

Diablo Analytical BTU Report

GPA 2145-03 Analysis

Sample Information

Sample Information	
Sample Name	Federal B 3 BradenHead
Station Number	2300450193
Taken By	Alpine Analysis LLC
Operator	Travis Tapp
Method Name	StandardNatGas.met
Injection Date	2018-03-19 18:11:48
Report Date	2018-03-19 18:15:39
EZReporter Configuration File	default Standard Sample.cfgx
Source Data File	2018-03-19 18-11-32 (GMT -06-00)Federal B 3 BradenHead.dat
EZReporter Data File	Federal B 3 BradenHead-20180319-181539.ezrx
Data Source	Agilent EZChrom Connector

30.045-33361

Component Results

Component Name	Ret. Time	Peak Area	Norm%	Gross HV (Dry) (BTU / Ideal cu.ft.)	Relative Gas Density (Dry)	GPM (Dry) (Gal. / 1000 cu.ft.)
Nitrogen	0.320	197304.0	0.28119	0.0	0.00272	0.031
Methane	0.324	43087831.0	89.19683	903.0	0.49406	15.159
Carbon Dioxide	0.378	80164.0	0.11553	0.0	0.00176	0.020
Ethane	0.423	4233604.0	5.78422	102.6	0.06005	1.551
Hydrogen Sulfide	0.601	0.0	0.00000	0.0	0.00000	0.000
Propane	0.529	5368809.0	2.68887	67.8	0.04094	0.743
i-Butane	0.578	1305654.0	0.56157	18.3	0.01127	0.184
n-Butane	0.611	1742599.0	0.73476	24.0	0.01475	0.232
i-Pentane	0.717	689350.0	0.26136	10.5	0.00651	0.096
n-Pentane	0.761	502712.0	0.18316	7.4	0.00456	0.067
Hexanes Plus	0.000	644031.0	0.19251	0.0	0.00000	0.000
Water	0.000	0.0	0.00000	0.0	0.00000	0.000
Total:			100.00000	1133.6	0.63661	18.082

Results Summary

Result	Dry	Sat. (Base)
Total Raw Mole% (Dry)	98.33130	
Pressure Base (psia)	14.730	
Temperature Base	60.0	
Water Mole%	-	1.74067
Gross Heating Value (BTU / Ideal cu.ft.)	1133.6	1113.8
Gross Heating Value (BTU / Real cu.ft.)	1136.6	1117.3
Relative Density (G), Real	0.6381	0.6381
Compressibility (Z) Factor	0.9973	0.9969
Total GPM	18.082	17.873

Diablo Analytical BTU Report

GPA 2145-03 Analysis

Sample Information

30-045-33361

Sample Information	
Sample Name	Federal B 3 Casing
Station Number	2300450193
Taken By	Alpine Analysis LLC
Operator	Travis Tapp
Method Name	StandardNatGas.met
Injection Date	2018-03-19 18:04:38
Report Date	2018-03-19 18:08:48
EZReporter Configuration File	default Standard Sample.cfgx
Source Data File	2018-03-19 18-04-22 (GMT -06-00)Federal B 3 Casing
EZReporter Data File	Federal B 3 Casing-20180319-180848.ezrx
Data Source	Agilent EZChrom Connector

Component Results

Component Name	Ret. Time	Peak Area	Norm%	Gross HV (Dry) (BTU / Ideal cu.ft.)	Relative Gas Density (Dry)	GPM (Dry) (Gal. / 1000 cu.ft.)
Nitrogen	0.321	304226.0	0.46027	0.0	0.00445	0.051
Methane	0.325	40908831.0	89.88696	910.0	0.49788	15.269
Carbon Dioxide	0.375	6015394.0	9.19898	0.0	0.13978	1.573
Ethane	0.432	103030.0	0.14939	2.6	0.00155	0.040
Hydrogen Sulfide	0.601	0.0	0.00000	0.0	0.00000	0.000
Propane	0.529	424601.0	0.22571	5.7	0.00344	0.062
i-Butane	0.577	61492.0	0.02807	0.9	0.00056	0.009
n-Butane	0.611	22877.0	0.01025	0.3	0.00021	0.003
i-Pentane	0.716	9037.0	0.00367	0.1	0.00009	0.001
n-Pentane	0.759	11318.0	0.00443	0.2	0.00011	0.002
Hexanes Plus	0.000	101665.0	0.03227	0.0	0.00000	0.000
Water	0.000	0.0	0.00000	0.0	0.00000	0.000
Total:			100.00000	919.9	0.64807	17.011

