

SOFTROCK GEOLOGICAL SERVICES, INC.



San Juan Basin's Premier Mudlogging Business



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- HORIZONTAL LOGGING
- WELLSITE CONSULTING
- PRECISION CHROMATOGRAPHY
- PHOTO MICROSCOPY
- COAL DESCRIPTION

Scale 1:240 (5"=100') Imperial Measured Depth Log

Well Name: Boren 34-9 #29-3A
Location: SWSW >> NWSW Sec. 29 T29N,R09W LaPlata Co., CO
License Number: AFE#: WAN.CBM.7102 Region: Basin Fruitland
Spud Date: Drilling Completed: February 15, 2008
Surface Coordinates: 1095' FSL Lat. 37.157663 North
1095' FWL Long. 107.853503 West
Bottom Hole 1840' FSL Lat. 37.159718 North
Coordinates: 0800' FWL Long. 107.854515 West
Ground Elevation (ft): 6553' K.B. Elevation (ft): 6567'
Logged Interval (ft): 2766' MD To: 3138' MD Total Depth (ft): 2935' TVD
Formation: Cretaceous Fruitland, Pictured Cliffs
Type of Drilling Fluid: Air/Mist

Printed by WellSight Log Viewer from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: ConocoPhillips - San Juan Business Unit
Address: 3401 E. 30th Street
Farmington, NM 8740

GEOLOGISTS

Name: Bob Bradley, JP Bauer
Company: Softrock Geological Services, Inc.
Address: 591 County Rd. 233
Durango, CO 81301
(970) 247-8868 fax (970) 247-5108

Contractors

Aztec Drilling Rig# 731
Koch Co. Rep. : Mr. Teddy Rodriguez

Instrument

i5 FID Chromatograph & FID Total Gas Detector

Hole/Csg Info

Hole Size: 12 1/4" to sfc. TD
8 3/4" to Int. TD
6 1/4" to TD

Casing Size: 9 5/8" to 173' 32.3# H-40 ST&C
7" to 2515' 20.0# J-55 ST&C

ROCK TYPES

LITHOLOGY

Bentonite
 Chert band
 Coal
 Conglom.
 Limestone
 Sandstone

Shale
 Siltstone
 Clay
 Fracture
 Marl
 Carb shale
 Mudstone

Metal
 Cement

STRINGER

Argillaceous
 Bentonite
 Coal lam.

Lime
 Sand lens
 Clay lens
 Carb shale

ACCESSORIES

FOSSIL

Shell hash
 Crinoid
 Fish
 Fossil
 Oolite
 Plant
 Inoceramus

MINERAL

Argillaceous
 Bentonite
 Calcareous
 Carby
 Dark chert
 Light chert
 Dolomite
 Feldspar

Ferromag
 Glaucinite
 Heavy min.
 Kaolinite
 Marly
 Mica
 Min. xl
 Pyrite
 Sandy

Silty
 Silica/qtz
 Water
 Fracfill
 Smkyqtz
 Chlorite
 Jasper
 Amber
 Inter. clay

OTHER SYMBOLS

EVENTS

Casing shoe
 Midnight
 Bit trip
 Fracture
 Survey

Dz canister
 Gas show
 Td
 Tite conn
 Pitot
 Sea level

Fm. member
 Fm. tops
 Interp. show

STAINING

Even

Spotted
 Rare
 Dead oil

ROP (min/ft)	Depth	% Lithology	Porosity	Lithology	Geological Descriptions	Gas Curves
ROP	Depth	% Lithology	Porosity	Lithology	Geological Descriptions	Total Gas (units) Methane (ppm) Ethane (ppm) Propane (ppm) Butanes (ppm) Wetness (% Methane)
Bit #1: 6 1/4" tri-cone In @ 2766' MD Out @ TD 60 RPM					Softrock Geological Services, Inc. operational on February 14, 2008 at 9:00 AM MDT. Drilling out of casing into Fruitland Fm. with a tri-cone bit. Cuttings and gas circulated to surface with compressed air/mist.	Total Gas (units) Chromatography components calibrated to a minimum of 98.85% repeatability. Wetness (% Methane) 2 compressor/ 2 booster combo: AP 600 psi 1900 cf/m

WOB 2-4K
AP 600 psi

2750

2/15/08

RCP (in/ft)

2800

2850

2900

7" casing at 2733' MD
(2530' TVD) (+4037' subsea elev.)

