RELIANCE OILFIELD SERVICES

Radial Cement Bond
Gamma Ray
Casing Collar Log

Company	Kerr-McGee Oil & Gas Onshore, L.P.
Well	Burough 2C-17HZ
Field	Wattenberg
County	Weld
State	Colorado

Company Kerr-McGee Oil & Gas Onshore, L.P.
Well Burough 2C-17HZ
Field Wattenberg
County Weld State Colorado
Location: API # : 05-123-45224
SEC 17 TWP 1N RGE 66W
Other Services
RBP
JBGR

Permanent Datum Ground Level Elevation 4979'
Log Measured From Kelly Bushing 26 FT
Drilling Measured From Kelly Bushing

Elevation
K.B. 5005'
D.F. ---
G.L. 4979'

Date	22-JAN-2018
Run Number	Three
Depth Driller	12216 FT
Depth Logger	6720 FT
Bottom Logged Interval	6717 FT
Top Log Interval	Surface
Open Hole Size	7.875"
Type Fluid	Water
Density / Viscosity	8.34 lb/gal
Max. Recorded Temp.	213°F
Estimated Cement Top	See Log
Time Well Ready	ROA
Time Logger on Bottom	11:30
Equipment Number	HD-363
Location	Fort Lupton, CO
Recorded By	Carlos Sisneros
Witnessed By	Mr. Kyle Carver

Borehole Record				Tubing Record			
Run Number	Bit	From	To	Size	Weight	From	To

Casing Record	Size (in)	Wgt (lbs/Ft)	Grade	Top	Bottom
Surface Casing	9 5/8	36	J-55	Surface	1882 FT
Intermediate #1	5 1/2	17	HCP-110	Surface	12207 FT
Intermediate #2					
Liner					

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All interpretations are opinions based on inferences from electrical or other measurements and we cannot and do not guarantee the accuracy or correctness of any interpretation, and we shall not, except in the case of gross or willful negligence on our part, be liable or responsible for any loss, costs, damages, or expenses incurred or sustained by anyone resulting from any interpretation made by any of our officers, agents or employees. These interpretations are also subject to our general terms and conditions set out in our current Price Schedule.

Comments

Log ran as per customer request
Depth referenced to Kelly Bushing at 26 FT
Adjusted +2 FT to correlate with Kelly Bushing
Gauge Ring/Junk Basket ran to 8055 FT with no debris
Log ran from just above WRBP
Recorded with 2800 PSI Surface Induced Pressure
Logging tools were clean and free of debris upon completion of operations

Thank you for choosing Reliance Oilfield Services, LLC!!

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Main Pass

Recorded With 2800 PSI Surface Induced Pressure

Database File	0512345224_anadarko_burough 2c-17hz_rbl_01-22-18\processed_0512345224_anadarko_burough 2c-17hz_rbl_01-22-18.d
Dataset Pathname	pass4.1
Presentation Format	ros_radii
Dataset Creation	Mon Jan 22 13:02:16 2018
Charted by	Depth in Feet scaled 1:240

Gamma Ray
0 (GAPI) 120
Casing Collar Locator
0 Temperature (degF) 20
Line Speed
-150 (ft/min) 150
0 Line Tension (lb) 2000
Differential Temperature
-2 (degF) 2

0 3' Amplitude (mV) 100
3' Amplitude x 5
0 (mV) 20
3' Travel Time
650 (usec) 150

5' Variable Density Log
200 1200

Sector Map

0 Average Amplitude 100
Mimimum Amplitude
0 100
Maximum Amplitude
0 100

Gamma Ray	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 … 100	200 … 1200		0 … 100
Casing Collar Locator	3' Amplitude x 5			Mimimum Amplitude
0 Temperature (degF) 20	0 (mV) 20			0 … 100
Line Speed	3' Travel Time			Maximum Amplitude
-150 (ft/min) 150	650 (usec) 150			0 … 100
0 Line Tension (lb) 2000				
Differential Temperature				
-2 (degF) 2				

