Weatherford

Company	ARRAY INDUCTION
Well	SENALONG FOCUSED
Field	
County	
State	
Country	
Other Services	
Permanent Datum	Ground Level
Log Measured From	Kelly Bushing
Drilling Measured From	Kelly Bushing
Elevation	
Date	22-Aug-2011
Run Number	ONE
Depth Driller	2500
Depth Logger	2500
Bottom Log Interval	2500
Top Log Interval	300
Casing Driller Size	9 5/8
Casing Logger Size	
Bit Size	8 1/2
Type Fluid in Hole	WATER BASED MUD
Density	1.03
Viscosity	40
Fluid Loss	8.0
Source of Sample	Flowline
Rm	0.0
Rmf	0.0
Rmc	0.0
Rm @ Meas. Temp.	0.0
Rmf @ Meas. Temp.	0.0
Rmc @ Meas. Temp.	0.0
Rm @ BHT	0.0
Time Since Circulation	0
Time Since Stop	0
Max. Recorded Temp.	0
Equipment Number	
Location	
Recorded By	
Witnessed By	

Last Edited: 22-AUG-2011 09:51
Version: 1
Job: 1
WELL: 1

BOREHOLE RECORD

Bit Size (in)	Depth From (m)	Depth To (m)
8 1/2	300.0	2500.0

CASING RECORD

Type	Size (in)	Depth From (m)	Depth To (m)	Shoe Depth (m)	Weight (kg/m)
SURFACE	9 5/8	0.00	304.00	304.00	36.00

REMARKS

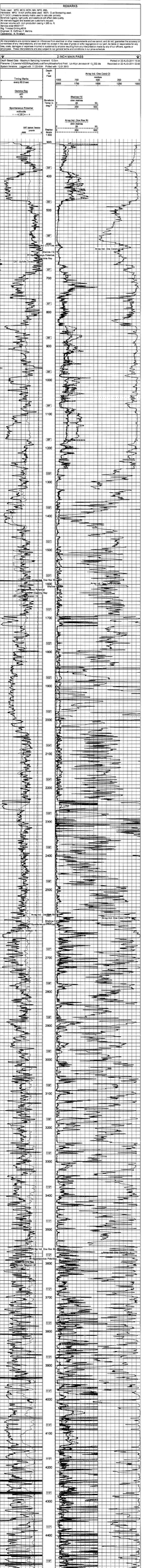
Tools used: MPD, MCG, MDN, MAI, MFC, MSI
Hardware: MPD, 8.5inch profile plate, sensor, MCG, 12 decimating sond
2.71 DOC (Undecimated density matrix used to calculate porosity
Calibration: Calibration data used was the most recent available for quality
No internal filtering was applied and scaled and calibrated to metric units
Depth shift: Depth shift was applied in accordance calang V 2B0 (v. 1)
Mud loss noted 2500.00 m
Log Quality: Log quality was good
Engineer: M. Hartley, M. Ward
Operations: A. Rodgers

Interpretations are based on inferences from electrical or other measurements and are opinions only. We do not guarantee the accuracy or correctness of any interpretations, 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 in our price schedule.

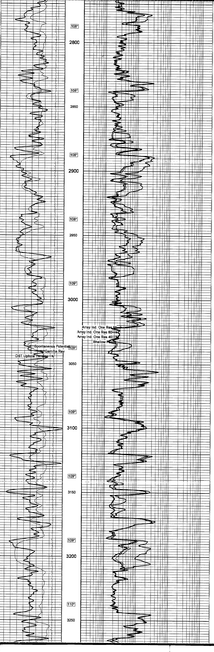
2 INCH MAIN PASS

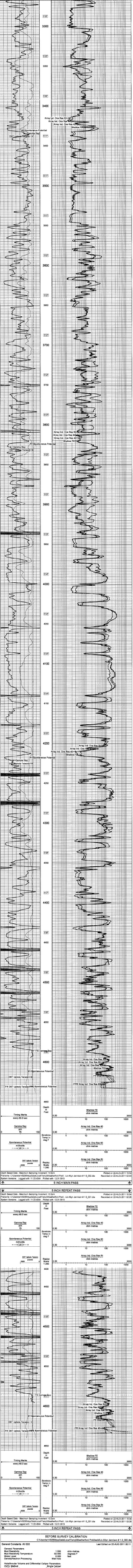
Depth Reset Data - Maximum Balancing Increment: 10.0m
Depth Shift Data - Depth shift was applied in accordance calang V 2B0 (v. 1)
Weather Intervals - Logged with 1.0 m sample interval

