Western Wireline

60 Arm Multifinger Caliper Log

Company	Southern California Gas Company
Well	Porter 69C
Field	Aliso Canyon
County	Los Angeles
State	California

Country U.S.A.

Company	Southern California Gas Company
Well	Porter 69C
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Location: API # : 037-24128

SEC 34 TWP 3N RGE 16W

Other Services

Permanent Datum	2389.5'	Elevation	2366
Log Measured From	23.5' K.B.		
Drilling Measured From	23.5' K.B.		

Elevation
K.B. 23.5'
D.F. 2413'
G.L. 2389.5'

Date	8-July-2016		
Run Number	One		
Depth Driller	7881'		
Depth Logger	7513'		
Bottom Logged Interval	7513'		
Top Log Interval	4.5'		
Open Hole Size			
Type Fluid	H2O		
Density / Viscosity	8.5 lb/gal		
Max. Recorded Temp.			
Estimated Cement Top			
Time Well Ready	13;00		
Time Logger on Bottom	14:30		
Equipment Number	208		
Location			
Recorded By	Kai Haughton		
Witnessed By	Tom McMahon		

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

Casing Record	Size	Wgt/Ft	Top	Bottom
Surface String	13.375"	54.5#	23.5'	1043'
Prot. String	9.625"	47#	23.5'	7596'
Production String	5.5"	17#	7520'	7881'
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

Objective is to Log 60mac in 9.625" casing for inspection.
Used a K.B. of 23.5' as per program. Tied into Western wireline's Gamma/CCL log
dated 8 July 2016 with collars between 7500ft and 6000ft.
9.625" 40# Reference joint was logged at surface, as per client request, for log QC purposes
Added -9.5' to put on depth

Log Variables

DatabaseC:\ProgramData\Warrior\Data\SouthernCaliforniaGasCompanyPorter 69c60MacGamCcl7
Dataset field/well/run1/mergdepth1.1/_vars_

Top - Bottom

BOREID	BOTTEMP	CASEID	CASEOD	CASETHCK	MinAPIWall	PERFS	RM_MEAS_R
in	degF	in	in	in	in		Ohm-m
7.875	175	8.681	9.625	0.472	0.413	0	0.1
RM_MEAS_T	SRFTEMP	TDEPTH					
degF	degF	ft					
80	0	0					

Variable Description

BOREID : Borehole I.D.
BOTTEMP : Bottom Hole Temperature
CASEID : Casing I.D.
CASEOD : Casing O.D.
CASETHCK : Casing Thickness
MinAPIWall : Minimum API Wall Thickness
PERFS : Perforation Flag
RM_MEAS_R : Mud Resistivity Measured
RM_MEAS_T : Mud Temperature Measured
SRFTEMP : Surface Temperature
TDEPTH : Total Depth