Repeat Pass

Recorded With 2800 PSI Surface Induced Pressure

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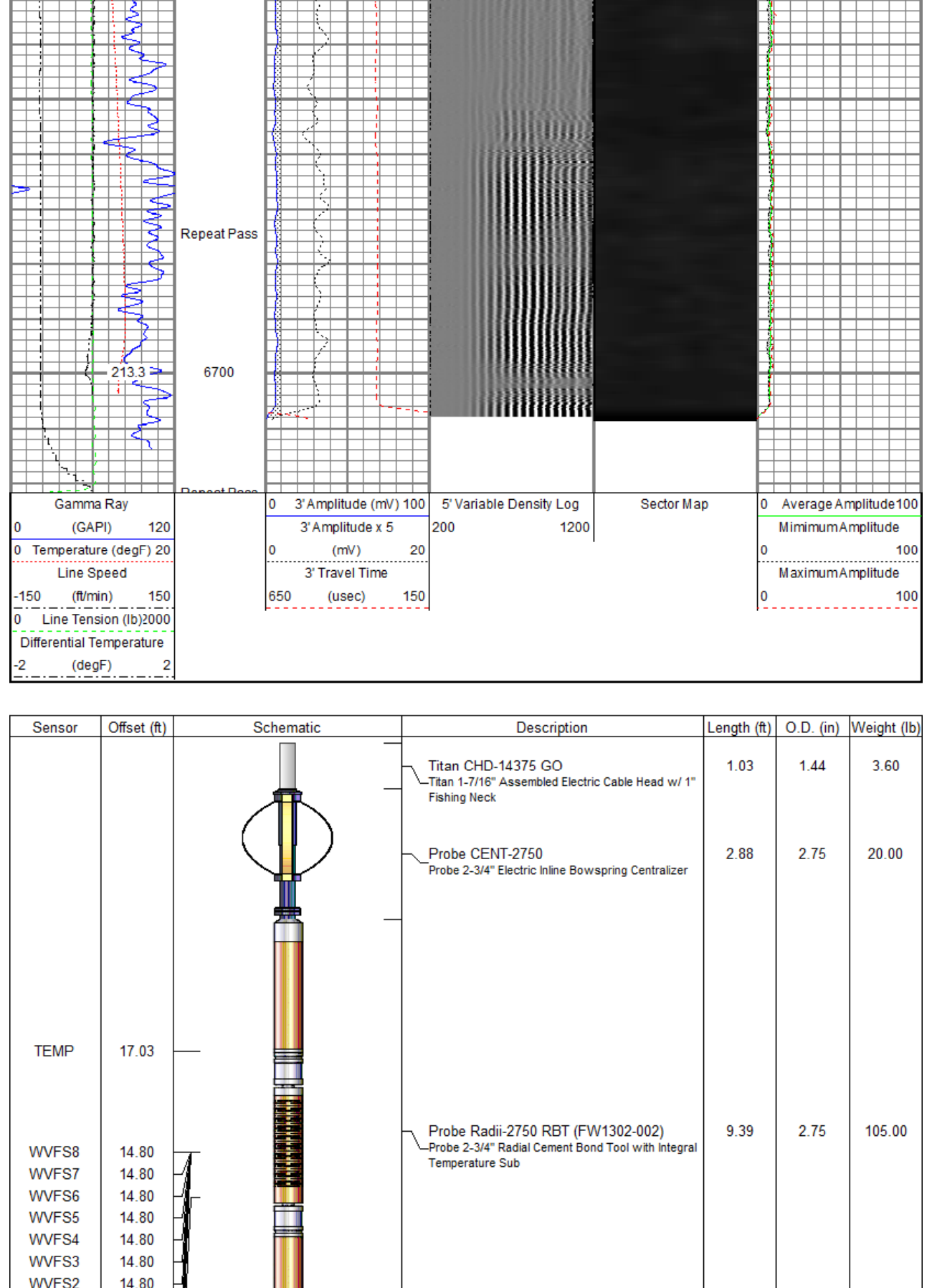
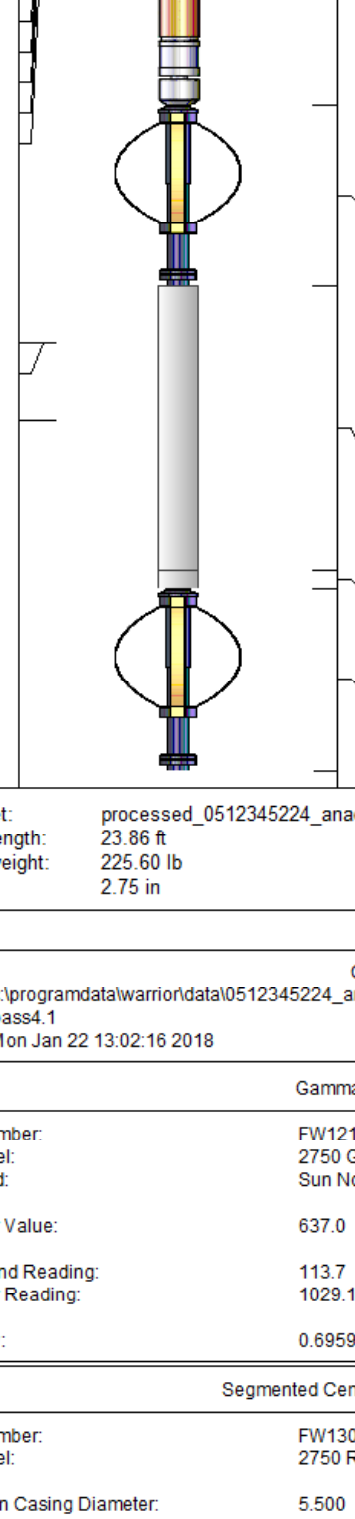
Database File 0512345224_anadarko_burough 2c-17hz_rbl_01-22-18\processed_0512345224_anadarko_burough 2c-17hz_rbl_01-22-18.d
Dataset Pathname pass2.1
Presentation Format ros_radii
Dataset Creation Tue Jan 23 12:14:49 2018
Charted by Depth in Feet scaled 1:240