Plotted on 22-AUG-2011 10:40
Recorded on 22-AUG-2011 09:48



2 INCH MAIN PASS
Array Ind. One Res 60
ohm meters
Array Ind. One Res 40
ohm meters
Array Ind. One Res 20
ohm meters
Array Ind. One Res 10
ohm meters
Array Ind. One Res 5
ohm meters
Array Ind. One Res 2.5
ohm meters
Array Ind. One Res 1.25
ohm meters
Array Ind. One Res 0.625
ohm meters
Array Ind. One Res 0.313
ohm meters
Array Ind. One Res 0.156
ohm meters
Array Ind. One Res 0.078
ohm meters
Array Ind. One Res 0.039
ohm meters
Spontaneous Potential
millivolts
Spontaneous Potential
millivolts
Spontaneous Potential
millivolts


2800
2900
3000
3100
3200
Cerro Tol. Cmp Reg
Arlay Int. Cmp Sys Alt
Nova Int. Cmp Sys Alt
Cerro Tol. Cmp Reg
Arlay Int. Cmp Sys Alt
Nova Int. Cmp Sys Alt


5 INCH PASS
5 INCH REPEAT PASS
5 INCH REPEAT PASS
BEFORE SURVEY CALIBRATION
General Constants: 42-000
Last Edited on 22-AUG-2011 08:11

Down-hole Tension Calibration SMS 0

Field Calibration on 21-AUG-2011 04:36

Reading No	Measured	Calibrated (lbs)
1	13437.97	0.00
2	14374.15	326.00

Gamma Calibration MCG-B 34

Field Calibration on 15-AUG-2011 10:07

	Measured	Calibrated (API)
Background	62	42
Calibrator (Gross)	1117	767
Calibrator (Net)	1055	725

Gamma Constants MCG-B 34

Last Edited on 22-AUG-2011 00:10

Gamma Calibrator Number	grc38	
Mud Density	1.10	gm/cc
Caliper Source for Processing	Density Caliper	
Tool Position	Eccentred	
Concentration of KCl	0.00	kppm

SP Calibration MCG-B 34

Field Calibration on 03-AUG-2011 10:32

	Measured	Calibrated (mV)
Reference 1	103.5	100.0
Reference 2	-96.9	-100.0

High Resolution Temperature Calibration MCG-B 34

Field Calibration on 03-AUG-2011 23:33

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	75.00	75.00

High Resolution Temperature Constants MCG-B 34

Last Edited on

Pre-filter Length 11

Micro Normal and Micro Inverse Calibration MML-A 4

Base Calibration on 03-AUG-2011 10:42
Field Check on 15-AUG-2011 10:14

Base Calibration

Channel	Measured Resistor 1	Measured Resistor 2	Calibrated (ohm-m) Resistor 1	Calibrated (ohm-m) Resistor 2
Micro Normal	12.2	60.2	2.6	12.8
Micro Inverse	15.7	78.4	1.7	8.4

Channel	Base Check (ohm-m)	Field Check (ohm-m)
Micro Normal	32.1	32.1
Micro Inverse	16.3	16.3

Micro Normal and Micro Inverse Constants MML-A 4

Last Edited on 15-AUG-2011 10:13

Pad Type	8-12 in Soft Rubber Inflatable 006-9011-159	
Micro Normal K Factor	0.5110	
Micro Inverse K Factor	0.3380	
Standoff Offset	N/A	inches

Caliper Calibration MML-A 4

Base Calibration on 03-AUG-2011 10:53
Field Calibration on 15-AUG-2011 10:13

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	15121	5.98
2	18479	7.97
3	21774	9.86
4	25719	11.92
5	0	0.00
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
5.94	5.98

Neutron Calibration MDN-A.B 65

Base Calibration on 02-AUG-2011 19:50
Field Check on 15-AUG-2011 10:22

Base Calibration

	Measured Near	Measured Far	Calibrated (cps) Near	Calibrated (cps) Far
	3295	104	3714	110
Ratio	31.664		33.764	

	Calibrated (cps)	
Field Calibrator at Base	1576	2237
Ratio	0.704	
Field Check	1557	2162
Ratio	0.720	