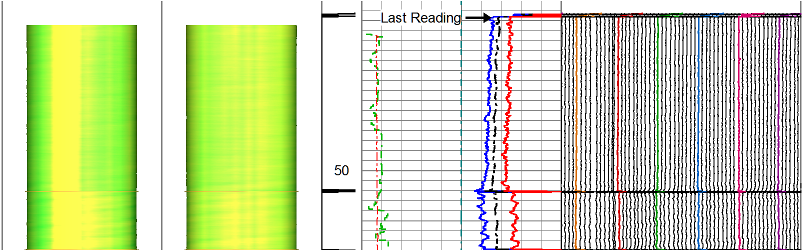
Western Wireline

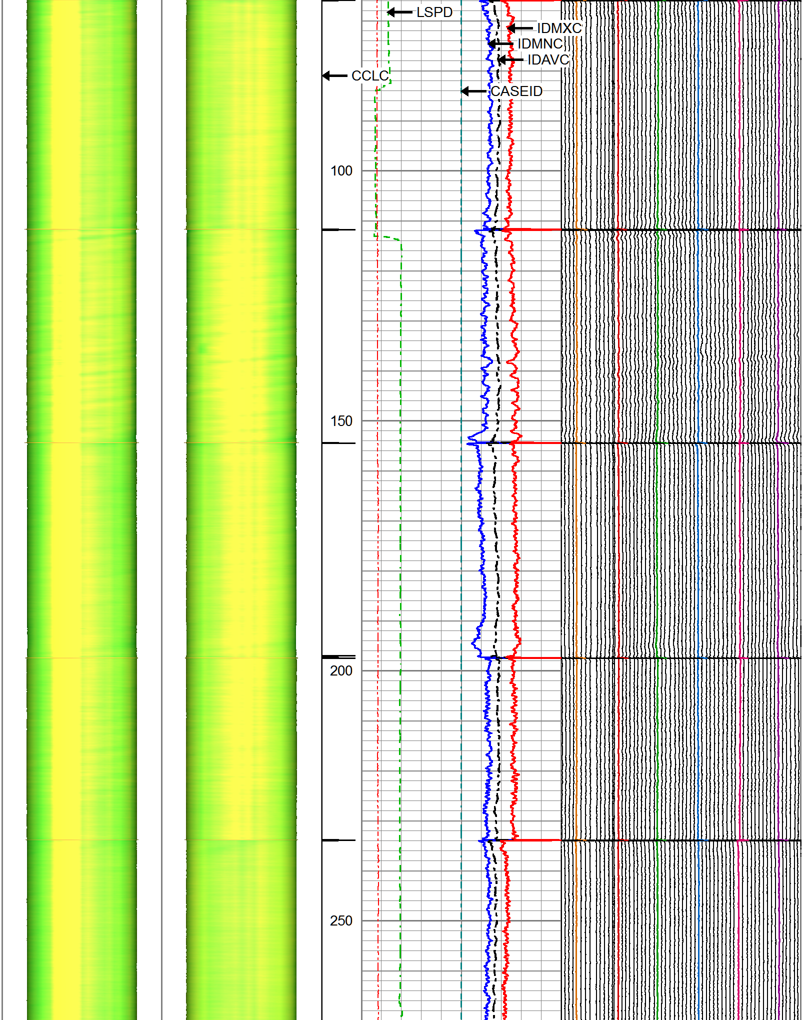
Main Multifinger Logging Section

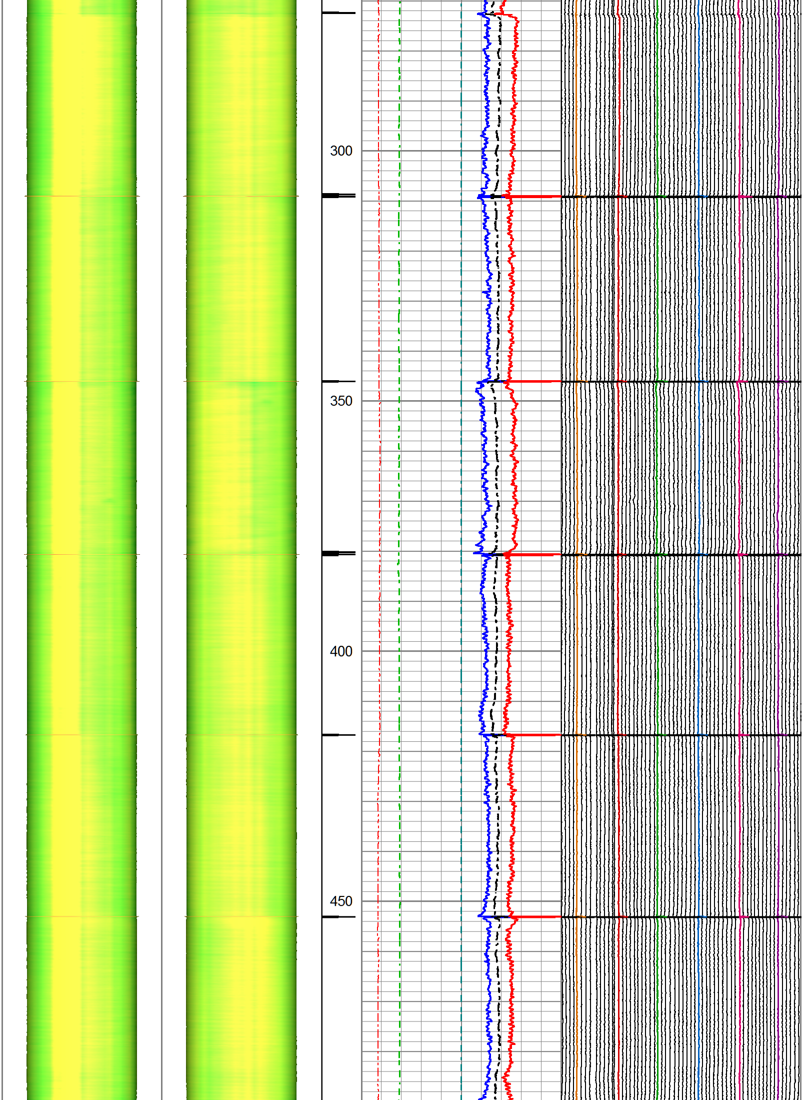
5 inches = 100 feet

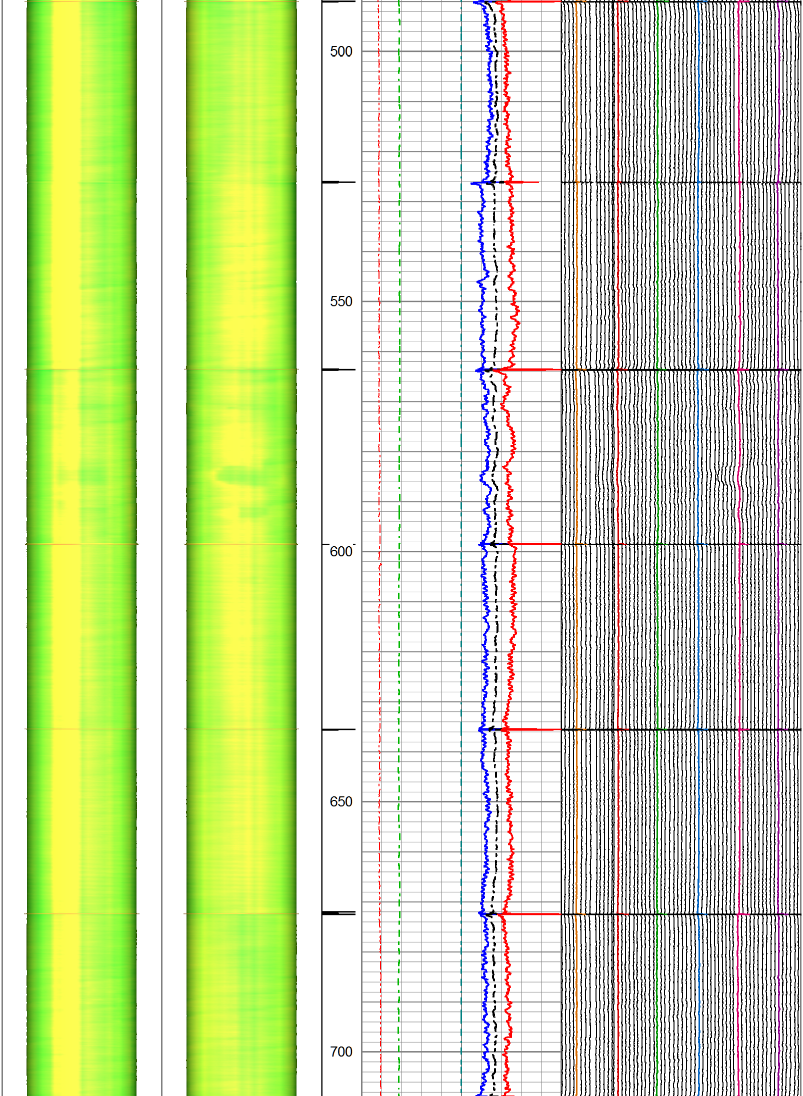
Database File	southerncaliforniagascompanyporter 69c60macgamccl7-8-16.db
Dataset Pathname	mergdepth1.1
Presentation Format	1b_mac_60_multi arm_gas co edit
Dataset Creation	Tue Jul 12 08:47:55 2016
Charted by	Depth in Feet scaled 1:240

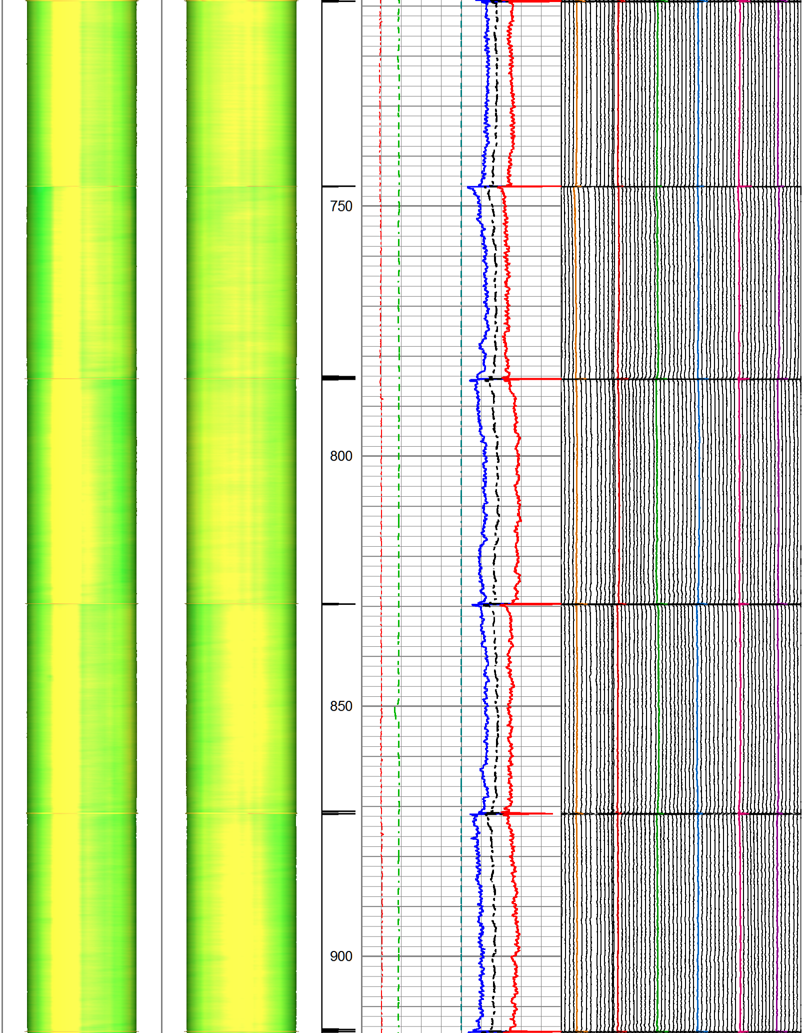
Low Side Image	High Side Image	CCL					
7.737 — 9.625	7.737 — 9.625		0	LSPD (ft/min)	200	1	RC10 (in) 7
			8.181	IDMNC (in)	9.181	2	RC20 (in) 8
			8.181	CASEID (in)	9.181	3	RC30 (in) 9
			8.181	IDAVC (in)	9.181	4	RC40 (in) 10
			8.181	IDMXC (in)	9.181	5	RC50 (in) 11
			0	LTEN (lb)	4000	6	RC60 (in) 12

