# **BAT Bi-Modal Acoustic**

**CTN Compensated Thermal Neutron** ALD Azimuthal Lithodensity **DGR Dual Gamma Ray EWR-Phase 4** 

600 / 1 : 240

DF 186.00 ft	_	186.00 ft Above Permanent Datum	186.00 f	oor	: Drill Floor	 D		Fror	Log Measured From	g Me	Lo
Elev. KB	т	Elevation: 0.00 ft	Elevati	Mean Sea Level	ean (	 <b>∑</b>		Ē m	Permanent Datum	rmar	Pe
		ASP Zn 4: Y = 5,847,838.30 ft ASP Zn 4: X = 665,672.48 ft	4: Y = 5,8 4: X = 6	ASP Zn 4: Y = ASP Zn 4: X =	LOCA	Rig	Comp	Well	Locati	Field	Count
Other Services DDSr PWD		Latitude : 69° 59' 26.11" North Longitude : 148° 40' 40.99" West	: 69° 59' : 148° 40	Latitude Longitud	TION	: N	any : <b>C</b>	: <i>A</i>	on :	: <b>A</b>	ry : <b>l</b>
		50-223-20026-00	nber :	API Number		labors 10	Great Bea	Alcor 1	.at: 69 .ong: 148	Alcor	JSA
		USA		Country		05E	ar Petr		° 59' 20 3° 40' 4		
		Alcor		Field			oleum				
		Alcor 1		Well			, LLC				
		Nabors 105E		Rig							
LLC	leum,	Great Bear Petroleum, LLC	··	Company							

Total Depth MD : 10,812.00 ft TVD: 10,802.05 ft Date Logged : 16-Jun-12 To 09-Aug-12 Depth Logged : 102.00 ft To 10,802.05 ft

Unit No. : 117

Job No. : AK-XX-0009285348

TVD LOG

§ P

163.70 ft

: 16-Jun-12

Plot Date : 31-Oct-12 Plot Type: Final

Run No.

Borehole Record (TVD)

 $\frac{1}{\omega}$ 

Size 6.125 in

From 10,652.06 ft

To 10,802.05 ft

Size

Borehole Record (TVD)

From 102.00 ft 2,509.82 ft 6,363.62 ft 8,319.41 ft 8,347.36 ft

Spud Date Run No.

12.250 in 8.500 in 8.500 in 6.125 in

To 2,509.82 ft 6,363.62 ft 8,319.41 ft 8,347.36 ft 8,636.91 ft 8,672.36 ft 10,093.26 ft 10,593.06 ft 10,593.06 ft 10,652.06 ft

Size

Casing Record (TVD)
Weight Fr

From

7

16.000 in 9.562 in 7.000 in

52.40 lbpf 46.20 lbpf 28.70 lbpf

SURFACE SURFACE SURFACE

80.00 ft 2,490.82 ft 8,310.42 ft

8,636.91 ft 8,672.36 ft 10,005.31 ft 10,093.25 ft 10,564.07 ft 10,593.06 ft

Drilling Measured From: Drill Floor

		WELL INFORM	ATION	 
	· · · · · · · · · · · · · · · · · · ·	WELL INFORM	ATION	
MWD Run Number	1400			
Date run completed	09-Aug-12			
Rig Bit Number	14			
Bit Size (in)	6.125			
Tool Nominal OD (in)	4.750			
Log Start Depth (TVD, ft)	8,310.42			
Log End Depth (TVD, ft)	10,802.05			
Drill or Wipe	Wipe			
Drill/Wipe Start Date and Time	07-Aug-12 23:29			
Drill/Wipe End Date and Time	08-Aug-12 19:10			
Min Inc (deg) @ Depth (TVD, ft)	0.52 @ 10,721.05			
Max Inc (deg) @ Depth (TVD, ft)	0.57 @ 10,802.05			
Bit TFA(in2) / Bit Type	0.46 / PDC			
Flow Rate (gpm)	150.00			
Max AV (fpm) / CV (fpm) @ MWD	823.0 / 439.0			
Fluid Type	Polymer			
Density (ppg) / Viscosity (spqt)	11.20 / 48.00			
Filtrate CL (ppm)	36,000.00			
pH / Fluid Loss (mptm)	10.40 / 10			
PV (cP) / YP (lhf2)	14 / 19.00			
% Solids / % Sand	11.30 / 0.00			
% Oil / Oil:Water Ratio	0.0 / 0.0:86			
Rm @ Measured Temp (degF)	1.800 @ 74.00			
Rmf @ Measured Temp (degF)	1.000 @ 74.00			
Rmc @ Measured Temp (degF)	2.000 @ 74.00			
Max Tool Temp (degF) / Source	211.00 / DDSr-DGR			

Rm @ Max Tool Temp (degF)	0.6676 @ 211.00		
Lead MWD Engineer	William Cartwright		
Customer Representative	Mike Grubb		

# SENSOR INFORMATION

	Dow	nhole Processor Information
Tool Type	HCIM	
Software Version	88.47	
Sub Serial Number	10486771	
Insert Serial Number	10911837	
Date and Time Initialized	07-Aug-12 12:09	
Date and Time Read	09-Aug-12 03:26	
ECMB SW Version	N/A	

	Diı	rectional Sensor Information
Tool Type	PCDC	
Distance From Bit (ft)	30.86	
Software Version	6.21	
Sub Serial Number	11837503	
Sonde Serial Number	10809536	
Sensor ID Number	N/A	
Toolface Offset (deg)	N/A	

	Gan	nma Ray Sensor	Information	
Tool Type	DGR			
Distance From Bit (ft)	19.46			
Recorded Sample Period (sec)	10			
Software Version	N/A			
Sub Serial Number	10506926			
Insert/Sonde Serial Number	10436096			

	Re	sistivity Sensor Information
Tool Type	Slim P4	
Distance From Bit (ft)	12.54	
Recorded Sample Period (sec)	10	
Software Version	5.55	
Sub Serial Number	10486771	
Receiver Insert Serial Number	10911837	
Transmitter Insert Serial Number	10452017	
Receiver Orientation	Up	

	Ne	eutron Sensor In	formation	
Tool Type	CTN			
Distance From Bit (ft)	55.75			
Recorded Sample Period (sec)	10			
Sub Serial Number	10837382			
Insert Serial Number	10907163			
Source Serial Number	5931NN/5932NN			
Source Factor	N/A			
Pin Orientation	Down			

	D	ensity Sensor In	formation	
Tool Type	ALD			
Distance From Bit (ft)	41.06			
Recorded Sample Period (sec)	10			

Software Version	3.04		
Sub Serial Number	249341		
Insert Serial Number	239217		
Sensor ID Number	32767		
Source Serial Number	31779B		
Pin Orientation	Down		
Stabilizer Blade O.D. (in)	5.75		
DPA Offset	200.00		

	5	Sonic Sensor In	ormation	
Tool Type	BAT			
Distance From Bit (ft)	93.78			
Recorded Sample Period (sec)	10			
Sub Serial Number	90335108			
Receiver Insert Serial Number	10499545			
Transmitter Insert Serial Number	10442003			
MIT File	R5Max_Run_f6.mi			
Config File	N/A			
Real-Time Window (uspf)	80 - 140			
Battery Insert Serial Number	11751304			
MCM Software Version	20.08			
DAQ1/DAQ2 Software Version	20.01 / 20.01			
DSM Software Version	36.65			

### **REMARKS**

- ALL DEPTHS ARE MEASURED DEPTHS (MD), UNLESS OTHERWISE NOTED. THESE DEPTHS ARE BLT DEPTHS.
- 2. ALL VERTICAL DEPTHS ARE TRUE VERTICAL DEPTH (TVD).
- 3. MWD RUN 100 WAS DIRECTIONAL ONLY AND IS NOT PRESENTED.
- 4. MWD RUNS 200 AND 300 COMPRISED DIRECTIONAL WITH DUAL GAMMA RAY (DGR), PRESSURE WHILE DRILLING (PWD) AND DRILLSTRING DYNAMICS SENSOR (DDSr).
- 5. MWD RUN 400 COMPRISED DIRECTIONAL AND GAMMA MODULE (GM).
- MWD RUN 500 COMPRISED DIRECTIONAL, DGR, PWD, AND DDSr.
- 7. MWD RUNS 600, 900, 1100, 1200 WERE CORING RUNS NO MWD TOOLS WERE INCLUDED IN THE BHA'S.
- 8. NO PROGRESS WAS MADE ON MWD RUN 700 DUE TO A TOOL FAILURE.
- 9. MWD RUN 800 COMPRISED DIRECTIONAL, DGR, PWD, AND DDSr. DGR MAD PASS DATA WERE ACQUIRED OVER THE RUN 6 CORED INTERVAL WHILE RIH.
- 10. MWD RUN 1000 COMPRISED DIRECTIONAL, DGR, ELECTROMAGNETIC WAVE RESISTIVITY PHASE-4 (EWR-P4), COMPENSATED THERMAL NEUTRON (CTN), AZIMUTHAL LITHODENSITY (ALD), BI-MODAL ACOUSTIC TOOL (BAT), PWD, AND DDSr. MAD PASS DATA WERE ACQUIRED FROM CASING SHOE AT 8,311'MD 10,103'MD WHILE RIH. BAT MAD DATA WERE DEEMED UNRELIABLE DUE TO A PARTIAL TOOL FAILURE.
- 11. MWD RUN 1300 COMPRISED DIRECTIONAL, DGR, EWR-P4, CTN, ALD, PWD, AND DDSr. THE PULSER FAILED NO MWD DATA WERE ACQUIRED. HOWEVER, DRILLING CONTINUED TO FINAL TD.
- 12. MWD RUN 1400 WAS A MAD PASS TO FILL IN GAPS OVER CORED INTERVALS AND OVER THE RUN 13 INTERVAL. DATA WERE ACQUIRED WHILE POOH FROM FINAL TD TO THE CASING SHOE. IT COMPRISED DIRECTIONAL, DGR, EWR-P4, CTN, ALD, BAT, PWD, AND DDSr.
- 13. MWD RUNS 100-1400 REPRESENT WELL ALCOR 1 WITH API # 50-223-20026-00. THIS WELL REACHED A TOTAL DEPTH OF 10, 812' MD/10, 802' TVD.