Neutron Constants MDN-A.B 65

Last Edited on 22-AUG-2011 00:10

Neutron Source Id	757	
Neutron Jig Number	5824NE	
Epithermal Neutron	No	
Caliper Source for Processing	Density Caliper	
Stand-off	0.00	inches
Mud Density	1.00	gm/cc
Limestone Sigma	7.10	cu
Sandstone Sigma	4.26	cu
Dolomite Sigma	4.70	cu
Formation Pressure Source	Constant Value	
Formation Pressure	0.00	kpsi
Temperature Source	Constant Value	
Temperature	68.00	degrees F
Mud Salinity	0.00	kppm
Formation Fluid Salinity Source	Constant Value	
Formation Fluid Salinity	0.00	kppm
Barite Mud Correction	Not Applied	

FE Calibration MFE-A.A 55

Base Calibration on 03-AUG-2011 11:09
Field Check on 15-AUG-2011 10:56

Base Calibration

	Measured	Calibrated (ohm-m)
Reference 1	0.0	0.0
Reference 2	952.6	126.8
Base Check		281.5
Field Check		281.6

FE Constants MFE-A.A 55

Last Edited on 22-AUG-2011 00:09

Running Mode	No Sleeve	
MFE K Factor	0.1268	
Caliper Source for FE correction	Density Caliper	
Caliper Value for FE correction	N/A	inches
Rm Source for FE correction	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Stand-off	0.5	inches

Induction Calibration MAI-A.A 45

Base Calibration on 03-AUG-2011 11:43
Field Check on 15-AUG-2011 10:49

Base Calibration

Test Loop Calibration

Channel	Measured Low	Measured High	Calibrated (mmho/m) Low	Calibrated (mmho/m) High
1	17.3	474.2	9.3	966.2
2	6.3	388.4	7.6	821.4
3	3.3	259.4	5.2	566.0
4	1.9	133.0	2.6	279.2
Array Temperature		76.8	Deg F	

Channel	Base Check (mmho/m) Low	Base Check (mmho/m) High	Field Check (mmho/m) Low	Field Check (mmho/m) High
1	0.0	0.0	13.6	3858.1
2	0.0	0.0	29.9	3497.7
3	0.0	0.0	29.3	3069.3
4	0.0	0.0	19.9	2085.2
Deep	0.0	0.0	18.7	2051.6
Medium	0.0	0.0	42.5	4021.1
Shallow	0.0	0.0	43.4	5095.2
Array Temperature		0.0		80.6 Deg F

Induction Constants MAI-A.A 45

Last Edited on 22-AUG-2011 00:09

Induction Model	RtAP-WBM	
Caliper for Borehole Corr.	Density Caliper	
Hole Size for Borehole Correction	N/A	inches
Tool Centred	No	
Stand-off Type	Fins	
Stand-off	0.50	inches
Number of Fins on Stand-off	8.0000	
Stand-off Fin Angle	45.00	degrees
Stand-off Fin Width	0.5000	inches
Borehole Corr. Rm Source	Temperature Corr	
Temp. for Rm Corr.	MCG External Temperature	
Squasher Start	0.0020	mhos/metre
Squasher Offset	0.0000	mhos/metre

Borehole Normalisation

DRM1	0.0000	DRC1	0.0000
DRM2	0.0000	DRC2	0.0000
MRM1	0.0000	MRC1	0.0000
MRM2	0.0000	MRC2	0.0000
SRM1	0.0000	SRC1	0.0000
SRM2	0.0000	SRC2	0.0000

Calibration Site Corrections

Channel 1	0.00	mmhos/metre
Channel 2	0.00	mmhos/metre
Channel 3	0.00	mmhos/metre
Channel 4	0.00	mmhos/metre

Apparent Porosity and Water Saturation Constants

Archie Constant (A)	1.00	
Cementation Exponent (M)	2.00	
Saturation Exponent (N)	2.00	
Saturation of Water for Apor	100.00	percent
Resistivity of Water for Apor and Sw	0.05	ohm-m
Resistivity of Mud Filtrate for Sw	0.00	ohm-m
Source for Rt		
Source for Rxo		