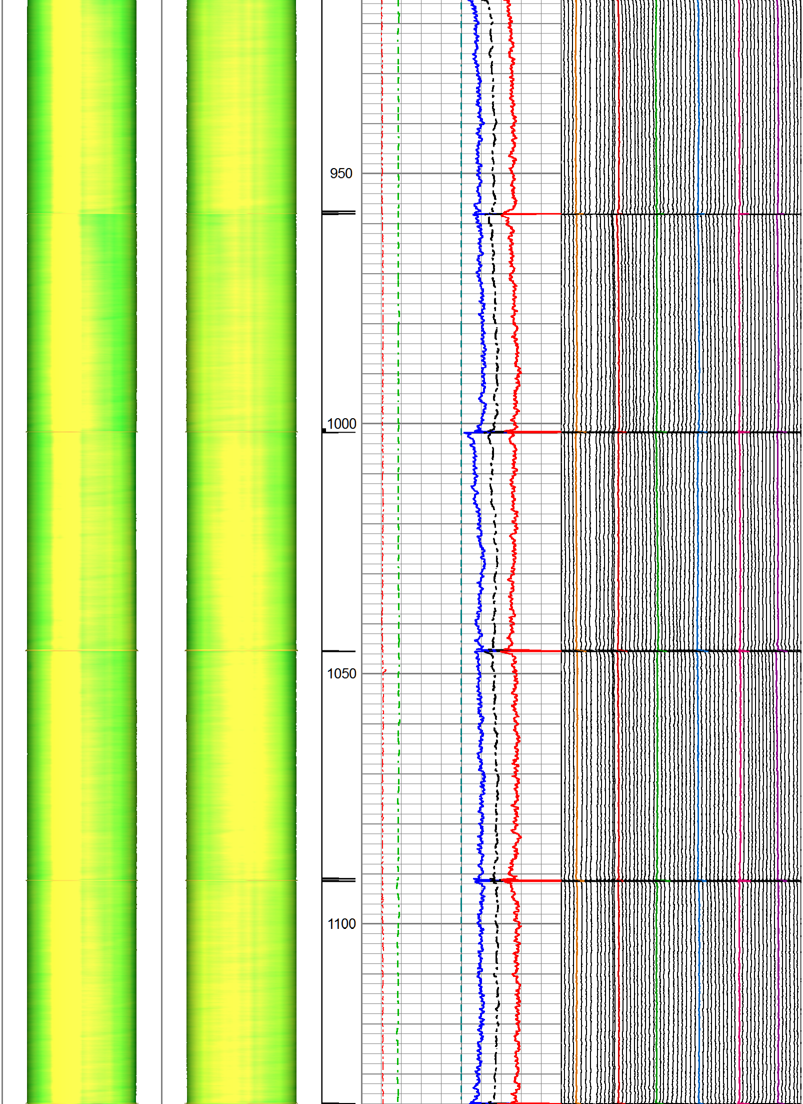


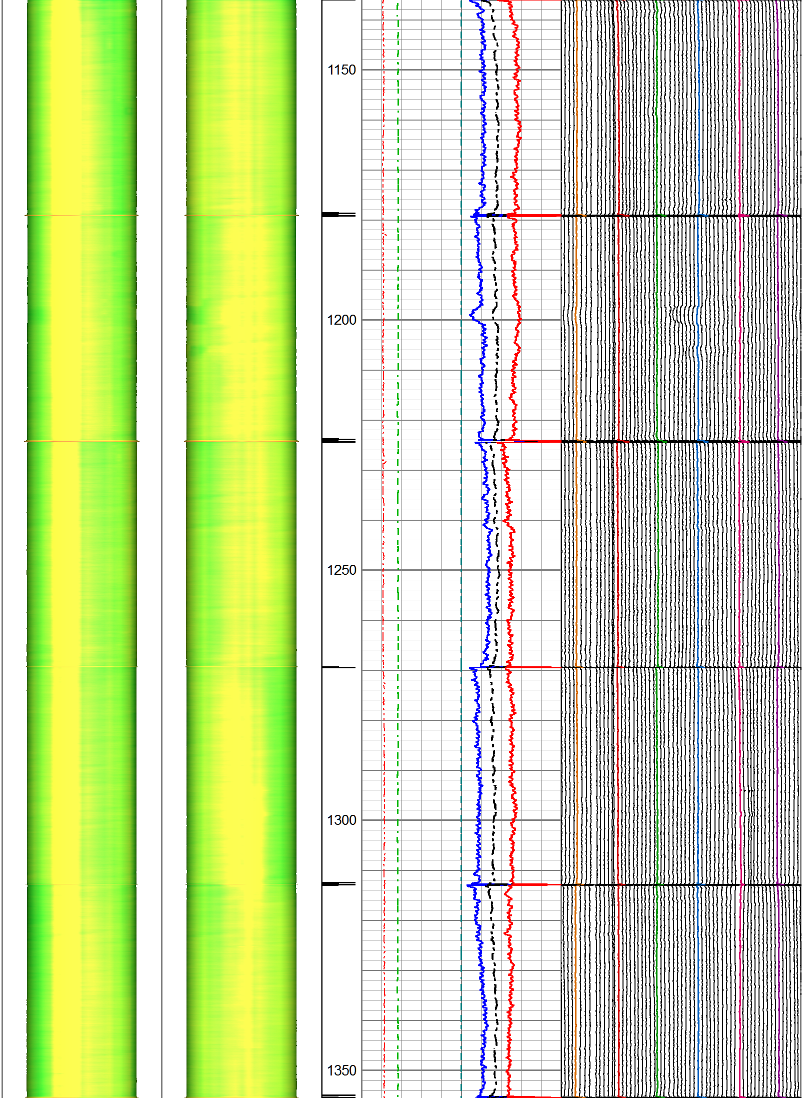


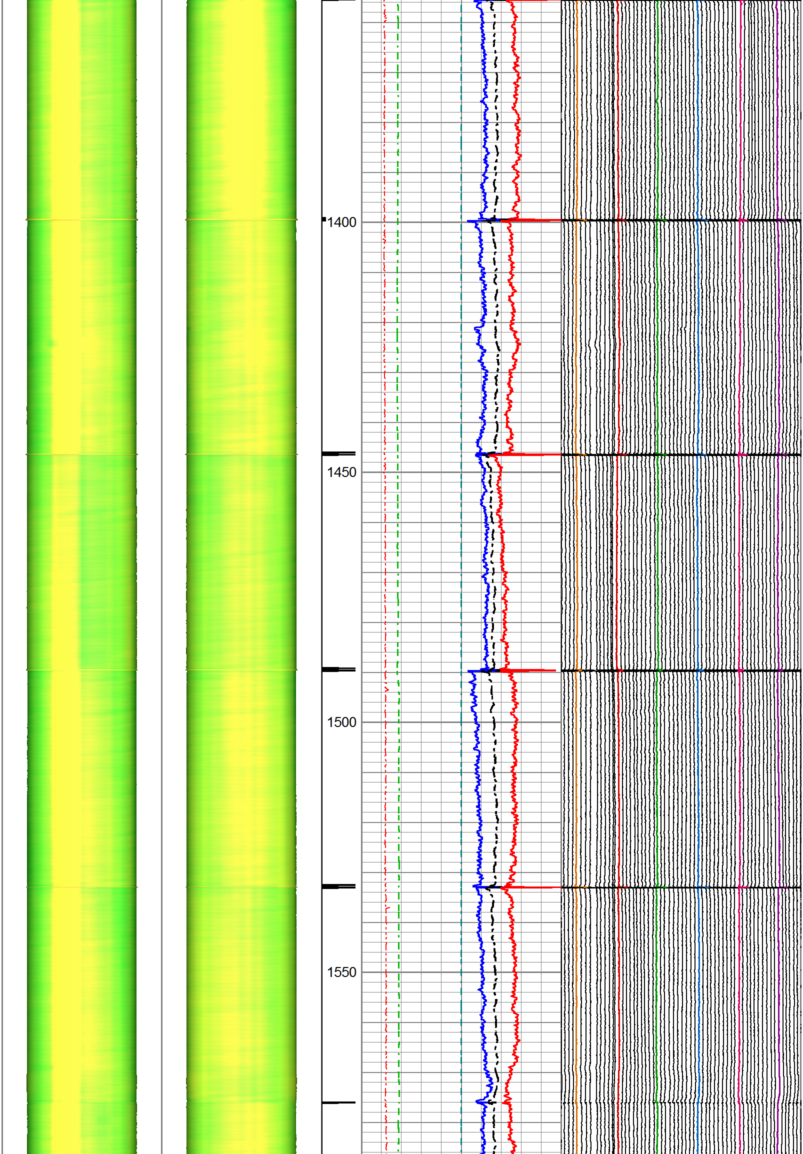