### REMARKS

MNEMONI CS	CURVE DESCRIPTION
ROPA RSPD DGRC RO9P R15P R27P R39P EWXT TNPS	AVERAGE RATE OF PENETRATION TOOL RUNNING SPEED DURING MAD PASS DGR COMBINED GAMMA RAY 9 INCH PHASE RESISTIVITY 15 INCH PHASE RESISTIVITY 27 INCH PHASE RESISTIVITY 39 INCH PHASE RESISTIVITY EWR FORMATION EXPOSURE TIME CTN POROSITY - SANDSTONE
ADCL/ALDCLC APEL/ALPELC ALRP/ALRPM AHSI/ALHSI BTCS BCSS/BTCSS	CTN FAR AVERAGE COUNT RATE CTN NEAR AVERAGE COUNT RATE ALD LCRB COMPENSATED DENSITY ALD LCRB DENSITY CORRECTION ALD LCRB PE FACTOR ALD RPM (SLIDE INDICATOR) ALD HOLE SIZE INDICATOR BAT COMPRESSIONAL SLOWNESS BAT COMBINED SHEAR SLOWNESS BAT VP/VS RATIO BAT SHEAR FLAG

### PARAMETERS USED IN NUCLEAR LOG PROCESSING:

HOLE SIZE: 6.125" FIXED MUD WEIGHT: 10.5 - 11.2 PPG

WHOLE MUD CHLORIDES: 24,000 - 38,000 PPM CL

FORMATION WATER SALINITY: 37,000 PPM CL

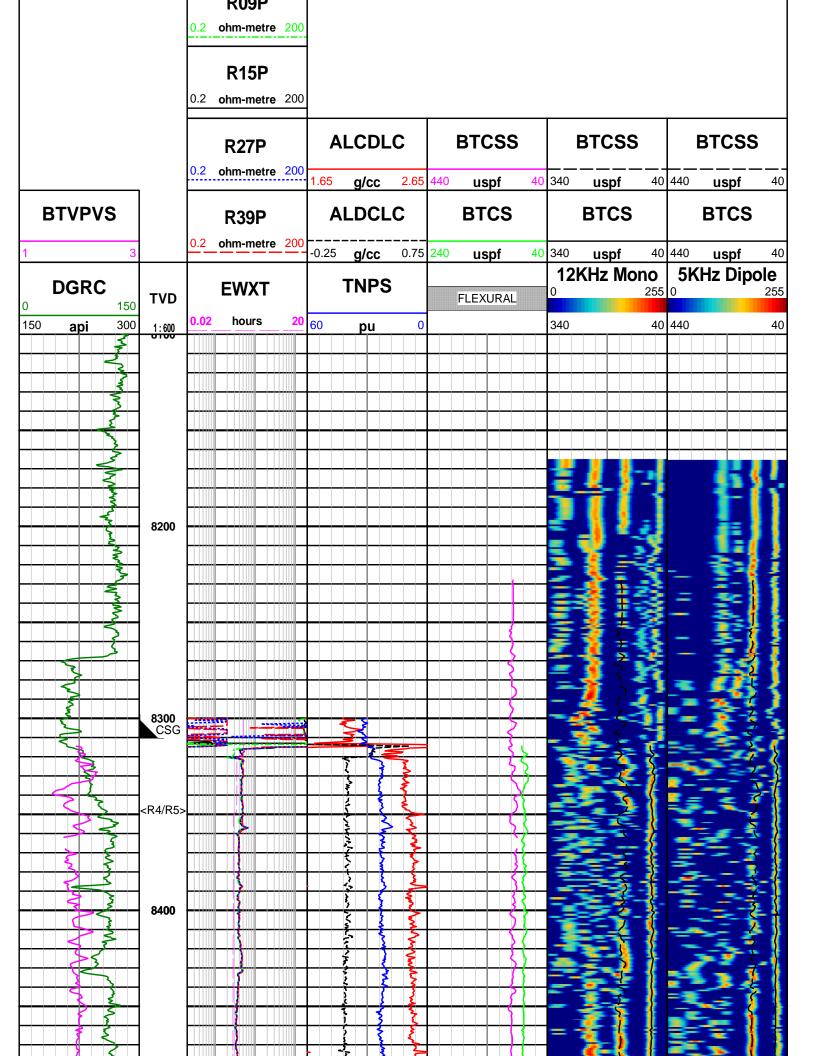
FLUID DENSITY: 1.0 G/CC MATRIX DENSITY 2.65 G/CC LITHOLOGY: SANDSTONE

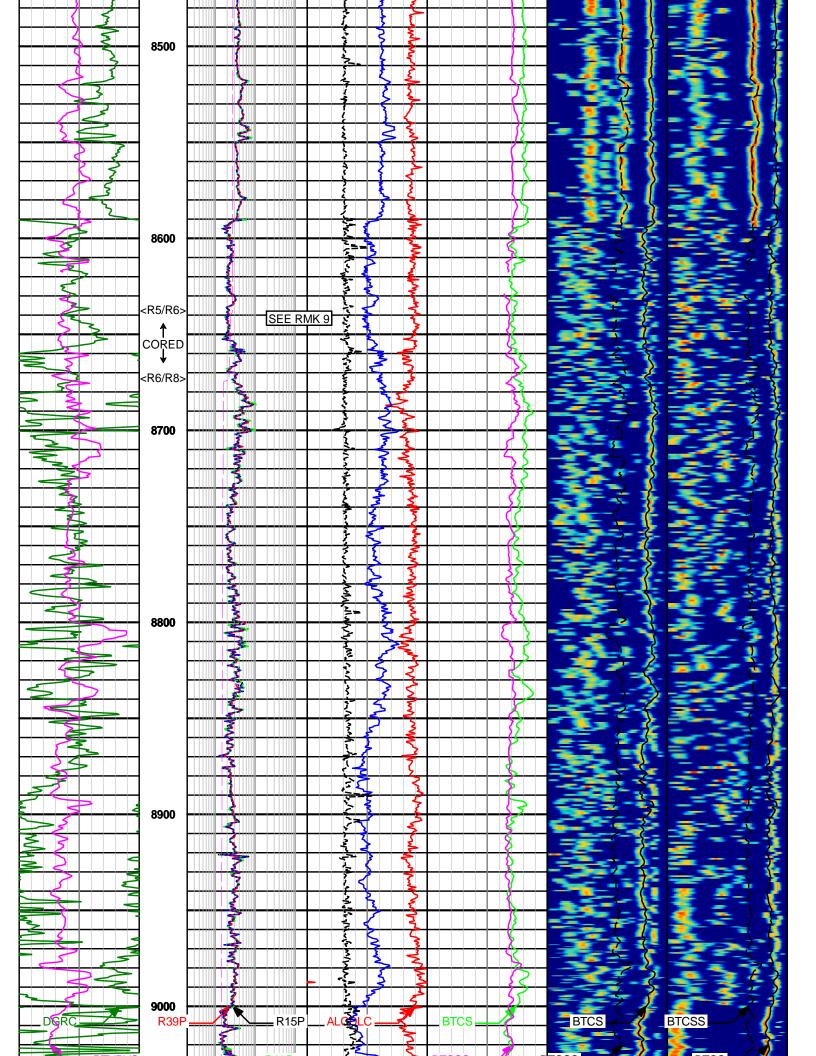
TEMPERATURE: DYNAMIC FROM EWR-P4, 133.5°F @ TD

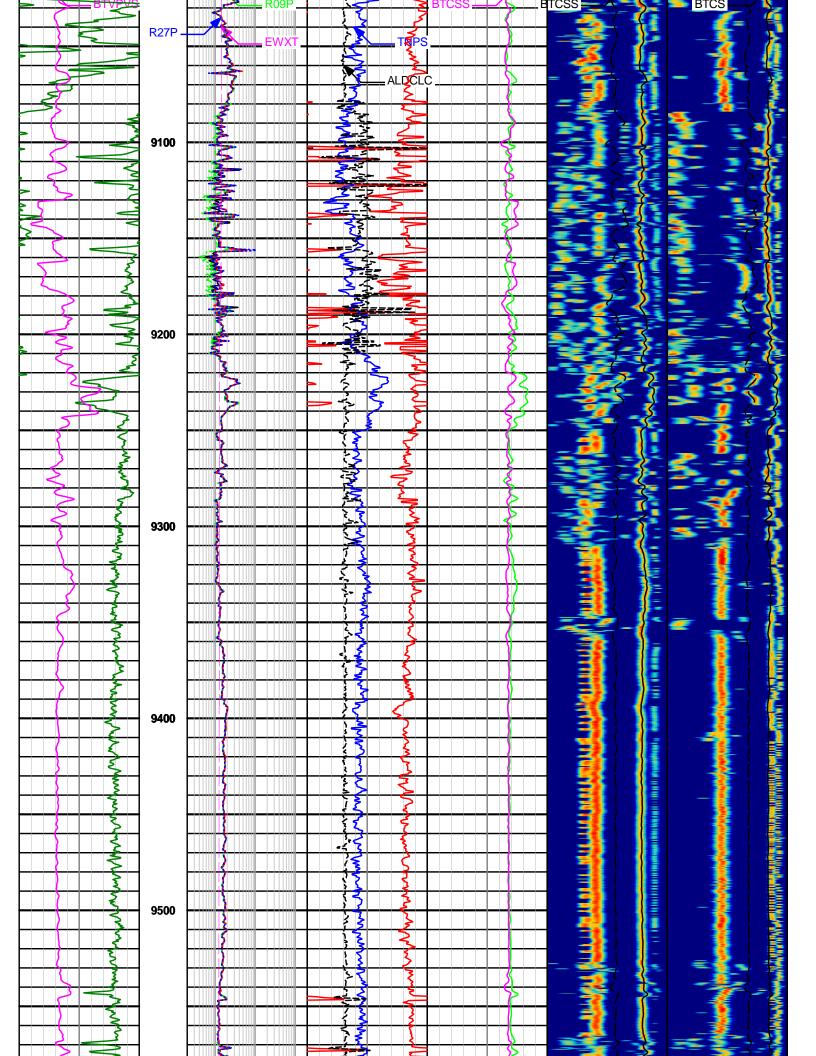
ALL DATA CURVES ARE SMOOTHED TO A STEP OF 0.5 FT, WITH A WINDOW OF 0.6 FT, EXCEPT FOR ROP AND GAMMA RAY. THESE CURVES ARE SMOOTHED WITH A 1.1 FT WINDOW. GAP FILL IS SET TO 5 FT FOR ALL CURVES.