High Resolution Temperature Calibration MAI-A.A 45

Field Calibration on 04-AUG-2011 08:54

	Measured	Calibrated(Deg F)
Lower	50.00	50.00
Upper	100.00	100.00

High Resolution Temperature Constants MAI-A.A 45

Last Edited on

Pre-filter Length 11

Photo Density Calibration MPD-B 31

Base Calibration on 02-AUG-2011 17:24
Field Check on 15-AUG-2011 10:27

Density Calibration

Base Calibration

	Measured Near	Measured Far	Calibrated (sdu) Near	Calibrated (sdu) Far
Reference 1	48081	24805	59556	30636
Reference 2	19867	2025	24941	2541
Field Check at Base	707.3	871.8		
Field Check	706.6	873.4		

PE Calibration

Base Calibration

	Measured WS	Measured WH	Measured Ratio	Calibrated Ratio
Background	131	626		
Reference 1	19081	47953	0.400	0.371
Reference 2	5693	19772	0.291	0.272
Field Check at Base	131.3	626.1		
Field Check	129.5	620.2		

Density Constants MPD-B 31

Last Edited on 22-AUG-2011 00:10

Density Source Id	254	
Nylon Calibrator Number	DNCE695	
Aluminium Calibrator Number	DACD698	
Density Shoe Profile	8 inch	
Caliper Source for Processing	Density Caliper	
PE Correction to Density	Not Applied	
Mud Density	1.10	gm/cc
Mud Density Z/A Multiplier	1.11	
Mud Filtrate Density	1.00	gm/cc
Dry Hole Mud Filtrate Density	1.00	gm/cc
DNCT	0.00	gm/cc
CRCT	0.00	gm/cc
Density Z/A Correction	Hybrid	

Matrix Density (gm/cc)	Depth (ft)
2.71	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00
0.00	0.00

Caliper Calibration MPD-B 31

Base Calibration on 02-AUG-2011 16:38
Field Calibration on 15-AUG-2011 10:34

Base Calibration

Reading No	Measured	Calibrator Size (in)
1	16208	3.99
2	24815	5.98
3	33539	7.97
4	41984	9.86
5	51072	11.92
6	N/A	N/A

Field Calibration

Measured Caliper (in)	Actual Caliper (in)
6.04	5.98

DOWNHOLE EQUIPMENT

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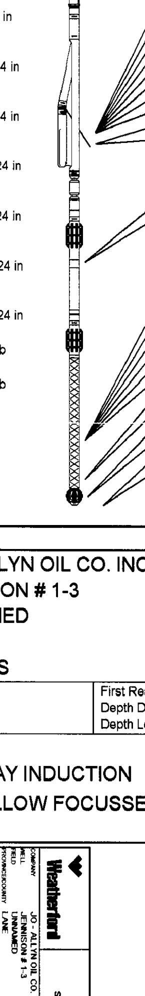


Compact Comms Gamma
MCG-B 34 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Comms Gamma
MCG-B 34 LG: 8.70 ft WT: 63.9 lb OD: 2.24 in

Compact Micro-log
MML-A 4 LG: 7.97 ft WT: 61.6 lb OD: 2.24 in

Compact Micro-log
MML-A 4 LG: 7.97 ft WT: 61.6 lb OD: 2.24 in

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Neutron
MDN-A.B 65 LG: 5.04 ft WT: 50.7 lb OD: 2.24 in

Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

Compact Density/Caliper
MPD-B 31 LG: 9.59 ft WT: 90.4 lb OD: 2.45 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 37 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

SKJ-D.A Compact Knuckle Joint
SKJ-D.A 37 LG: 2.17 ft WT: 24.3 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Focussed Electric
MFE-A.A 55 LG: 6.05 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Compact Induction
MAI-A.A 45 LG: 10.81 ft WT: 48.5 lb OD: 2.24 in