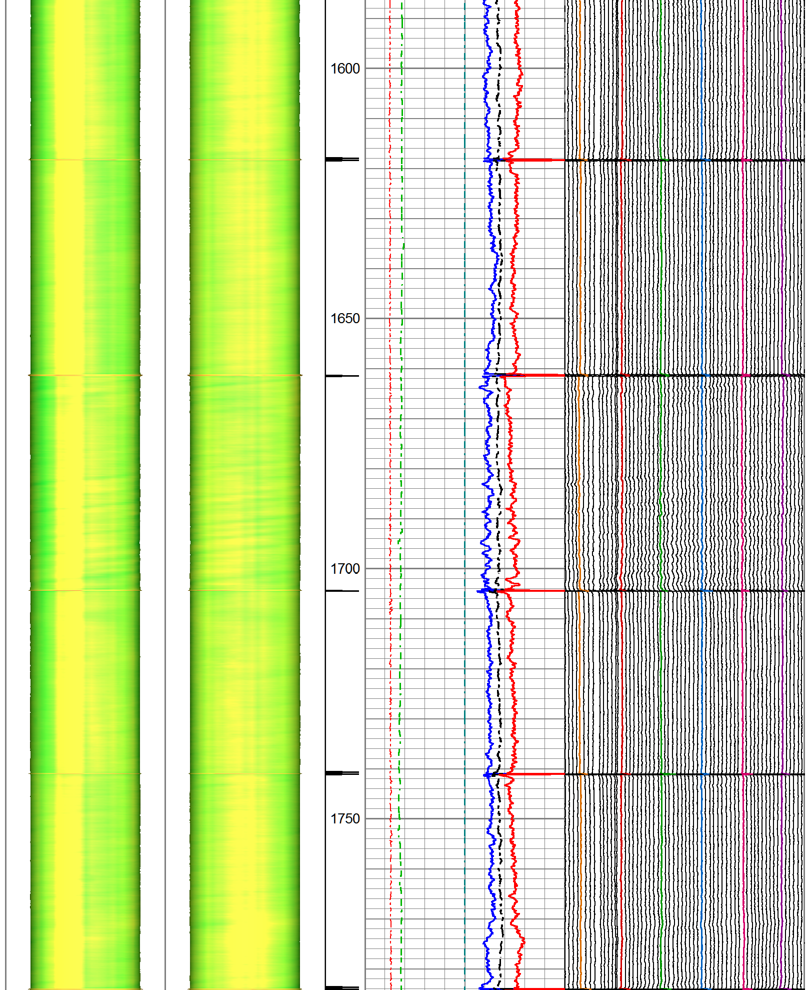


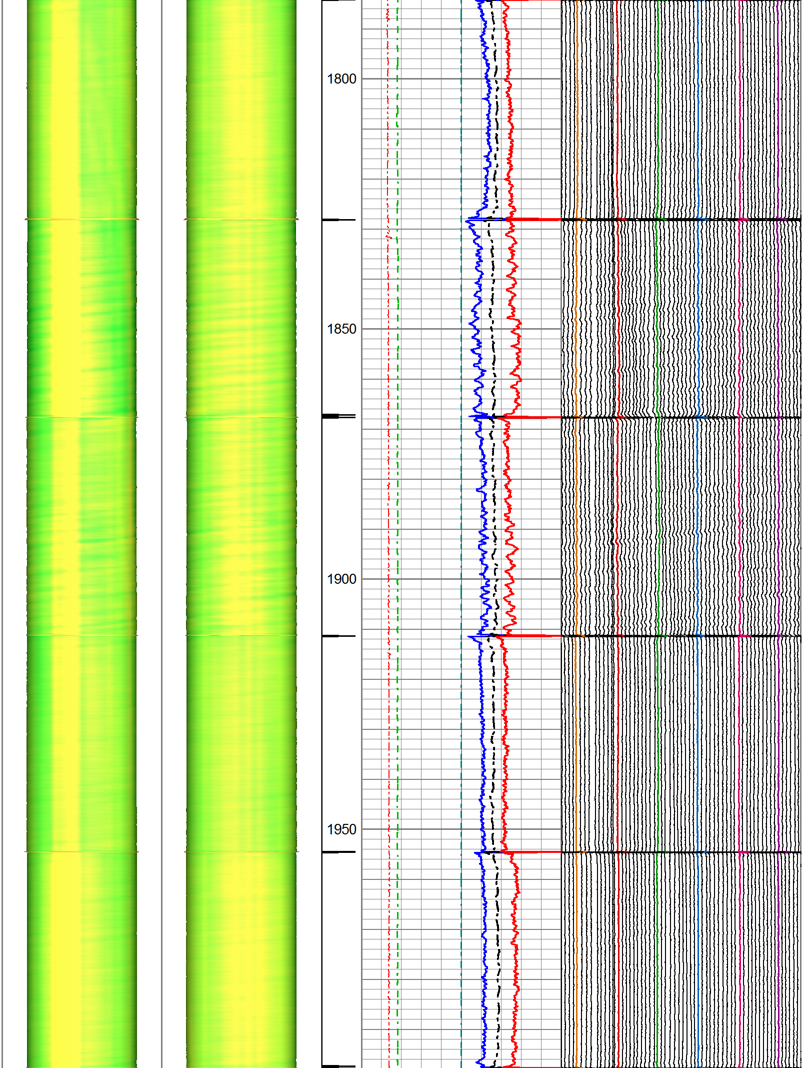


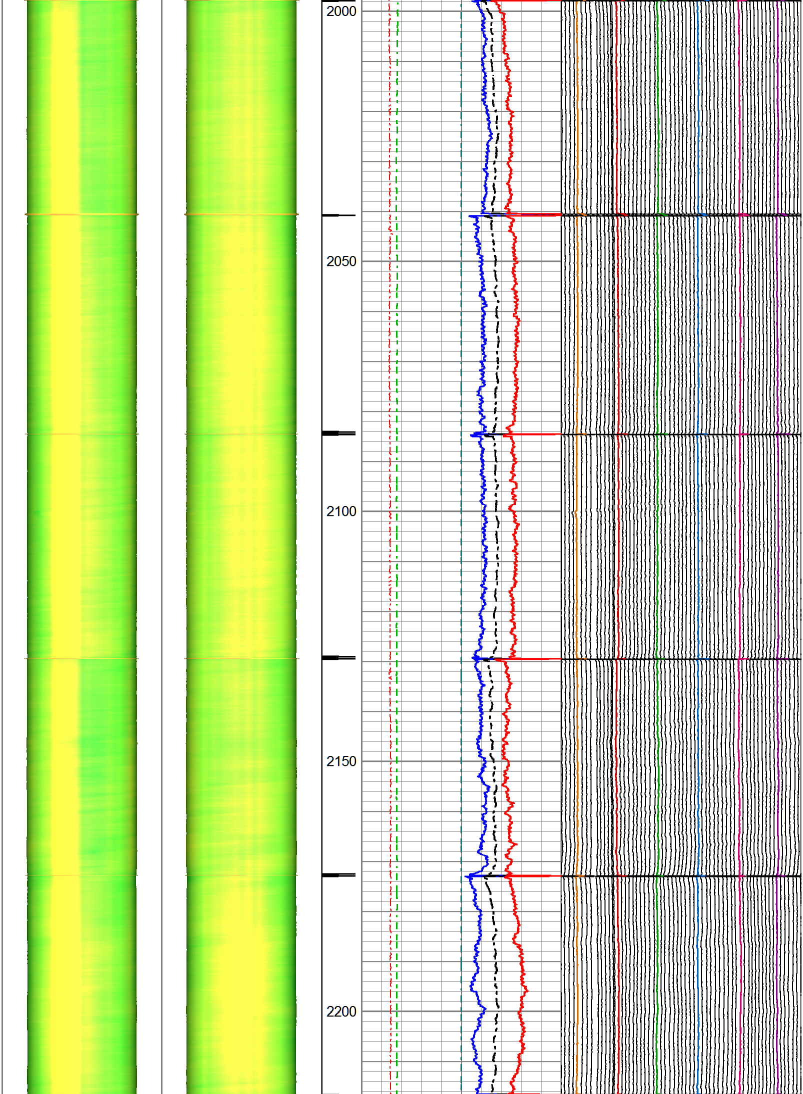


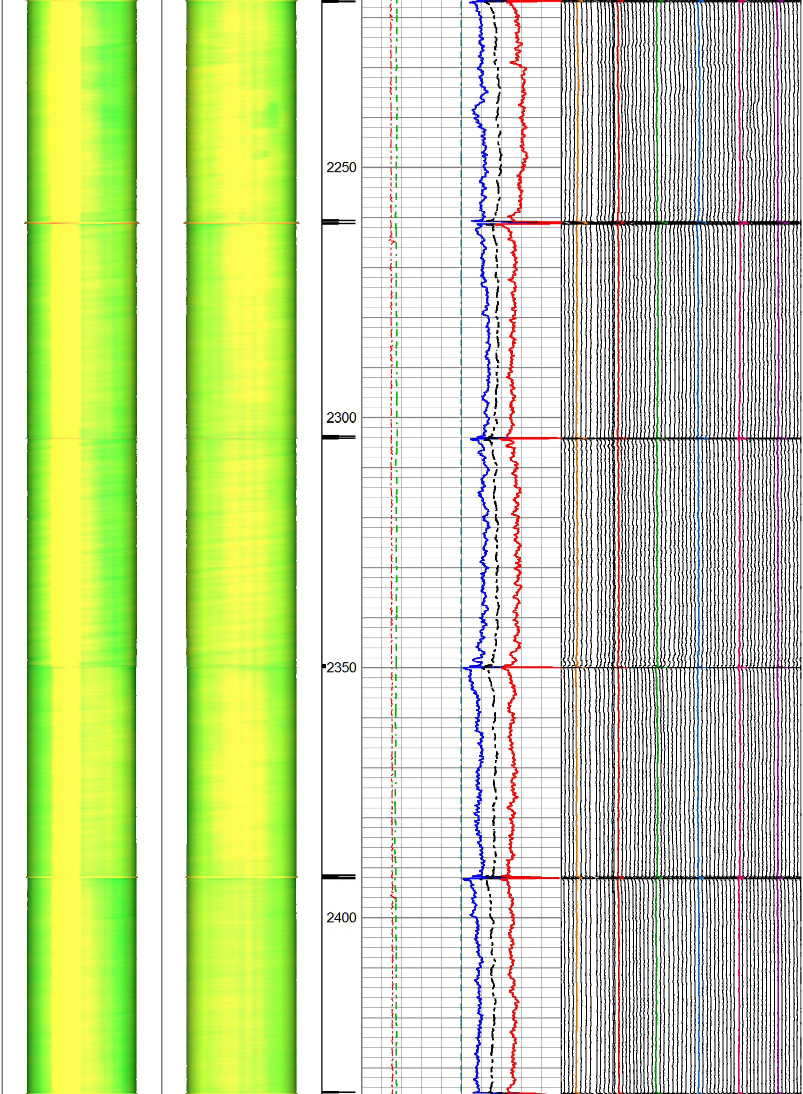