Results Summary

Result	Dry	Sat. (Base)
Total Raw Mole% (Dry)	92.64180	
Pressure Base (psia)	14.730	
Temperature Base	60.0	
Water Mole%	-	1.74067
Gross Heating Value (BTU / Ideal cu.ft.)	919.9	903.9
Gross Heating Value (BTU / Real cu.ft.)	922.0	906.2
Relative Density (G), Real	0.6493	0.6490
Compressibility (Z) Factor	0.9977	0.9974
Total GPM	17.011	16.820

Diablo Analytical BTU Report

GPA 2145-03 Analysis

Sample Information

30-045-33361

Sample Information	
Sample Name	Federal B 3 Tubing
Station Number	2300450193
Taken By	Alpine Analysis LLC
Operator	Travis Tapp
Method Name	StandardNatGas.met
Injection Date	2018-03-19 17:52:47
Report Date	2018-03-19 17:57:33
EZReporter Configuration File	default Standard Sample.cfgx
Source Data File	2018-03-19 17-52-31 (GMT -06-00)Federal B 3 Tubing.dat
EZReporter Data File	Federal B 3 Tubing-20180319-175733.ezrx
Data Source	Agilent EZChrom Connector

Component Results

Component Name	Ret. Time	Peak Area	Norm%	Gross HV (Dry) (BTU / Ideal cu.ft.)	Relative Gas Density (Dry)	GPM (Dry) (Gal. / 1000 cu.ft.)
Nitrogen	0.321	164445.0	0.24242	0.0	0.00234	0.027
Methane	0.325	42158320.0	90.25410	913.7	0.49992	15.331
Carbon Dioxide	0.375	6028374.0	8.98215	0.0	0.13648	1.536
Ethane	0.432	109918.0	0.15534	2.8	0.00161	0.042
Hydrogen Sulfide	0.601	0.0	0.00000	0.0	0.00000	0.000
Propane	0.530	368827.0	0.19099	4.8	0.00291	0.053
i-Butane	0.578	61190.0	0.02724	0.9	0.00055	0.009
n-Butane	0.612	31368.0	0.01367	0.4	0.00027	0.004
i-Pentane	0.717	20511.0	0.00799	0.3	0.00020	0.003
n-Pentane	0.760	29880.0	0.01125	0.5	0.00028	0.004
Hexanes Plus	0.000	371677.0	0.11485	0.0	0.00000	0.000
Water	0.000	0.0	0.00000	0.0	0.00000	0.000
Total:			100.00000	923.4	0.64457	17.009

Results Summary

Result	Dry	Sat. (Base)
Total Raw Mole% (Dry)	95.08300	
Pressure Base (psia)	14.730	
Temperature Base	60.0	
Water Mole%	-	1.74067
Gross Heating Value (BTU / Ideal cu.ft.)	923.4	907.3
Gross Heating Value (BTU / Real cu.ft.)	925.4	909.6
Relative Density (G), Real	0.6457	0.6456
Compressibility (Z) Factor	0.9977	0.9974
Total GPM	17.009	16.818

30-045-33361

WellView

ERC - Current WBD

FRLDC Completion

Well Name: Federal B-3

API Well 3004533361	Surface Legal Location	Field Name Basini New Mexico	License # 000000	State/Province New Mexico	Well Configuration Type Land
Original BSE Elevation (ft) 5,828.00	K/S-Tubing Head Distance (ft)	Solid Date 8/26/2007 00:00	R/g Release Date	PSTD (A/I) (ft/B) Original Hole - 2,233.0	Total Depth All (TVD) (ft/B)