Gamma Ray	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 … 100	200 … 1200		0 … 100
0 Temperature (degF) 20	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 … 100
-150 (ft/min) 150	3' Travel Time			Maximum Amplitude
0 Line Tension (lb) 2000	650 (usec) 150			0 … 100
Differential Temperature				
-2 (degF) 2				



Gamma Ray	3' Amplitude (mV)	5' Variable Density Log	Sector Map	Average Amplitude
0 (GAPI) 120	0 … 100	200 … 1200		0 … 100
0 Temperature (degF) 20	3' Amplitude x 5			Mimimum Amplitude
Line Speed	0 (mV) 20			0 … 100
-150 (ft/min) 150	3' Travel Time			Maximum Amplitude
0 Line Tension (lb) 2000	650 (usec) 150			0 … 100
Differential Temperature				
-2 (degF) 2				

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb)
			Titan CHD-14375 GO Titan 1-7/16" Assembled Electric Cable Head w/ 1" Fishing Neck	1.03	1.44	3.60
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00
TEMP	17.03					
WVFS8	14.80		Probe Radii-2750 RBT (FW1302-002) Probe 2-3/4" Radial Cement Bond Tool with Integral Temperature Sub	9.39	2.75	105.00
WVFS7	14.80					
WVFS6	14.80					
WVFS5	14.80					
WVFS4	14.80					
WVFS3	14.80					
WVFS2	14.80					
WVFS1	14.80					
WVFCAL	14.80					
WVF3FT	14.80					
WVF5FT	13.80					
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00
CCL$2	6.79					
CCL$1	6.79					
GR	5.55		Probe GR-CCL-2750 GOB (FW1212-026) Probe 2-3/4" rev.2 Digital Scintillation Gamma Ray/CCL Combined	4.51	2.75	55.00
			Probe ADPT-6P-GO Probe 2-3/4" 6-Pin Top to GO Bottom Adaptor Sub	0.28	2.75	2.00
			Probe CENT-2750 Probe 2-3/4" Electric Inline Bowspring Centralizer	2.88	2.75	20.00

Dataset: processed_0512345224_anadarko_burough 2c-17hz_rbl_01-22-18.db: field/well/run1/pass4.1
Total length: 23.86 ft
Total weight: 225.60 lb
O.D.: 2.75 in

Calibration Report

Database File c:\programdata\warrior\data\0512345224_anadarko_burough 2c-17hz_rbl_01-22-18\processed_0512345224_anadarko_buroug
Dataset Pathname pass4.1
Dataset Creation Mon Jan 22 13:02:16 2018

Gamma Ray Calibration Report

Serial Number:	FW1212-026	
Tool Model:	2750 GOB	
Performed:	Sun Nov 12 12:27:51 2017	
Calibrator Value:	637.0	GAPI
Background Reading:	113.7	cps
Calibrator Reading:	1029.1	cps
Sensitivity:	0.6959	GAPI/cps

Segmented Cement Bond Log Calibration Report

Serial Number:	FW1302-002	
Tool Model:	2750 RBT	
Calibration Casing Diameter:	5.500	in
Calibration Depth:	-33.544	ft

Master Calibration, performed (Derived):

	Raw (v)		Calibrated (mv)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
3'	0.001	0.518	0.800	71.921	137.590	0.680
CAL	0.692	0.695				
5'	0.000	0.466	0.800	71.921	152.699	0.743
SUM						
S1	0.001	0.514	0.000	100.000	194.820	-0.199
S2	0.001	0.512	0.000	100.000	195.437	-0.156
S3	0.001	0.518	0.000	100.000	193.310	-0.159
S4	0.001	0.528	0.000	100.000	189.836	-0.156
S5	0.001	0.534	0.000	100.000	187.635	-0.164
S6	0.001	0.533	0.000	100.000	188.048	-0.159
S7	0.001	0.522	0.000	100.000	191.731	-0.139
S8	0.001	0.519	0.000	100.000	193.198	-0.178

Internal Reference Calibration, performed (Not Performed):

	Raw (v)		Calibrated (v)		Results	
	Zero	Cal	Zero	Cal	Gain	Offset
CAL	0.000	0.000	0.692	0.695	1.000	0.000

Air Zero Calibration, performed Thu Jan 18 07:23:09 2018:

	Raw (v)	Calibrated (v)	Results
	Zero	Zero	Offset
3'	0.000	0.000	0.000
5'	0.000	0.000	0.000
SUM			
S1	0.000	0.000	0.000
S2	0.000	0.000	0.000
S3	0.000	0.000	0.000
S4	0.000	0.000	0.000
S5	0.000	0.000	0.000
S6	0.000	0.000	0.000
S7	0.000	0.000	0.000
S8	0.000	0.000	0.000

Temperature Calibration Report

Serial Number:	FW1302-002	
Tool Model:	2750 RBT	
Performed:	Sun Nov 12 13:28:07 2017	
	Reference	Reading
Low Reference:	100.00 degF	110.72 degF
High Reference:	350.00 degF	409.18 degF
Gain:	0.84	
Offset:	7.26	
Delta Spacing	1	

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State	Colorado