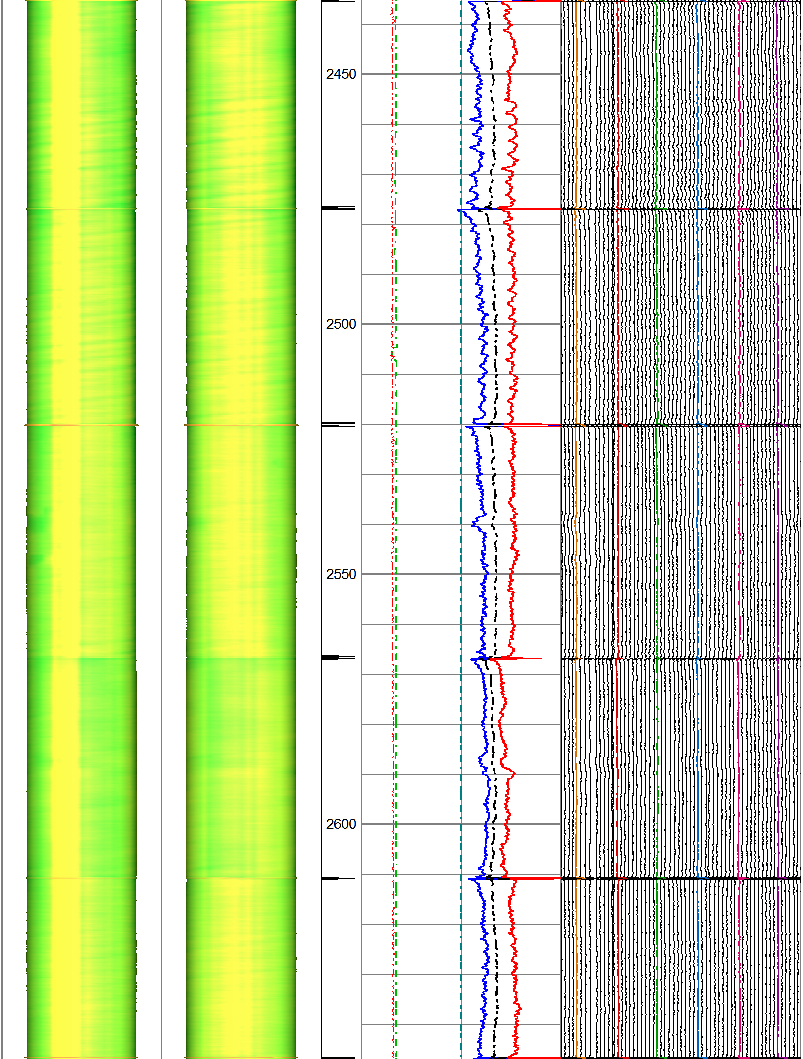


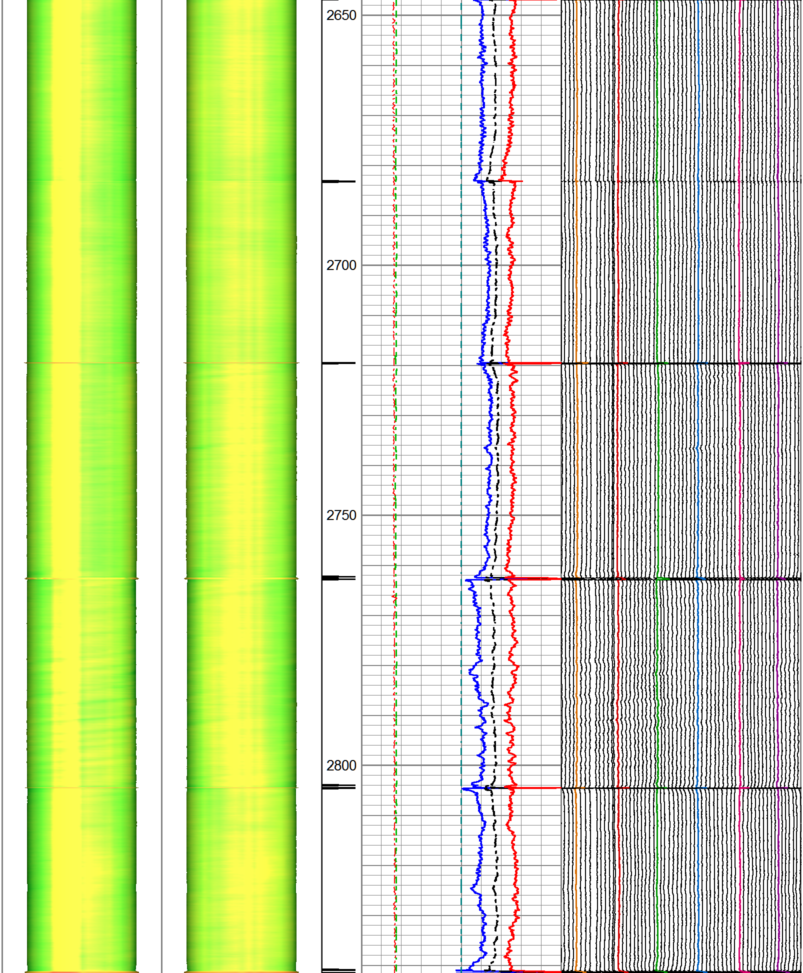


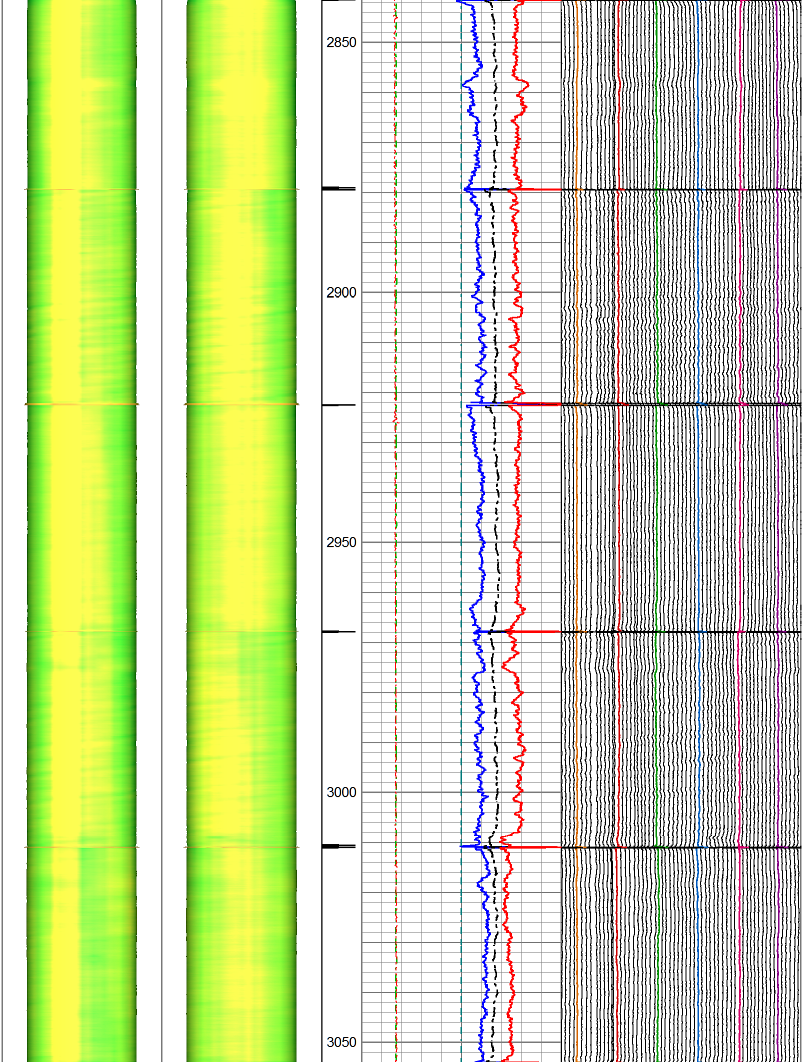