TVD = MD - 203'.

10' Sample Interval.

8 3/4" hole drilled to 2766' MD

COALS: silky black intermediate matrix with dark brown to flat black dull bands, rare sub glassy black bright bands. Firm to hard, fissile to sub platy, brittle to flaky. Poor to fair cleating with angular junctions, no striations. Micro pyrite and amorphous calcite fill. Grades to carby shale at margins.

SHALES/ CARB SHALES: medium to dark gray to dark gray-brown. Peppared with microcrystalline pyrite and black carby-coaly laminations and streaks. Sub platy to platy, fissile. Moderately firm to brittle. Dull to earthy luster, gritty to smooth texture. Trace sandstone lenses and benches.

COAL: (40%) dull to flat black-brown grade coal, (40%) silky to semi-bright intermediate banded coal, (20%) bright black glassy grade coal with abundant conchoidal fracturing. Sub blocky to blocky cuttings, fair to good cleat development with intersecting faces, oblique junctions. Trace calcite fracture fill seen as sheets attached to coal cuttings. Firm to slightly brittle. No visible striations. Overall a good looking coal.

COAL: (60-70%) satiny black intermediate banded coal, (20%) flat black, (10-20%) bright black grade. Mostly blocky to sub blocky cuttings, with good cleating. Trace intersecting smooth cleat faces at almost 90 degrees. Trace calcite fracture fill as above coal. Hard to firm. Grades to carbonaceous shale at base. Trace conchoidal fracturing seen in most vitreous cuttings. Overall a fair to good quality coal.

COAL: (60%) satiny to greasy intermediate grade coal. Irregular cuttings, trace intersecting faces and oblique junctions. Fair to good cleat development. Trace calcite fracture fill, no other secondary mineralization. Firm to brittle. (20-30%) bright black glassy coal, blocky to angular cuttings, smooth clean faces. (10-20%) dull grade dark brown to black coal, grading to carbonaceous shale. Overall good quality coal.

COAL: mostly silky to satiny black intermediate banded coal, with bright black vitreous bands and lenses. Trace to 10% bright black coal. Blocky to cubic cuttings with fair to good cleat development. No visible secondary mineralization or striations.

COAL: (75-80%) silky to semi-bright intermediate banded coal, with abundant black vitreous bands and lenses. Cuttings vary from blocky to platy to

12 bbl/hr H2O
2 gal soap/20

6 - 127 - 109 units
(99.1% methane)

2775 - 2778' 3'

2789 - 2790' 1'
147 units
(99.0% methane)

2799 - 2801' 2'
137 units
(99.3% methane)
Wetness (% methane)

117 - 216 - 196 units
(99.5% methane)

2833 - 2839' 6'

2841 - 2845' 4'

2858 - 2866' 8'

2877 - 2880' 3'

2889 - 2891' 2'

2894 - 2895' 1'

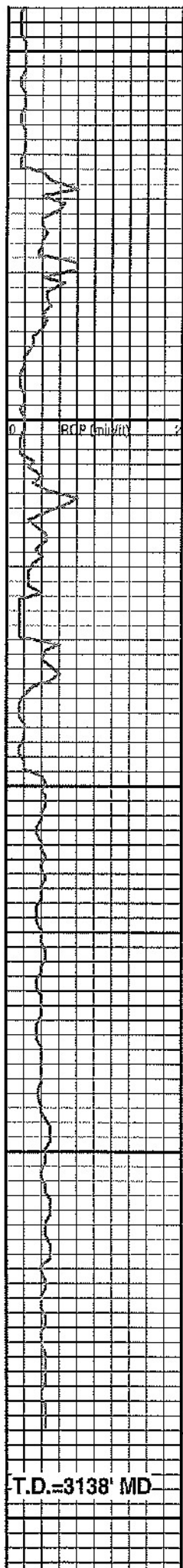
2898 - 2902' 4'

2911 - 2917' 6'

2925 - 2926' 1'

2928 - 2932' 4'

162 - 350 - 342 units
(98.9% methane)