Land Original Hole: 8/20/2016 2:47:34 PM

Vertical schematic (actual)

Long Rod
Long Rod

Casing Strings

Csg Des	OD (in)	Wt/Len (lb/ft)	Grade	Top Thread	Top (ft/B)	Set Depth (ft/B)
Surface	9 5/8	36.00	J-55	EXT-UPSET	16.0	362.2
Production Casing	7	23.00	N80	LTC	16.0	2,282.3

Cement

Description	Comment
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Perforations

Date	Top (ft/B)	Bot (ft/B)	Shot Date (shots/ft)
9/21/2007	1,775.0	1,889.0	
9/20/2007	1,961.0	1,993.0	
9/20/2007	2,061.0	2,090.0	

Tubing Strings

Tubing Description	Run Date	String Length (ft)	Set Depth (ft/B)
LONG TUBING	10/31/2007	2,132.99	2,149.0

JIS	Item Des	OD (in)	Len (ft)	Top (ft/B)	Bot (ft/B)	Grade	Wt (lb/ft)
1	TUBING HANGER	6	0.80	16.0	16.8	0	0.00
66	TUBING	2 3/8	2,088.73	16.8	2,105.5	J55	4.70
1	SEATING NIPPLE	2 3/8	1.10	2,105.5	2,106.6	0	0.00
1	PUP JTS	2 3/8	9.76	2,106.6	2,116.4	J55	4.70
1	SAND SCREEN	2 3/8	23.85	2,116.4	2,140.2	0	0.00
1	PUP JTS	2 3/8	8.10	2,140.2	2,148.3	J55	4.70
1	BLIND PIPE	2 3/8	0.65	2,148.3	2,149.0	0	0.00

Tubing Description	Run Date	String Length (ft)	Set Depth (ft/B)
LONG TUBING	10/31/2007	2,132.99	2,149.0

JIS	Item Des	OD (in)	Len (ft)	Top (ft/B)	Bot (ft/B)	Grade	Wt (lb/ft)
1	TUBING HANGER	6	0.80	16.0	16.8	0	0.00
66	TUBING	2 3/8	2,088.73	16.8	2,105.5	J55	4.70
1	SEATING NIPPLE	2 3/8	1.10	2,105.5	2,106.6	0	0.00
1	PUP JTS	2 3/8	9.76	2,106.6	2,116.4	J55	4.70
1	SAND SCREEN	2 3/8	23.85	2,116.4	2,140.2	0	0.00
1	PUP JTS	2 3/8	8.10	2,140.2	2,148.3	J55	4.70
1	BLIND PIPE	2 3/8	0.65	2,148.3	2,149.0	0	0.00

Rod Strings

Rod Description	Run Date	String Length (ft)	Set Depth (ft/B)
Long Rod	10/31/2007	2,146.25	2,146.3

JIS	Item Des	OD (in)	Len (ft)	Top (ft/B)	Bot (ft/B)
1	POLISHED ROD	1 1/4	26.00	0.0	26.0
1	PONY ROD	3/4	4.00	26.0	30.0
1	PONY ROD	3/4	6.00	30.0	36.0
1	PONY ROD	3/4	8.00	36.0	44.0
73	ROD	3/4	1,825.00	44.0	1,869.0
10	SINKER BAR	1 1/4	250.00	1,869.0	2,119.0
1	STABILIZER BAR	2	3.25	2,119.0	2,122.3
1	ROD PUMP	2	24.00	2,122.3	2,146.3
0	END OF RODS @	0.0	0.00	2,146.3	2,146.3

Rod Description	Run Date	String Length (ft)	Set Depth (ft/B)
Long Rod	10/31/2007	2,146.25	2,146.3