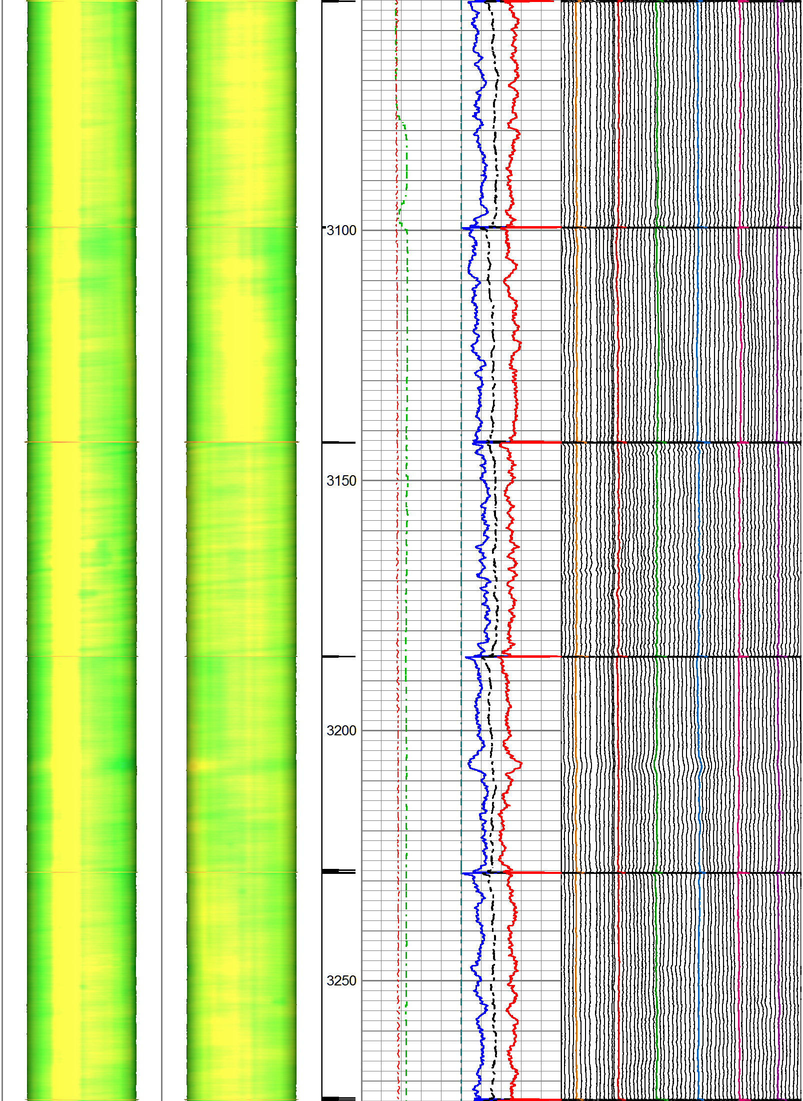


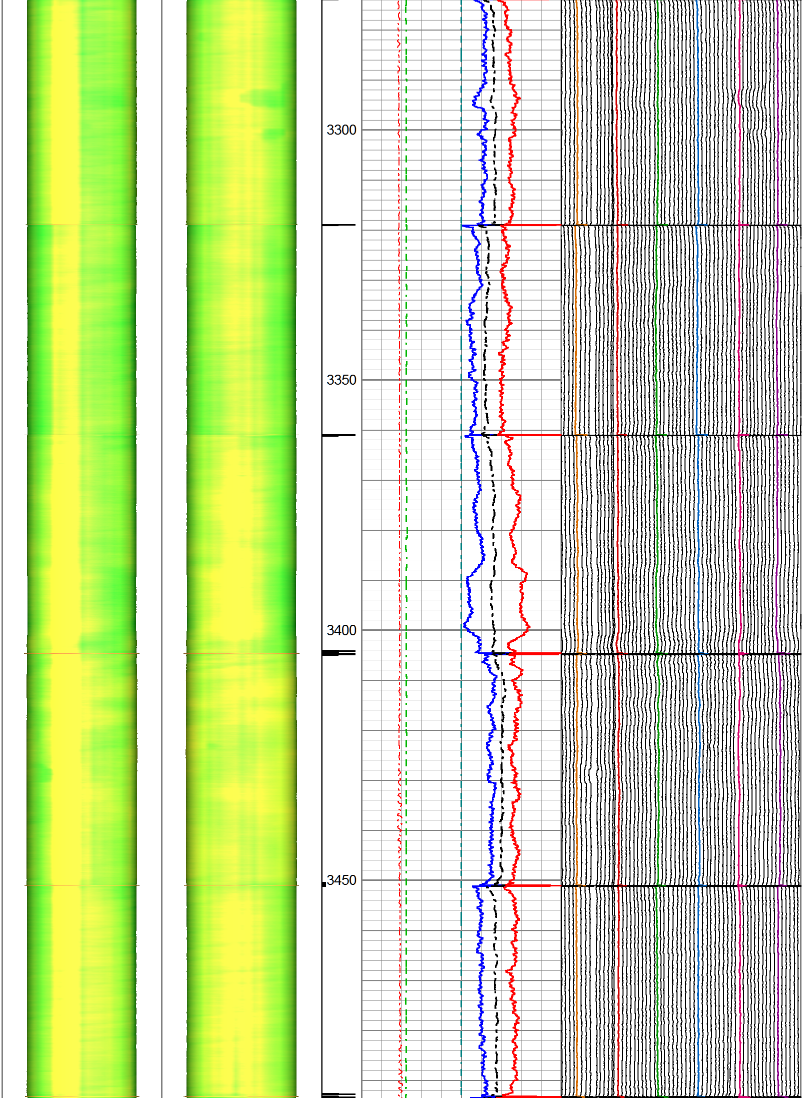


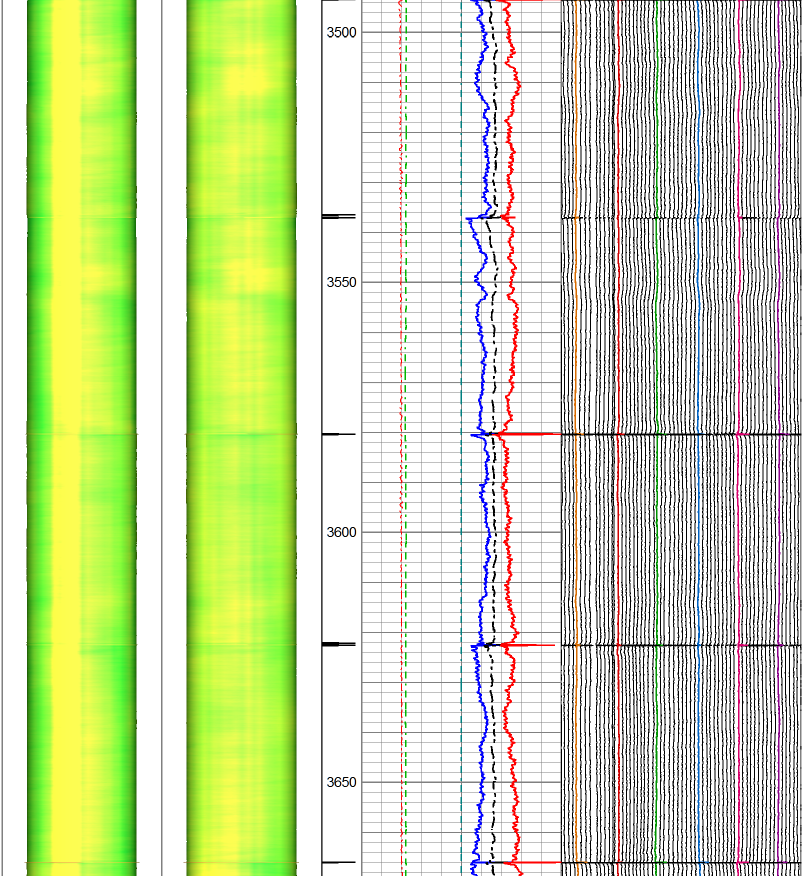