Total Length: 50.32 ft Weight: 407.9 lb

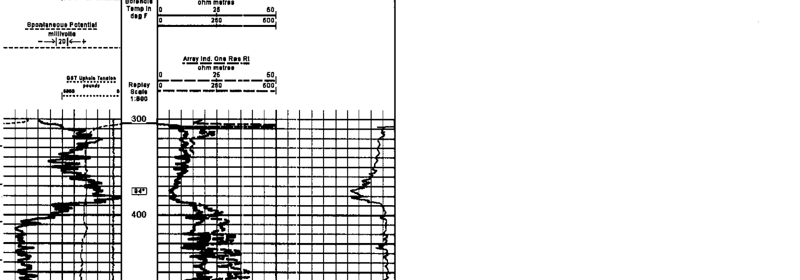
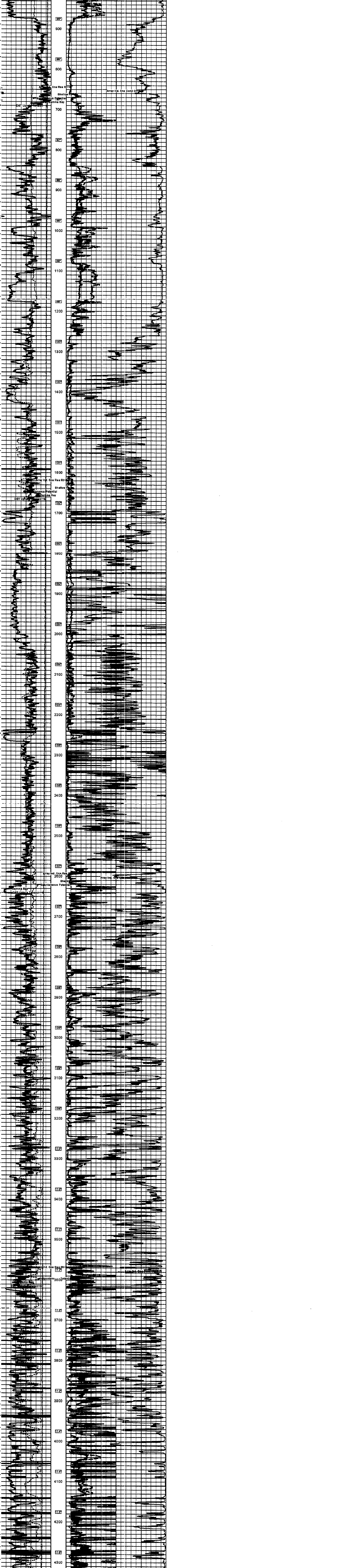
Total Length: 50.32 ft Weight: 407.9 lb

45.04 ft GRGC - Gamma Ray
45.04 ft GRGC - Gamma Ray
42.13 ft CGXT - MCG External Temperature
42.13 ft CGXT - MCG External Temperature
35.41 ft MINV - Micro-inverse
35.41 ft MNRL - Micro-normal
36.40 ft MLTC - MML Caliper
35.41 ft MINV - Micro-inverse
35.41 ft MNRL - Micro-normal
36.40 ft MLTC - MML Caliper
30.61 ft NPRL - Limestone Neutron Por.
30.61 ft NPRL - Limestone Neutron Por.
23.37 ft CLDC - Density Caliper
23.37 ft CLDC - Density Caliper
21.44 ft DPRL - Limestone Density Por.
21.44 ft DEN - Compensated Density
21.44 ft DCOR - Density Correction
21.44 ft DCOR - Density Correction
21.44 ft DPRL - Limestone Density Por.
21.44 ft DEN - Compensated Density
21.38 ft PDPE - PE
21.38 ft PDPE - PE
13.72 ft FEFE - Shallow FE
13.72 ft FEFE - Shallow FE
3.34 ft R40O - Array Ind. One Res 40
3.34 ft RTAO - Array Ind. One Res Rt
3.34 ft R40O - Array Ind. One Res 40
3.34 ft R60O - Array Ind. One Res 60
3.34 ft R60O - Array Ind. One Res 60
3.34 ft RTAO - Array Ind. One Res Rt
0.23 ft SPCG - Spontaneous Potential
0.23 ft SPCG - Spontaneous Potential
Tool Zero (0.15ft from bottom)
Tool Zero (0.13ft from bottom)
-0.13 ft SMTU - DST Uphole Tension
-0.13 ft SMTU - DST Uphole Tension
All measurements relative to tool zero.
All measurements relative to tool zero.

COMPANY	JO - ALLYN OIL CO. INC.
WELL	JENNISON # 1-3
FIELD	UNNAMED
PROVINCE/COUNTY	LANE
COUNTRY/STATE	KANSAS

Elevation Kelly Bushing	2844.00	feet	First Reading	4628.00	feet
Elevation Drill Floor	2842.00	feet	Depth Driller	4630.00	feet
Elevation Ground Level	2838.00	feet	Depth Logger	4631.00	feet

Weatherford®

ARRAY INDUCTION
SHALLOW FOCUSSED

40 Years of Wireline