JIS	Item Des	OD (in)	Len (ft)	Top (ft/B)	Bot (ft/B)
1	POLISHED ROD	1 1/4	26.00	0.0	26.0
1	PONY ROD	3/4	4.00	26.0	30.0
1	PONY ROD	3/4	6.00	30.0	36.0
1	PONY ROD	3/4	8.00	36.0	44.0
73	ROD	3/4	1,825.00	44.0	1,869.0
10	SINKER BAR	1 1/4	250.00	1,869.0	2,119.0
1	STABILIZER BAR	2	3.25	2,119.0	2,122.3

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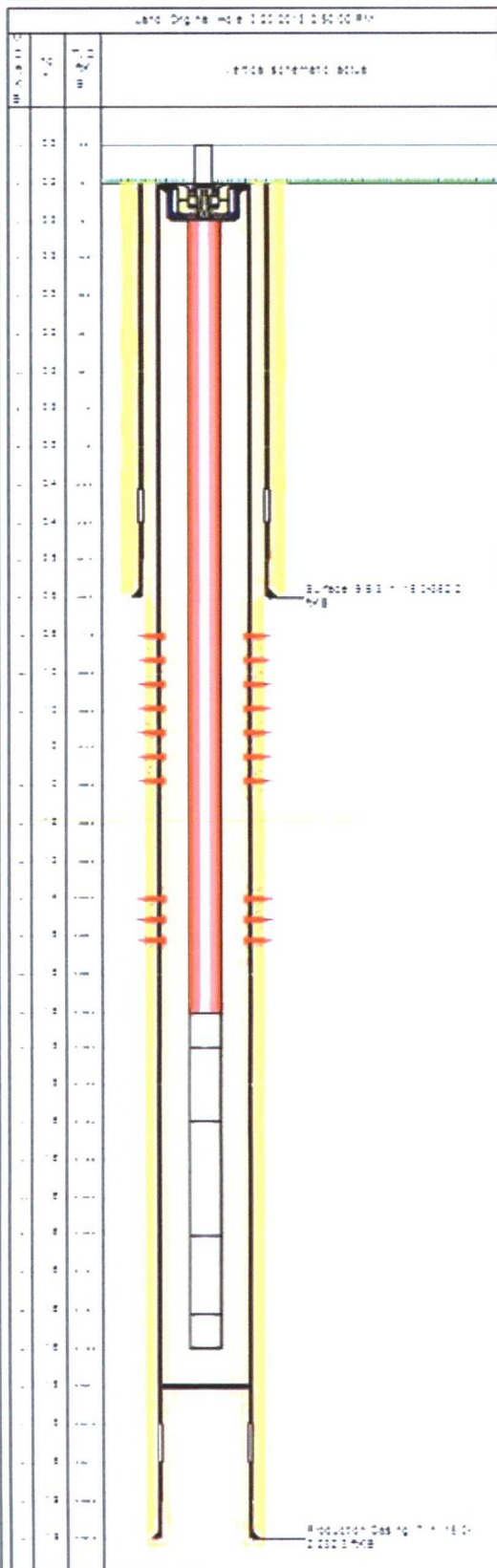
WellView

Casing, Liner and Cement report

Well Name: Federal B-3

Production Casing

API Well 3004533361	Surface Legal Location	Field Name Basin (New Mexico)	License # 000000	State/Province New Mexico	Well Configuration Type Land
Ground Elevation (ft) 5,812.00	Casing Flange Elevation (ft)	KB-Ground Distance (ft) 16.00	KB-Casing Flange Distance (ft)	Solid Date 8/26/2007 00:00	Rig Release Date



Wellbore			
Wellbore Name Original Hole	Profile Type Vertical	Vertical Section Direction	
Section Des	Size (in)	Act Top (ftKB)	Act Btm (ftKB)
	12 1/4	16.0	370.0
	8 3/4	370.0	2,327.0

Kick Offs & Key Depths

Type	Top Depth (ftKB)	Depth Top (TVD) (ftKB)
Kick Off		

Wellhead

Type 9 5/8" SOW CSG HEAD				
Des	Make	Model	SN	WV Top (ftKB)
Type TUBING HEAD				
Des	Make	Model	SN	WV Top (ftKB)