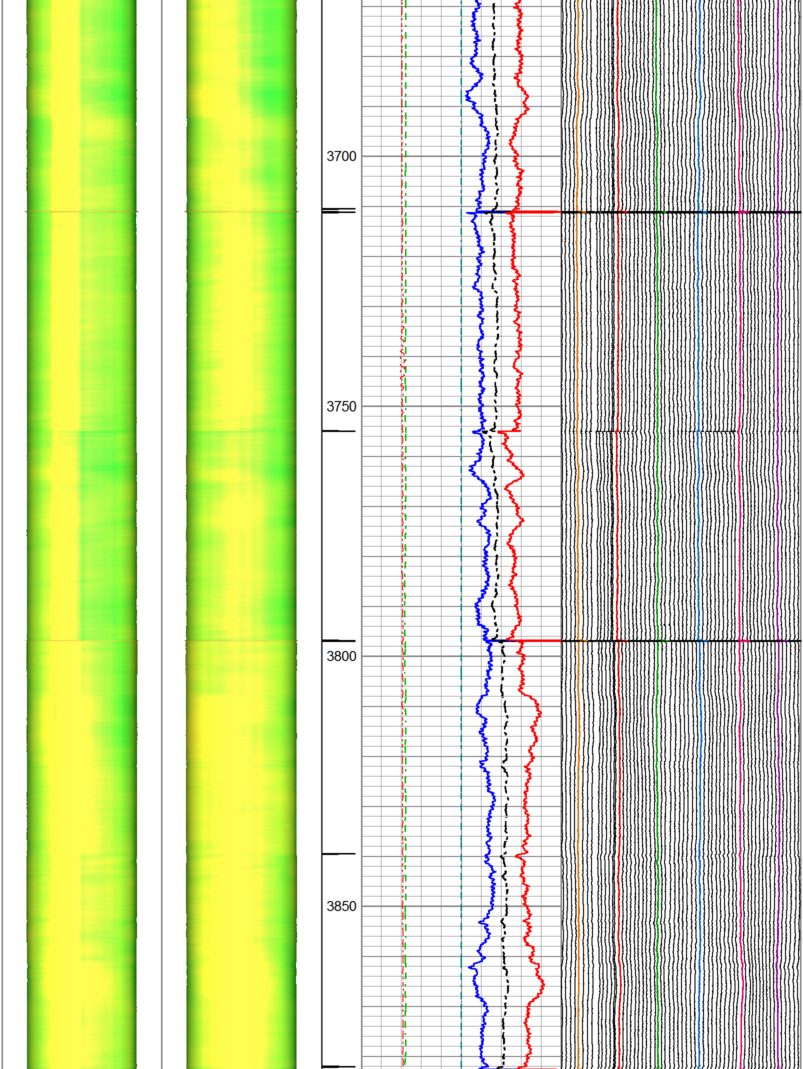


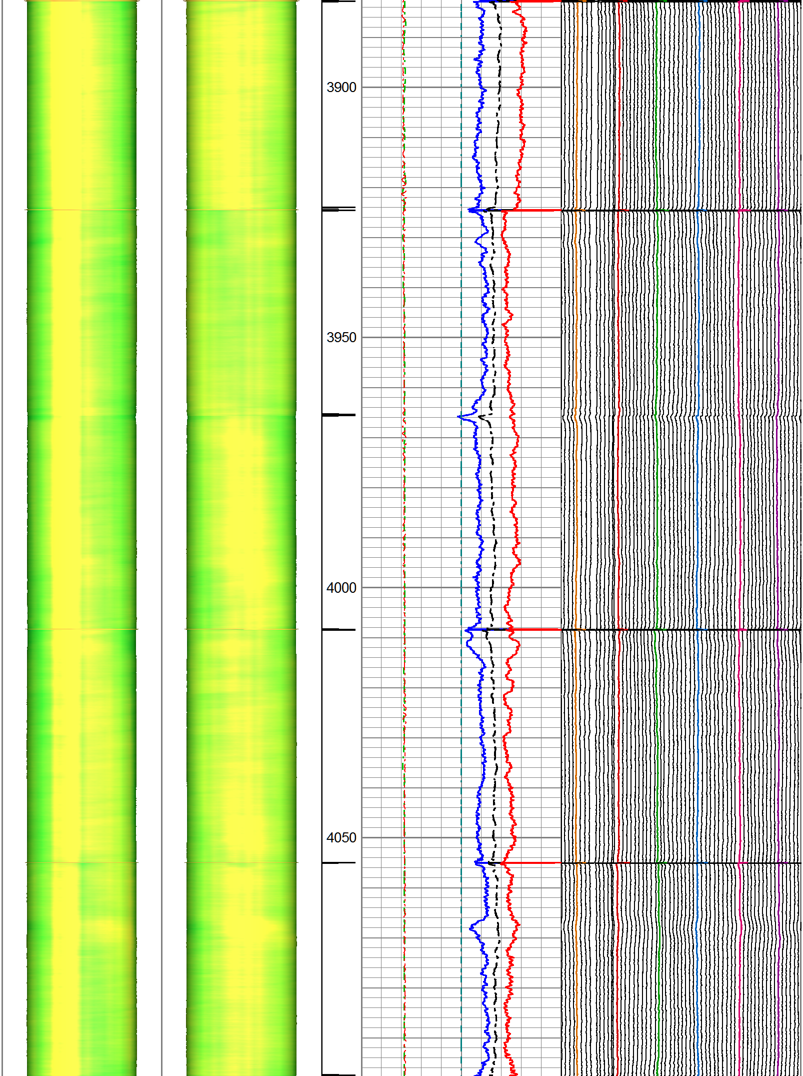


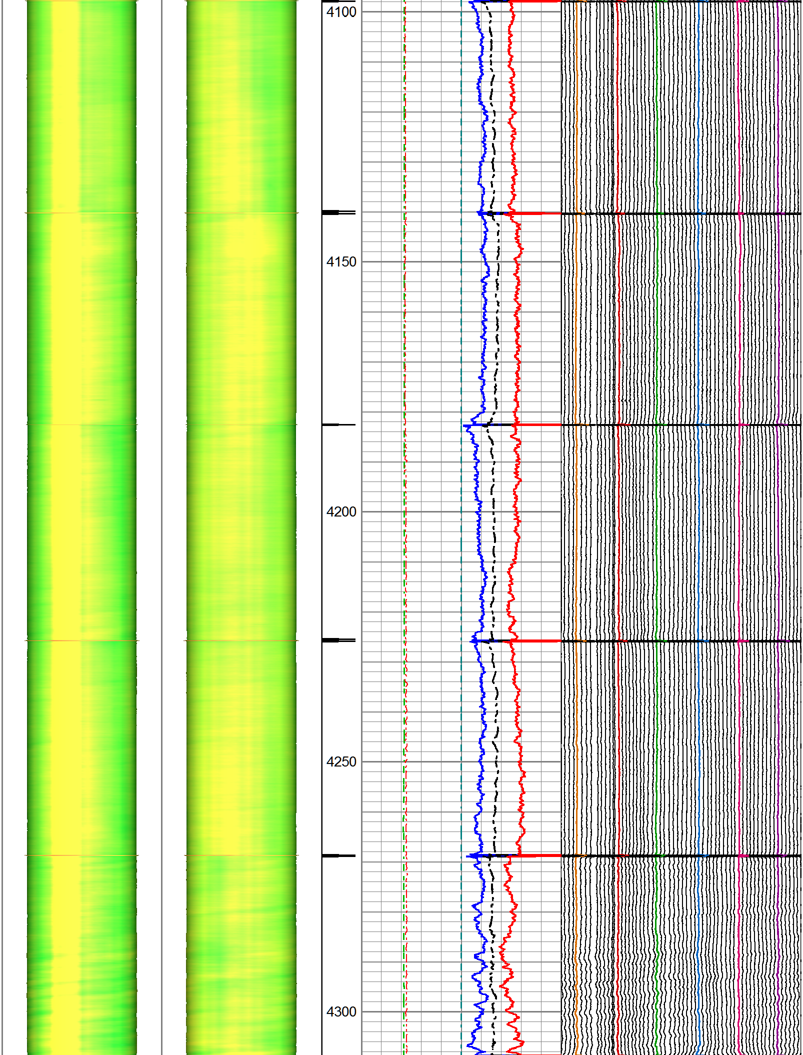


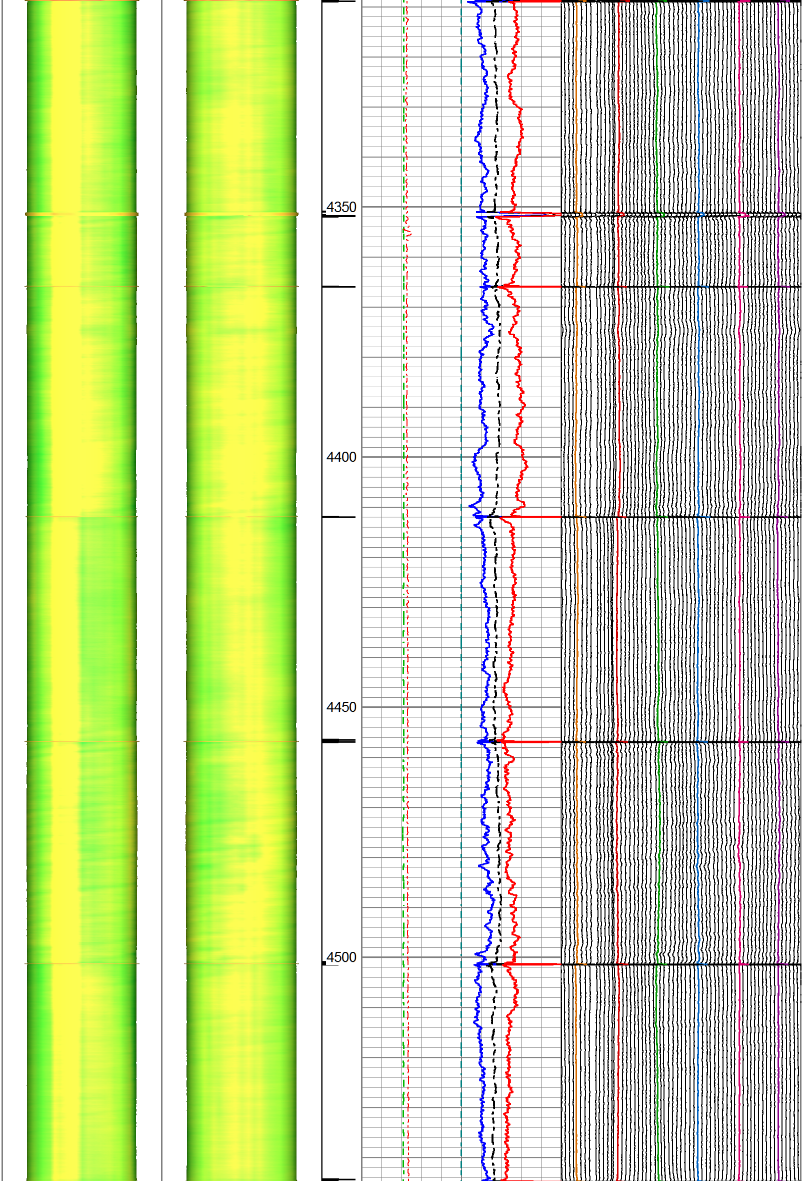