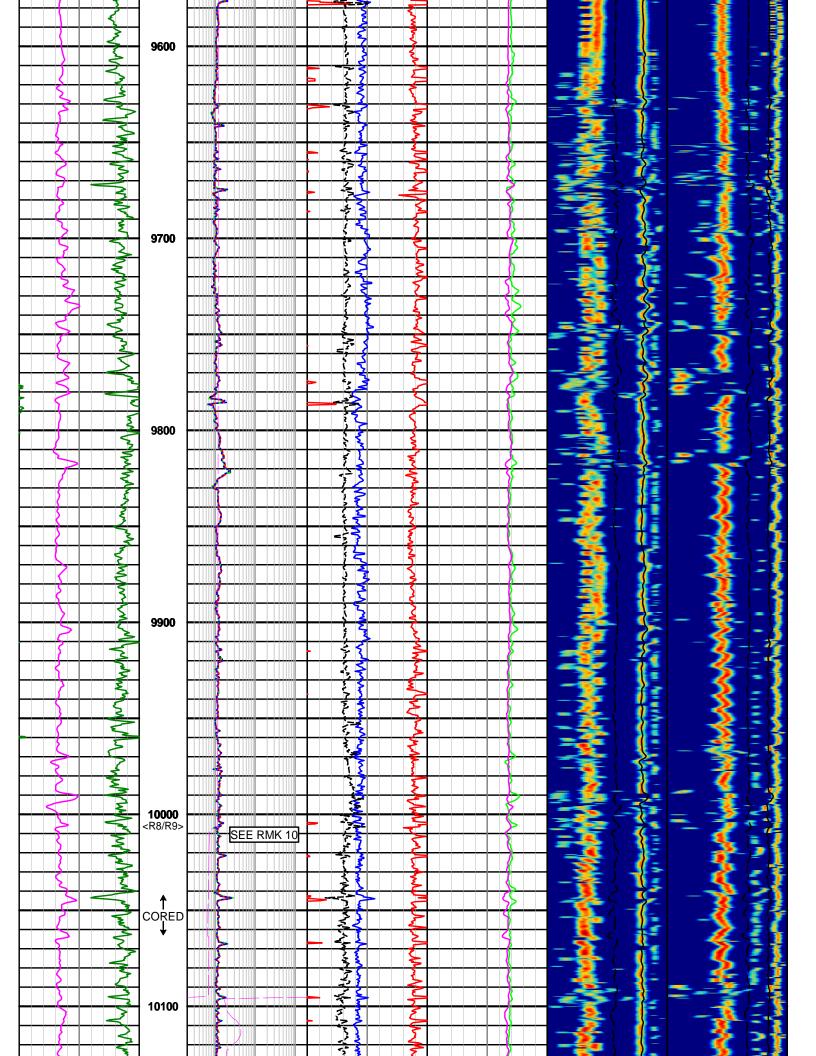
### WARRANTY

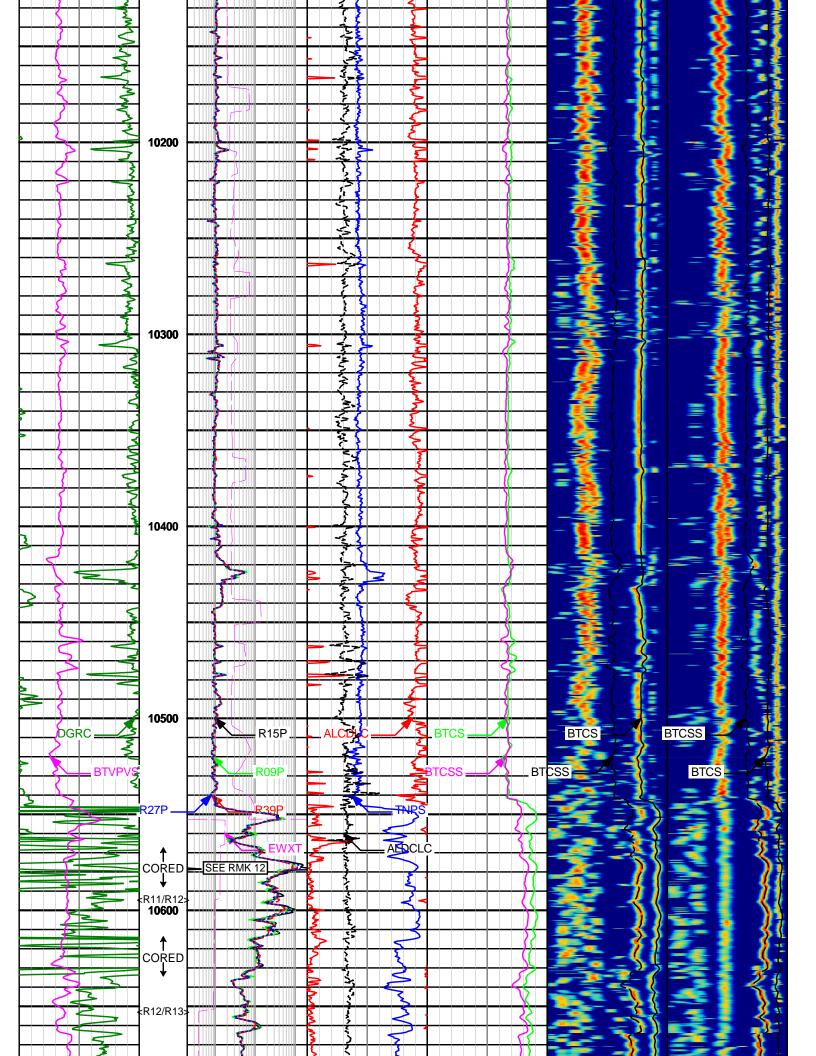
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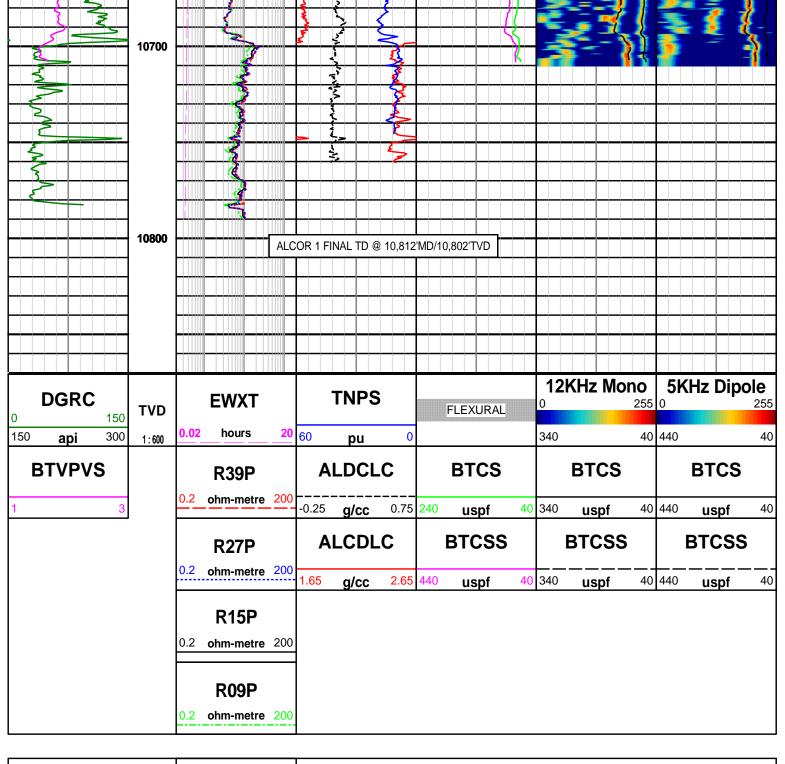