Last Mud Check

Date	Type	Depth (ftKB)	Dens (lb/gal)	Vts (lb/qt)	Gel (10s) (not 100ft)	Gel (10m) (not 100ft)	PV OR (cP)	YP OR (not 100ft)
8/27/2007	Water Based	370.0	8.50	60				
8/28/2007	Water Based	980.0	8.90	46	9.000	12.000		
8/29/2007	Water Based	2,326.0	9.20	108	9.000	12.000		

Casing

Casing Description Production Casing			Run Date 8/30/2007 00:00		Set Depth (ftCS) 2,282.3		Wellbore Original Hole	
Cementers 15 BOW			Scratchers					
JTS	Item Des	OD (in)	ID (in)	Wt (lb/ft)	Grade	Len (ft)	Top (ftCS)	Btm (ftCS)
43	JTS CSG	7	6.37	23.00	N80	1,838.03	16.0	1,854.0
1	MARKER JT	7	6.37	23.00	N80	21.15	1,854.0	1,875.2
5	JTS CSG	7	6.37	23.00	N80	215.80	1,875.2	2,091.0
1	MARKER JT	7	6.37	23.00	N80	21.20	2,091.0	2,112.2
3	JTS CSG	7	6.37	23.00	N80	124.92	2,112.2	2,237.1
1	FLT COLLAR	7	6.37	23.00	N80	0.73	2,237.1	2,237.8
1	JT CSG	7	6.37	23.00	N80	43.25	2,237.8	2,281.1
1	FLT SHOE	7	6.37	23.00	N80	1.20	2,281.1	2,282.3

Cement: <Description?>

Cementing Start Date	Cementing End Date	Well bore
Evaluation Method	Cement Evaluation Results	
Comment		

Cement Stage: <Description?>

Top Depth (ftKB)	Bottom Depth (ftKB)	Pu Return?	Top Cement	Top Plug?	Bottom Plug?
Q Pump Init (bbl/min)	Q Pump Final (bbl/min)	Avg Pump Rate (bbl/min)	Final Pump Pressure (psi)	Plug Pump Pressure (psi)	
Pipe Recirculated?	Stroke (ft)	Recirculation Rate (s/min)	Pipe Rotated?	Pipe RPM (rpm)	
Tagged Depth (ftKB)	Tag Method	Cement Plug Drilled Out	Drill Out Diameter (in)	Drill Out Date	

Cement Fluid: <Description?>

Fluid Type	Fluid Description	Amount (lb)	Class	Volume Pumped (bbl)
Estimated Top (ftKB)	Est Btm (ftKB)	Yield (lb/sack)	Mix = 20 Ratio (lb/sack)	Free Water (%)
Density (lb/gal)	Paste Viscosity (cP)	Thickening Time (hr)	1st Compressive Strength (psi)	

Cement Fluid Additives

Add	Type	Conc



(submit 1 copy to above address)

OPEN BRADENHEAD AND INTERMEDIATE TO ATMOSPHERE INDIVIDUALLY FOR 15 MINUTES EACH

FLOW CHARACTERISTICS	
BRADENHEAD	INTERMEDIATE
Steady Flow _____	
Surges _____	
Down to Nothing ✓ _____	
Nothing _____	
Gas ✓ _____	
Gas & Water _____	
Water _____	

If bradenhead flowed water, check all of the descriptions that apply below:

CLEAR FRESH SALTY SULFUR BLACK

5 MINUTE SHUT-IN PRESSURE BRADENHEAD D INTERMEDIATE N/A

REMARKS:

REMARKS: DOWN TO ZERO IN 7 min. through 1/4" inch fittings

By _____

Witness _____

AIR QUALITY SPECIALIST
(Position)

E-mail address Sbarrett@enduringresources.com

NMOC D

MAR 22 2018

DISTRICT III