimuth: 177.14°	Azimuth: 176.49°	Azimuth: 176.2°	Azimuth: 176.33°
VS: 277.93'	VS: 321.73'	VS: 340.64'	VS: 366.66'	VS: 395.99'
TVD: 6,170.59'	TVD: 6,185.25'	TVD: 6,190.58'	TVD: 6,195.89'	TVD: 6,198.78'

MRLST: med-dk gy, blk, sb pty-bkly, 55-60% CHK: lt-med gy, occ dk brn, mot, sb pty-bkly, sft-sl frm, rthy-sb wxy, 45-40%: MRLST: med-dk gy, blk, sb pty-bkly, sl frm-mod hd, arg-sily tex, mtx; calc, mod od

sb wxy,