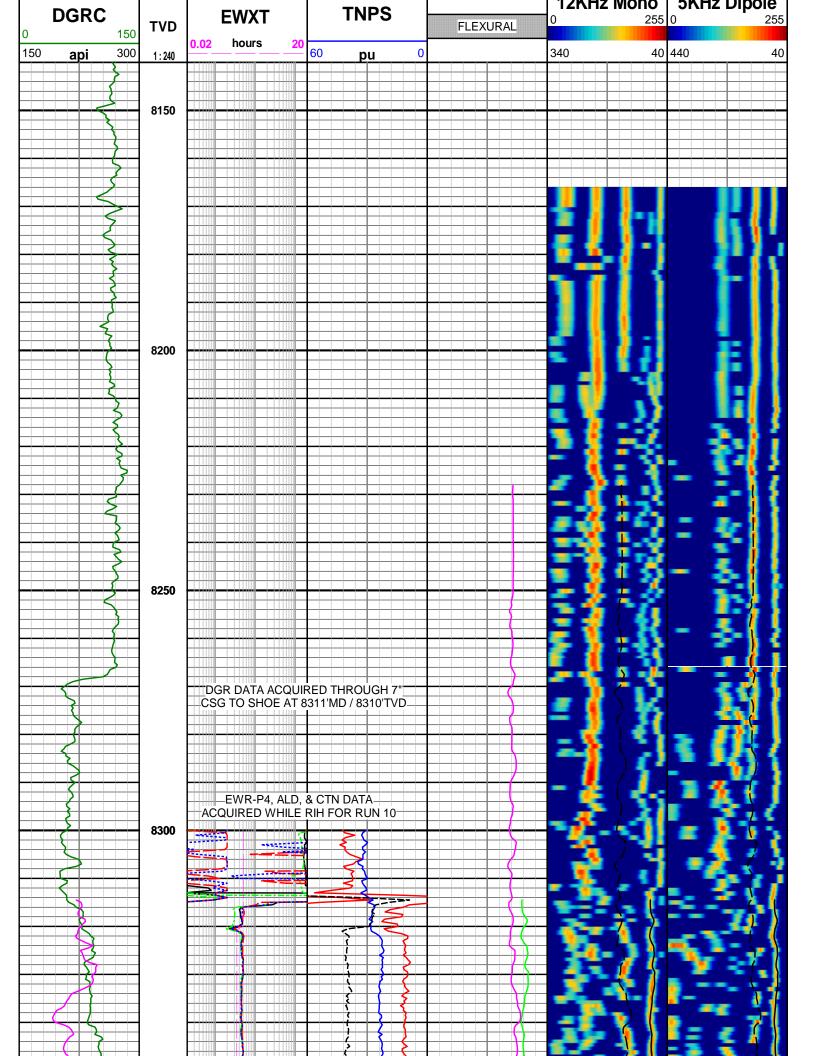


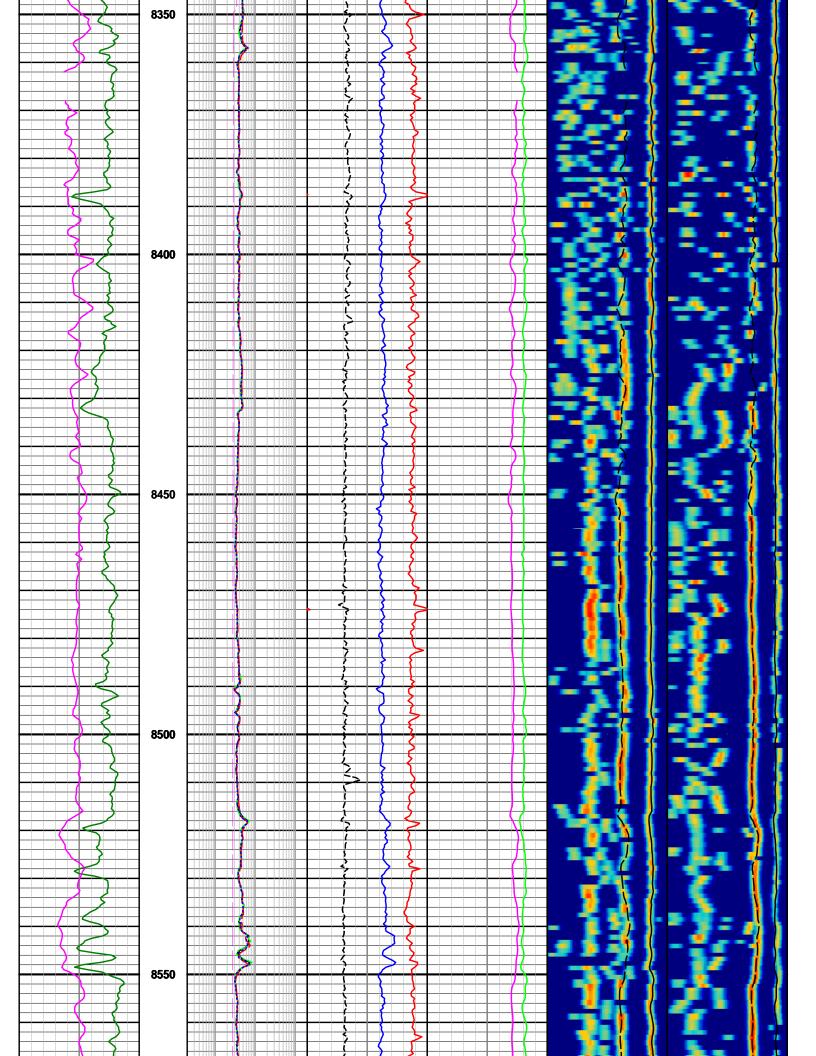


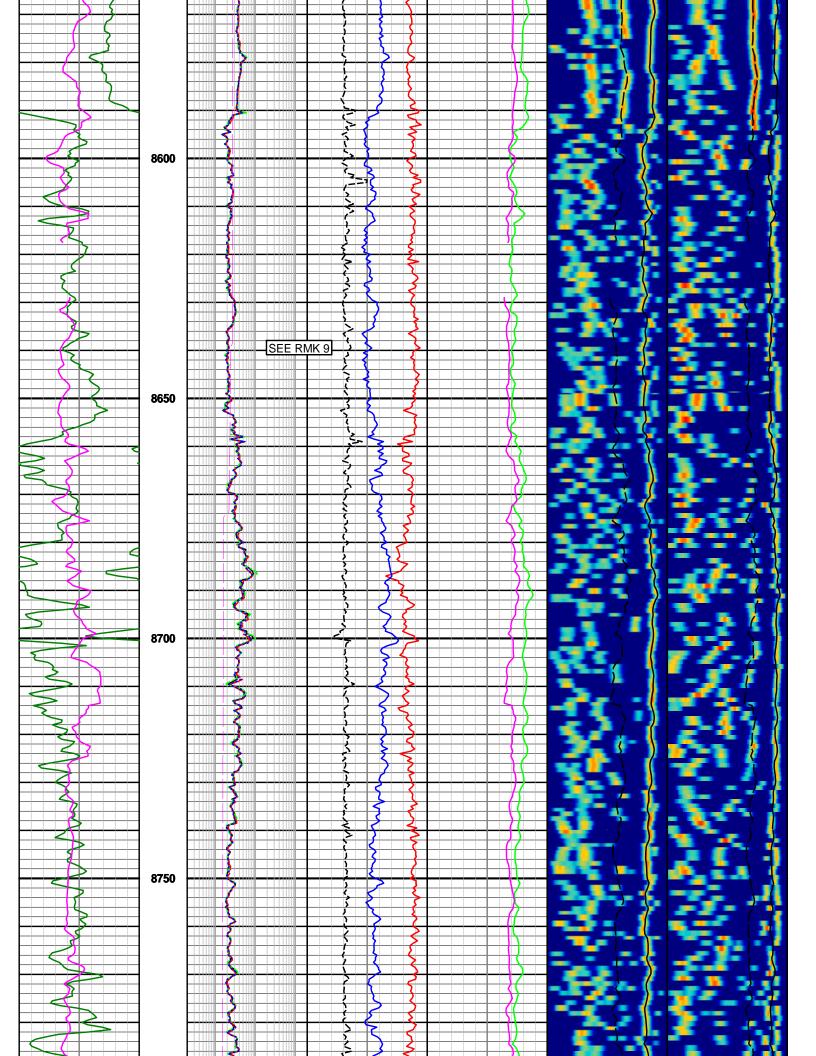


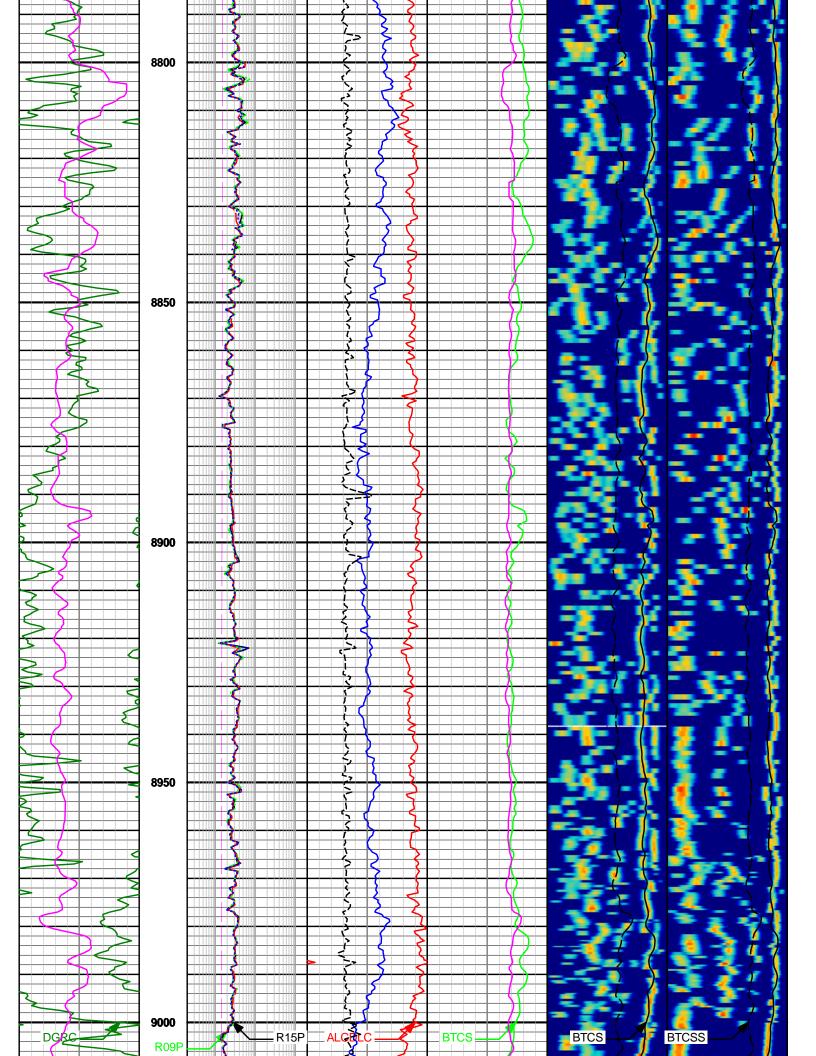


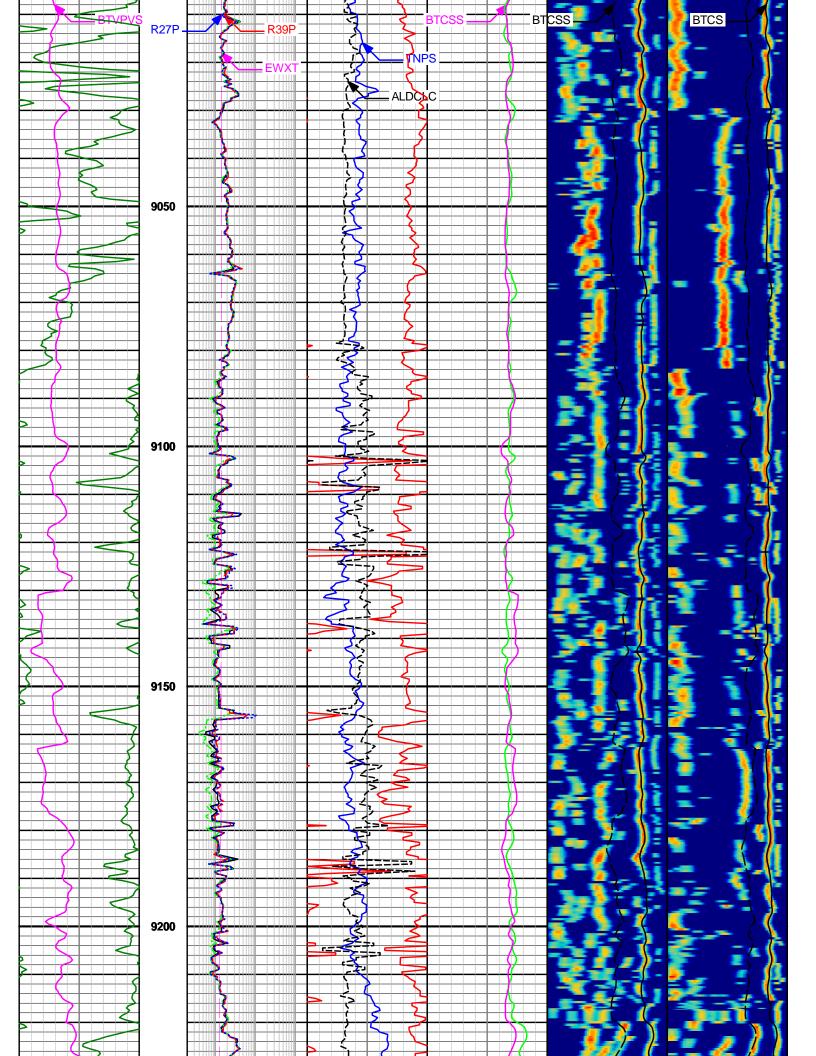
	<b>R09P</b> 0.2 <b>ohm-metre</b> 200				
	<b>R15P</b> 0.2 <b>ohm-metre</b> 200				
	R27P	ALCDLC	BTCSS	BTCSS	BTCSS
	0.2 ohm-metre 200	1.65 <b>g/cc</b> 2.65	440 <b>uspf</b> 40	340 <b>uspf</b> 40	440 <b>uspf</b> 40
BTVPVS	R39P	ALDCLC	втсѕ	втсѕ	втсѕ
1 3	0.2 ohm-metre 200	-0.25 <b>g/cc</b> 0.75	240 <b>uspf</b> 40	340 uspf 40	440 <b>uspf</b> 40