2950

3000

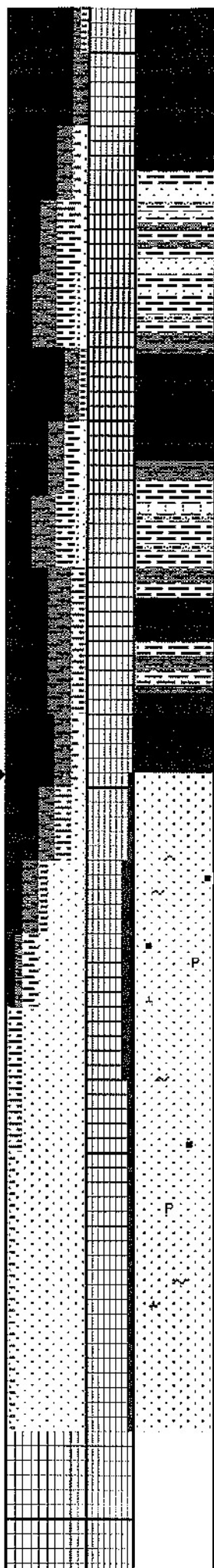
3100

TD

T.D.=3138' MD

3150

Formation
TOP
3030



shardy. Moderately firm to brittle. Calcite fracture fill seen in sheet-like structures attached to coal cuttings. Good cleat development with some cubic to oblique junctions. Other (20-25%) coal is bright black glassy coal with conchoidal fracturing. No visible striations. Overall fair to good quality coal.

SANDSTONE: light to medium gray, dirty, heavily peppered with chert shards, microcrystalline pyrite, carby material. Very fine to fine grained, sub angular to sub rounded. Well cemented with highly calcareous clay and some silica. Tight, poor porosity due to clay fill. No fluorescence seen or cut.

COAL: (75-80%) silky to semi-bright intermediate banded coal, with abundant black vitreous bands and lenses. Cuttings vary from blocky to platy to shardy. Moderately firm to brittle. Calcite fracture fill seen in sheet-like structures attached to coal cuttings. Good cleat development with some cubic to oblique junctions. Other (20-25%) coal is bright black glassy coal with conchoidal fracturing. No visible striations. Overall fair to good quality coal.

COAL: varies from dull to bright black, with most (80-70%) intermediate range material. Trace amounts of bright vitreous material seen as thin laminae and scattered sub conchoidal fragments. Silky to satiny black luster. Sub platy to irregular cuttings. Hard to brittle. Fair to good cleating, occasional cleat plane intersections at oblique angles. No secondary mineralization seen.

Pictured Cliffs Fm. @ 3048' MD
(2845' TVD) +3722' subsea elev.

SANDSTONE: off white to light gray, translucent. Upper fine grained to lower medium grained, subrounded to rounded, very well sorted. Consists of disaggregate quartz grains with trace amounts of glauconite, black carby flakes, microcrystalline pyrite. Trace amber staining. Highly calcareous clay cement when consolidated, friable. No fluorescence seen or cut.

SANDSTONE: white to cream 'salt and pepper' appearance typical of the P.C. formation, upper fine to fine grained, well sorted, sub-rounded to sub-angular, poorly cemented with calcite, occasional pale green grains interpreted to be from weathered glauconite. No fluorescence seen or cut.

Total Depth of 3138' MD
(2935' TVD) from K.B.
reached at 11:30 AM MDT on
February 15, 2008.

320 units background gas at T.D.

2934 - 2966' 32'

2991 - 3005' 14'

Total Gas (scf/lb)	300
Methane (scf/lb)	60000
Ethane (scf/lb)	30000
Propane (scf/lb)	20000
Butanes (scf/lb)	20000
Weight (% methane)	

3024 - 3030' 6'

3037 - 3048' 11'

Coal Intervals:

- 2775 - 2778' 3'
- 2789 - 2790' 1'
- 2799 - 2801' 2'
- 2833 - 2839' 6'
- 2841 - 2845' 4'
- 2858 - 2866' 8'
- 2877 - 2880' 3'
- 2889 - 2891' 2'
- 2894 - 2895' 1'
- 2898 - 2902' 4'
- 2911 - 2917' 6'
- 2925 - 2926' 1'
- 2928 - 2932' 4'
- 2934 - 2966' 32'
- 2991 - 3005' 14'
- 3024 - 3030' 6'
- 3037 - 3048' 11'

Total Openhole Coal: 108'