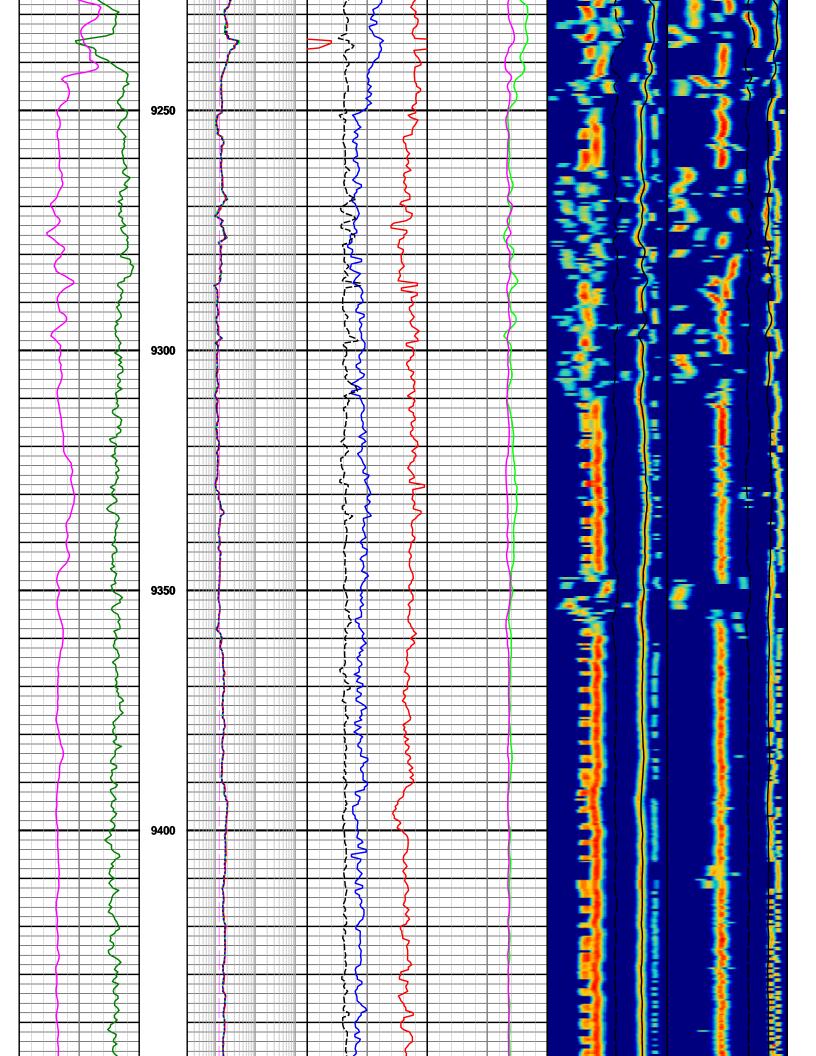


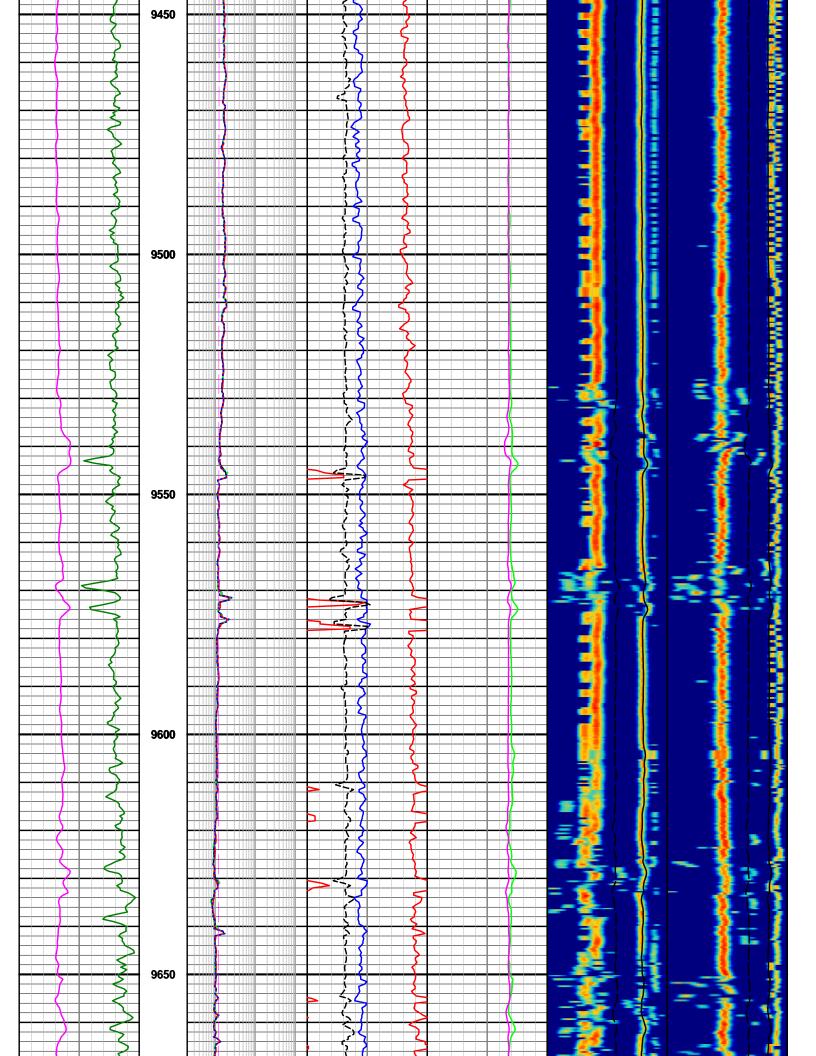


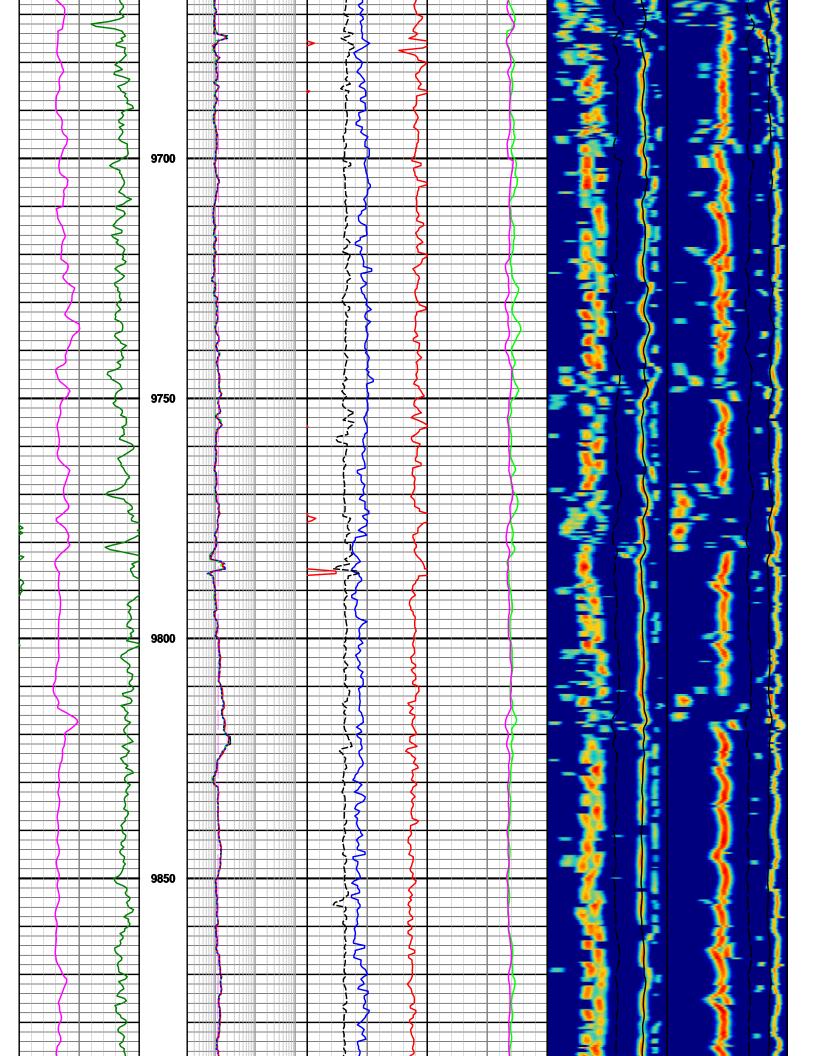


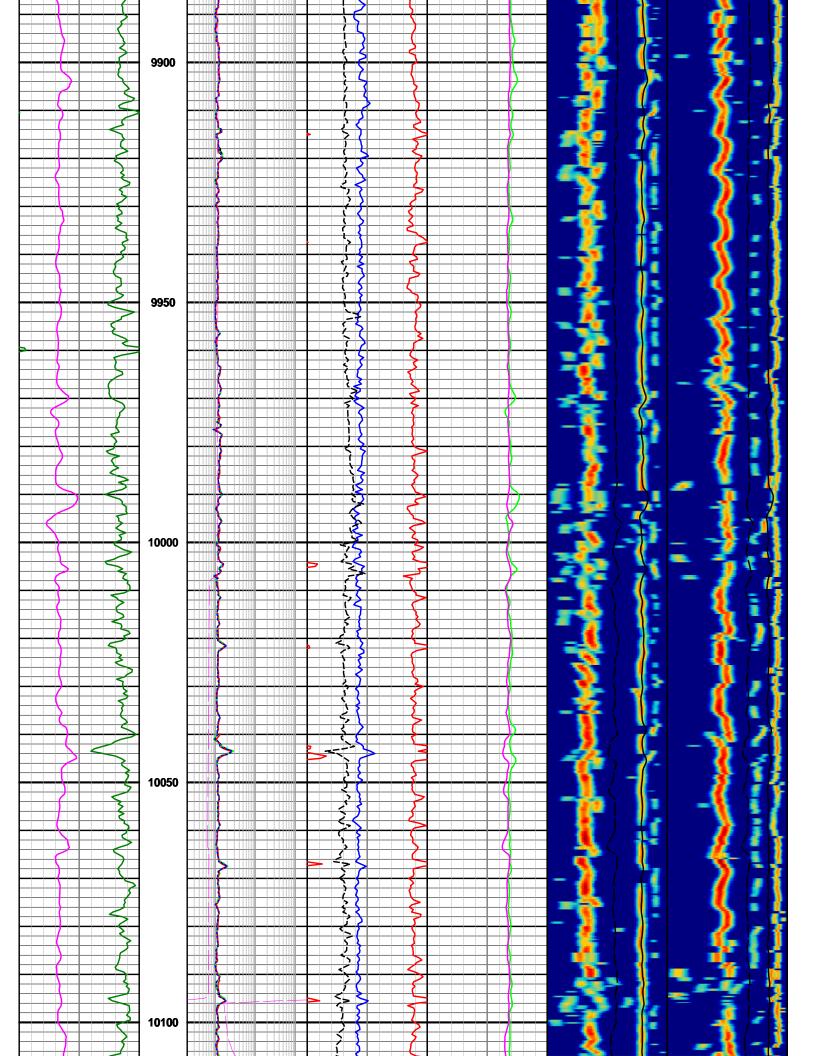


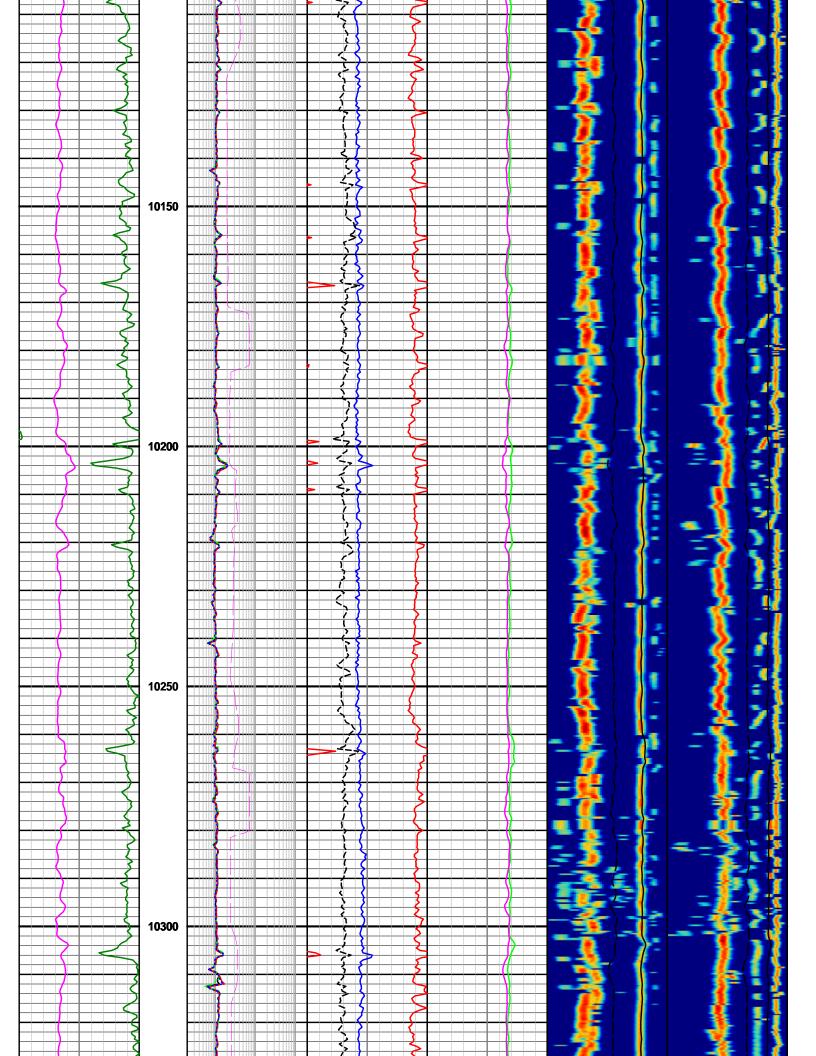


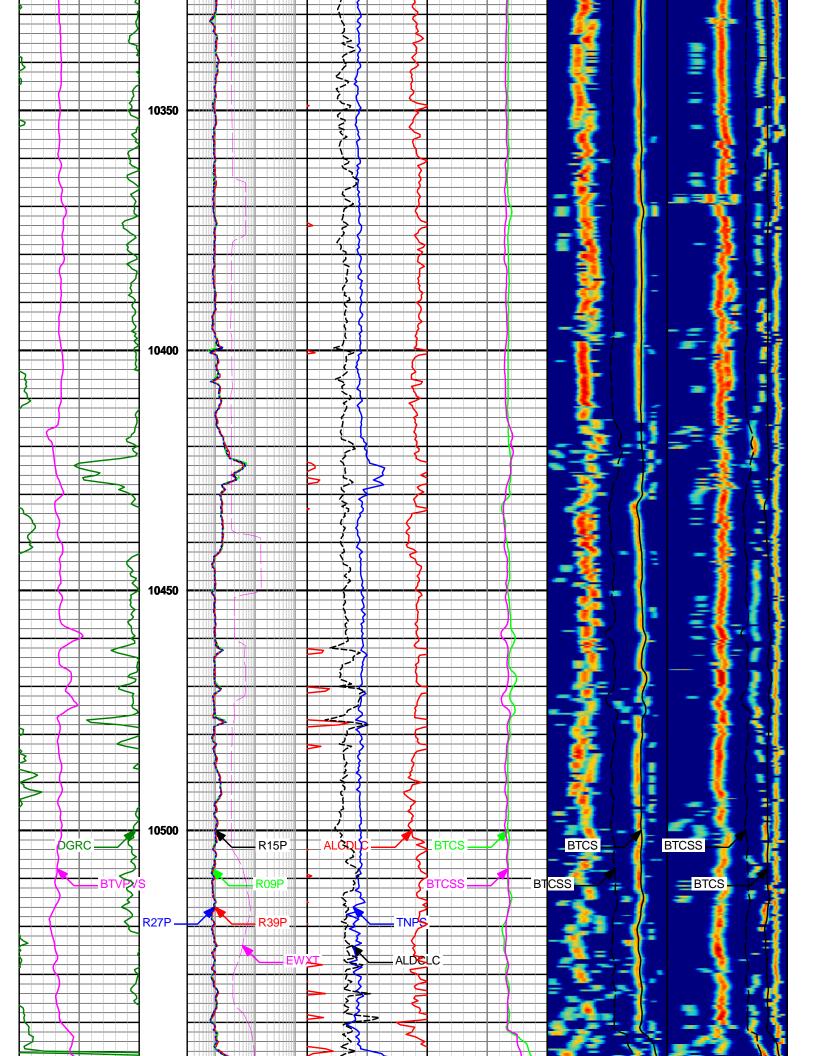


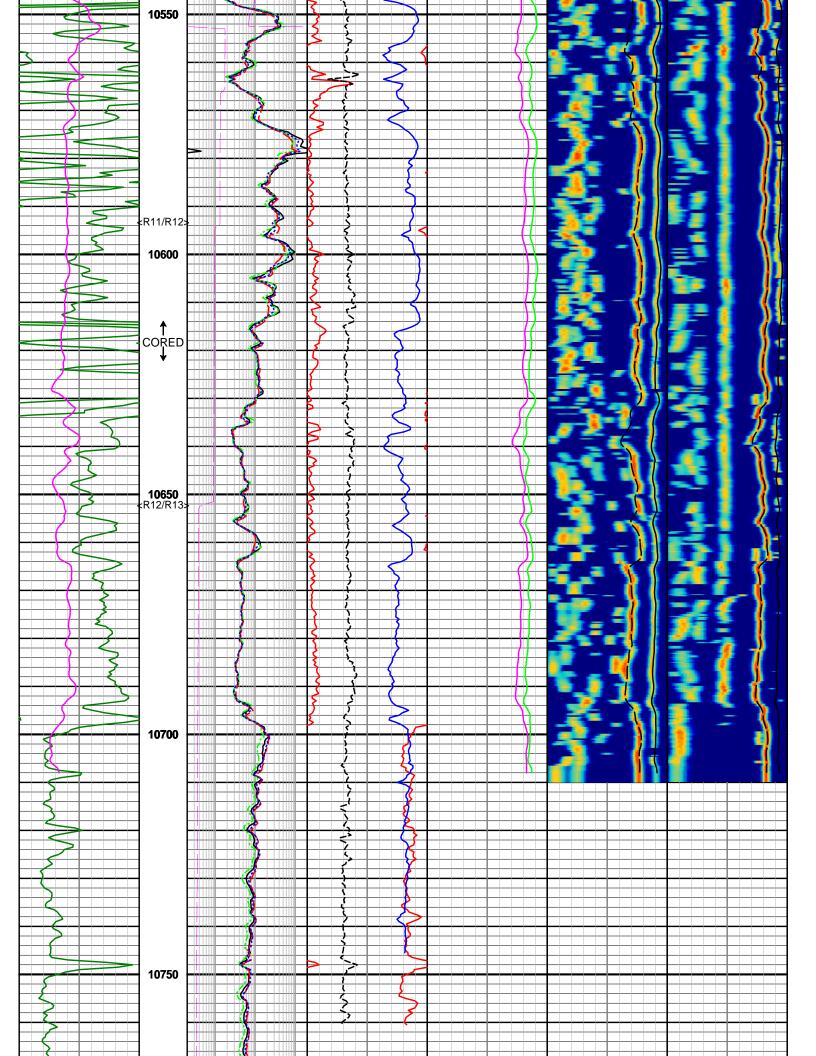


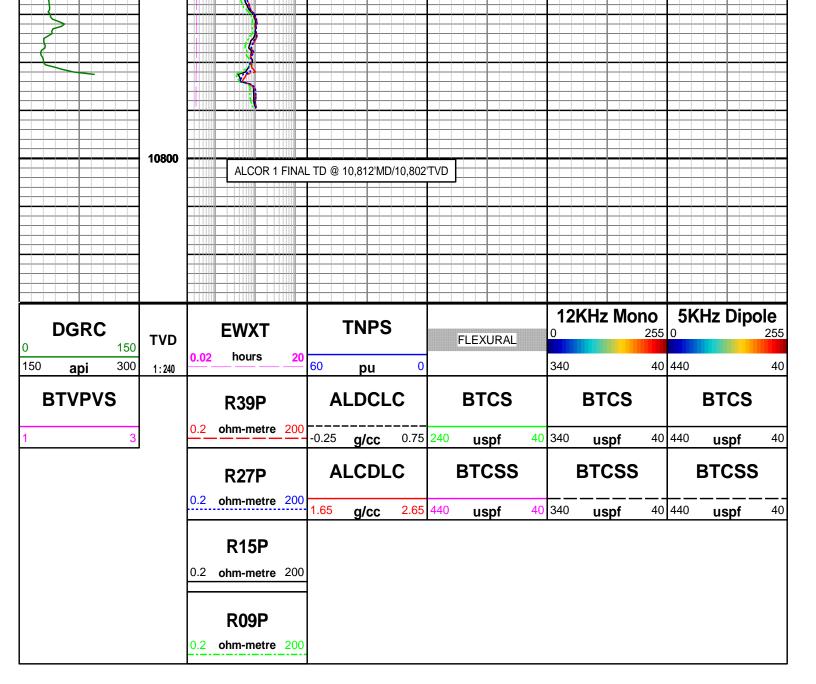














## **HALLIBURTON**

### **DIRECTIONAL SURVEY REPORT**

Great Bear Petroleum, LLC
Alcor 1
Alcor
North Slope Borough Alaska
USA
AK-XX-0009285348

Surveys from 139.03' to 416.62' are MWD with interpolated azimuth.
Surveys from 416.62' to 10778.66' are MWD+ SAG
Final Survey Projected to TD

Measured Depth (feet)	Inclination (degrees)	Direction (degrees)	Vertical Depth (feet)	Latitude (feet)	Departure (feet)	Vertical Section (feet)	Dogleg (deg/100ft)
0.00	0.00	0.00	0.00	0.00 N	0.00 E	0.00	TIE-IN
22.30	0.00	0.00	22.30	0.00 N	0.00 E	0.00	0.00
139.03	0.37	207.79	139.03	0.33 S	0.18 W	0.38	0.32
231.15	0.19	271.35	231.15	0.59 S	0.47 W	0.74	0.36
322.39	0.46	261.45	322.39	0.64 S	0.98 W	1.03	0.30

416.62	0.80	219.77	416.61	1.21 S	1.78 W	1.90	0.58
503.87 592.94	1.11 1.04	201.58 196.68	503.85 592.90	2.46 S 4.04 S	2.48 W 3.03 W	3.34 4.99	0.49 0.13
685.39	0.95	186.77	685.34	5.60 S	3.36 W	6.52	0.21
780.20	0.94	208.49	780.14	7.07 S	3.82 W	8.03	0.38
877.37	0.65	225.85	877.30	8.15 S	4.60 W	9.35	0.38
976.87	0.55	217.66	976.79	8.92 S	5.29 W	10.36	0.13
1070.52 1161.77	0.84 0.84	233.02 184.97	1070.44 1161.68	9.69 S 10.76 S	6.12 W 6.71 W	11.43 12.65	0.37
1259.04	0.65	208.98	1258.94	11.95 S	7.04 W	13.86	0.75 0.37
1355.56 1451.70	0.78 0.70	205.42 209.13	1355.45 1451.58	13.02 S 14.13 S	7.58 W 8.15 W	15.06 16.30	0.14 0.10
1547.61	0.87	214.97	1547.48	15.24 S	8.85 W	17.61	0.20
1642.98	0.86	205.66	1642.84	16.47 S	9.58 W	19.05	0.15
1739.38	0.64	193.71	1739.23	17.65 S	10.02 W	20.29	0.28
1836.78	0.69	209.38	1836.63	18.69 S	10.44 W	21.40	0.19
1931.60	0.71	175.26	1931.44	19.77 S	10.67 W	22.47	0.43
2028.33 2123.91	0.48 0.46	183.94 205.20	2028.17 2123.74	20.77 S 21.52 S	10.65 W 10.84 W	23.34 24.08	0.25 0.18
2217.21	0.50	180.79	2217.04	22.27 S	11.00 W	24.82	0.10
0040.00	0.50	404.40	0040.45	00.40.0	44.00 W	05.50	0.00
2312.62 2409.08	0.53 0.22	181.16 169.25	2312.45 2408.90	23.12 S 23.75 S	11.02 W 10.99 W	25.58 26.12	0.03 0.33
2463.32	0.57	179.55	2463.14	24.12 S	10.97 W	26.44	0.66
2510.66	0.67	119.99	2510.48	24.50 S	10.73 W	26.65	1.31
2606.45	1.05	112.70	2606.26	25.12 S	9.43 W	26.58	0.41
2700.00	0.12	96.30	2699.80	25.46 S	8.54 W	26.46	1.00
2799.23	0.18	69.63	2799.03	25.41 S	8.30 W	26.30	0.09
2894.32 2990.67	0.50 0.53	111.12 133.19	2894.12 2990.47	25.51 S 25.97 S	7.77 W 7.05 W	26.14 26.20	0.40 0.21
3084.68	0.88	117.17	3084.47	26.60 S	6.09 W	26.29	0.42
0400.44	0.05	440.54	0470.00	07.05.0	4.04.14/	00.05	0.00
3180.11 3275.33	0.85 0.61	116.51 141.14	3179.89 3275.10	27.25 S 27.96 S	4.81 W 3.86 W	26.25 26.43	0.03 0.41
3372.36	0.83	141.77	3372.12	28.91 S	3.10 W	26.91	0.23
3468.66	0.65	129.82	3468.42	29.81 S	2.25 W	27.29	0.25
3560.34	1.00	128.73	3560.09	30.64 S	1.22 W	27.54	0.38
3656.27	0.94	157.86	3656.00	31.89 S	0.27 W	28.19	0.51
3755.14	0.94	121.17	3754.86	33.07 S	0.73 E	28.74	0.60
3851.82 3948.95	0.94 0.63	107.39 109.99	3851.53 3948.65	33.71 S 34.13 S	2.16 E 3.42 E	28.63 28.40	0.23 0.32
4043.92	0.19	103.09	4043.62	34.35 S	4.07 E	28.28	0.47
4140.04	0.15	126.06	4139.74	34.46 S	4.32 E	28.26	0.08
4236.56	0.13	102.08	4236.26	34.59 S	4.69 E	28.20	0.00
4331.54	0.29	159.75	4331.23	34.87 S	5.03 E	28.28	0.31
4425.85 4523.07	0.62 0.27	116.22 149.90	4425.54 4522.76	35.32 S 35.75 S	5.57 E 6.16 E	28.42 28.52	0.48 0.43
4525.07	0.27	149.90	4322.70	35.75 3	0.10 E	20.52	
4618.45	0.53	131.14	4618.14	36.23 S	6.61 E	28.74	0.30
4710.67 4808.64	0.31 0.68	184.86 180.96	4710.35 4808.32	36.76 S 37.61 S	6.91 E 6.87 E	29.06 29.82	0.46 0.38
4903.55	0.33	180.86	4903.23	38.45 S	6.86 E	30.56	0.37
4999.95	0.55	168.26	4999.62	39.18 S	6.95 E	31.16	0.25
5095.22	0.47	204.56	5094.89	39.98 S	6.88 E	31.90	0.34
5190.87	0.69	179.59	5190.53	40.91 S	6.72 E	32.80	0.35
5286.20	0.26	183.07	5285.86	41.70 S	6.71 E	33.49	0.45
5382.80 5476.87	0.32 0.51	212.82 208.96	5382.46 5476.53	42.15 S 42.73 S	6.56 E 6.21 E	33.96 34.64	0.17 0.20
5573.78 5669.61	0.60 0.39	174.46 169.03	5573.43 5669.26	43.62 S 44.44 S	6.05 E 6.16 E	35.49 36.16	0.35 0.22
5764.88	0.46	176.14	5764.53	45.14 S	6.25 E	36.74	0.22
5860.77	0.50	196.81	5860.41	45.92 S	6.15 E	37.47	0.18
5956.68	0.61	212.35	5956.32	46.75 S	5.76 E	38.39	0.19
6054.74	0.58	217.79	6054.37	47.59 S	5.18 E	39.40	0.07
6149.17	0.43	229.35	6148.80	48.19 S	4.61 E	40.20	0.19
6241.53 6336.73	0.53 0.44	187.93 156.77	6241.16 6336.35	48.84 S 49.62 S	4.29 E 4.38 E	40.93 41.57	0.38 0.29
6388.96	0.51	174.23	6388.58	50.03 S	4.48 E	41.88	0.29
6407.00		450.50					
6437.33 6534.86	0.65 0.49	159.50 172.94	6436.95 6534.48	50.50 S 51.43 S	4.60 E 4.84 E	42.24 42.95	0.42 0.21
6630.89	0.45	184.45	6630.50	52.22 S	4.86 E	43.63	0.11
6726.83	0.44	180.68	6726.44	52.96 S	4.83 E	44.30	0.03
6822.44	0.40	162.88	6822.05	53.65 S	4.92 E	44.85	0.14
6918.13	0.56	174.04	6917.73	54.43 S	5.07 E	45.48	0.19
7011.46 7100.44	0.32	185.63	7011.06	55.14 S	5.09 E	46.09	0.27
7109.41 7205.30	0.54 0.45	204.95 211.55	7109.01 7204.89	55.84 S 56.57 S	4.87 E 4.48 E	46.80 47.63	0.27 0.11
7301.43	0. <del>4</del> 0 0.57	216.27	7301.02	57 27 S	4.40 E	48 48	0.11

7001.40	0.01	LIVILI	7001.02	01.27	4.00 L	70.70	0.10
7394.03	0.88	237.89	7393.61	58.02 S	3.13 E	49.56	0.44
7492.35	1.06	248.06	7491.92	58.76 S	1.64 E	50.91	0.25
	0.64	283.13	7588.62	58.98 S	0.29 E	51.75	0.23
7589.06							0.07
7684.78	0.72	280.36	7684.33	58.75 S	0.82 W	52.07	0.09
7779.85	0.64	297.13	7779.40	58.40 S	1.88 W	52.27	0.22
7877.15	0.79	282.23	7876.69	58.01 S	3.02 W	52.47	0.24
7973.13	0.91	268.39	7972.66	57.89 S	4.43 W	53.03	0.25
8066.71	1.07	262.34	8066.22	58.02 S	6.04 W	53.92	0.20
8163.21	1.06	183.52	8162.71	59.04 S	6.99 W	55.26	1.40
8256.61	2.03	187.48	8256.08	61.54 S	7.26 W	57.59	1.04
0230.01	2.03	107.40	0200.00	01.04 3	7.20 VV	57.59	1.04
8276.71	2.22	188.14	8276.16	62.28 S	7.36 W	58.29	0.95
8360.29	3.67	182.39	8359.63	66.55 S	7.70 W	62.21	1.77
8396.65	4.99	183.01	8395.88	69.29 S	7.83 W	64.68	3.63
8428.91	5.96	184.13	8428.00	72.37 S	8.03 W	67.48	3.02
8457.38	6.62	184.77	8456.30	75.48 S	8.27 W	70.33	2.33
			0.000.00				
8491.89	7.22	186.53	8490.55	79.61 S	8.68 W	74.16	1.84
8525.32	8.06	186.68	8523.69	84.03 S	9.19 W	78.29	2.51
8554.46	8.67	185.91	8552.52	88.24 S	9.66 W	82.22	2.13
8598.25	9.50	184.77	8595.76	95.13 S	10.30 W	88.58	1.94
8659.65	10.12	183.80	8656.26	105.56 S	11.07 W	98.13	1.04
0000.00	10.12	100.00	0000.20	100.000	11.07 11	55.15	1.0-1
8693.51	9.83	182.61	8689.61	111.41 S	11.40 W	103.44	1.05
8723.57	9.80	181.00	8719.23	116.53 S	11.57 W	108.02	0.92
8756.25	9.65	180.09	8751.44	122.05 S	11.62 W	112.90	0.66
8790.22	8.91	178.99	8784.96	127.53 S	11.58 W	117.70	2.24
8825.57	8.56	177.37	8819.90	132.90 S	11.41 W	122.34	1.21
8850.66	8.67	176.28	8844.71	136.65 S	11.20 W	125.54	0.78
8950.92	7.22	181.35	8944.01	150.49 S	10.86 W	137.55	1.60
9046.40	6.24	171.45	9038.83	161.62 S	10.23 W	147.04	1.59
9143.03	4.89	174.66	9135.00	170.91 S	9.06 W	154.67	1.43
9240.11	4.61	172.51	9231.75	178.90 S	8.17 W	161.27	0.34
9335.90	4.22	173.94	9327.26	186.22 S	7.29 W	167.29	0.42
			9423.03				
9431.91	3.88	174.51		192.97 S	6.61 W	172.90	0.36
9527.21	3.48	174.68	9518.13	199.06 S	6.03 W	177.99	0.42
9622.34	3.07	176.04	9613.10	204.47 S	5.59 W	182.54	0.44
9719.33	3.05	174.83	9709.96	209.64 S	5.18 W	186.89	0.07
9815.52	2.76	177.03	9806.02	214.50 S	4.83 W	191.00	0.32
9912.28	2.50	181.36	9902.68	218.93 S	4.76 W	194.86	0.34
10064.19	2.23	194.12	10054.46	216.93 S 225.11 S	5.56 W	200.68	0.39
10157.05	2.23 1.66	203.99	10147.27	228.09 S	6.55 W	200.66	0.39
							0.71
10254.18	1.66	200.62	10244.36	230.69 S	7.61 W	206.57	0.10
10349.19	1.60	196.87	10339.33	233.25 S	8.48 W	209.23	0.13
10447.17	1.59	196.11	10437.27	235.87 S	9.26 W	211.90	0.02
10539.87	1.20	196.93	10529.94	238.03 S	9.90 W	214.11	0.42
10731.66	0.57	144.06	10721.71	240.72 S	9.92 W	216.49	0.51
10731.66	0.52	224.28	10768.71	240.72 S 241.07 S	9.93 W	216. <del>49</del> 216.80	1.50
10770.00	U.UZ	££4.20	10700.71	271.07 3	9.93 W	210.00	1.00
10812.00	0.52	224.28	10802.05	241.28 S	10.14 W	217.09	0.00

### **CALCULATION BASED ON MINIMUM CURVATURE METHOD**

SURVEY COORDINATES RELATIVE TO WELL SYSTEM REFERENCE POINT TVD VALUES GIVEN RELATIVE TO DRILLING MEASUREMENT POINT

VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 208.39 DEGREES (TRUE)
A TOTAL CORRECTION OF 20.87 DEG FROM MAGNETIC NORTH TO TRUE NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD. HORIZONTAL DISPLACEMENT(CLOSURE) AT 10812.00 FEET IS 241.50 FEET ALONG 182.41 DEGREES (TRUE)

> Map System: US State Plane 1927 (Exact Solution) Geo Datum: NAD 1927 (NADCON CONUS) Map Zone: Alaska Zone 04