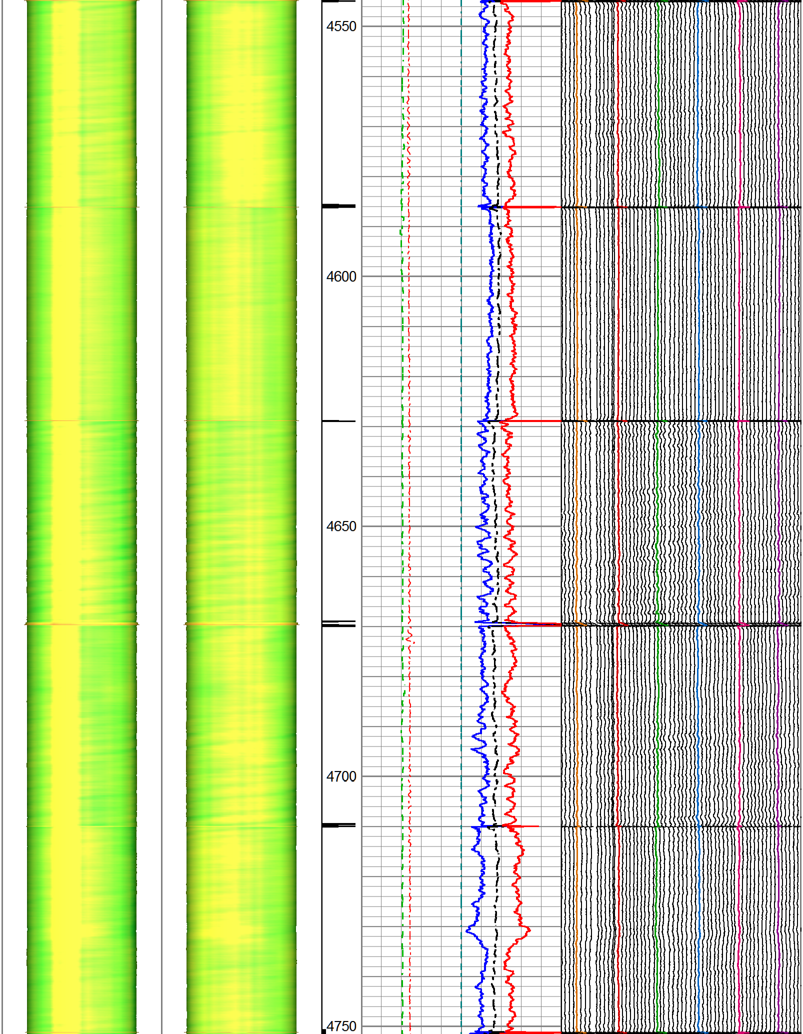


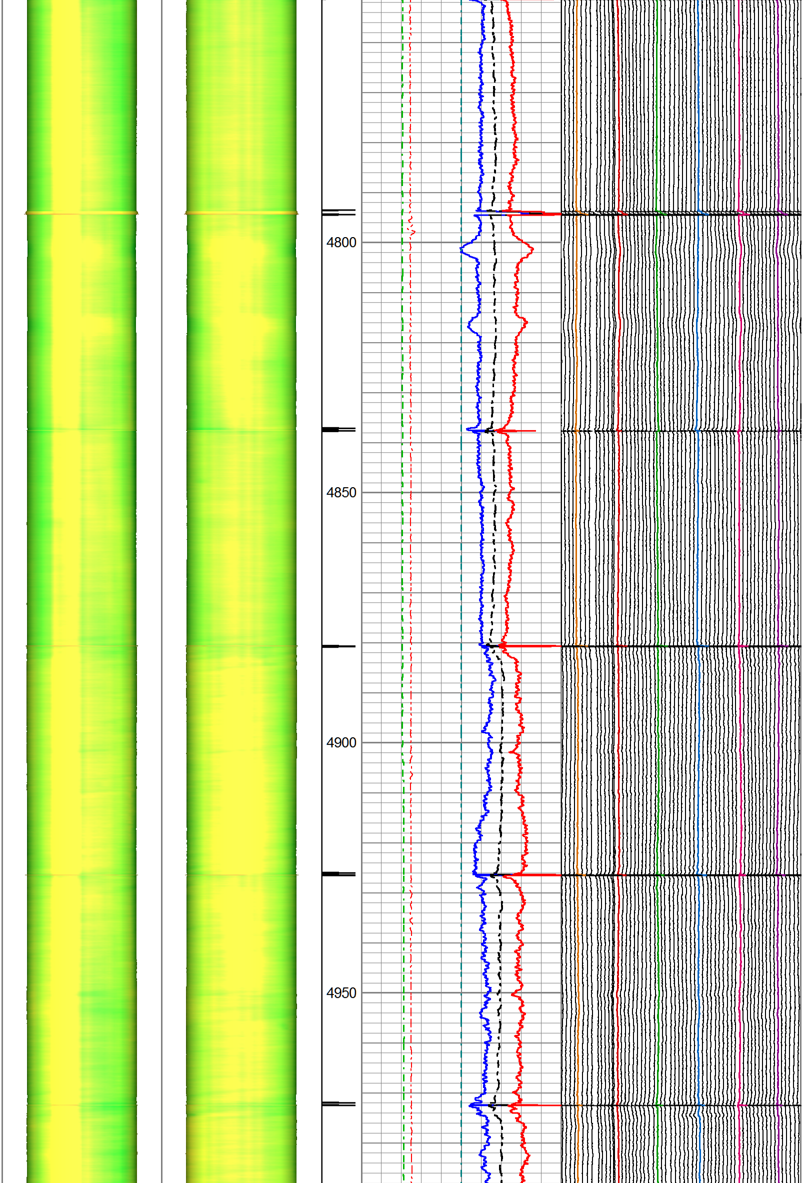


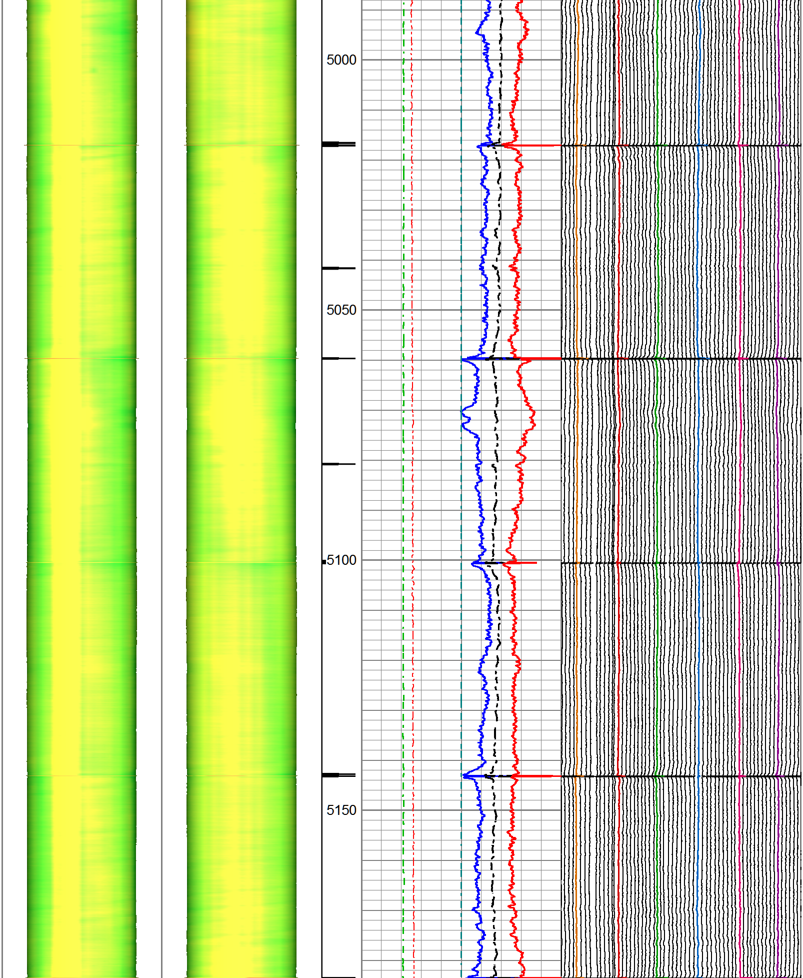


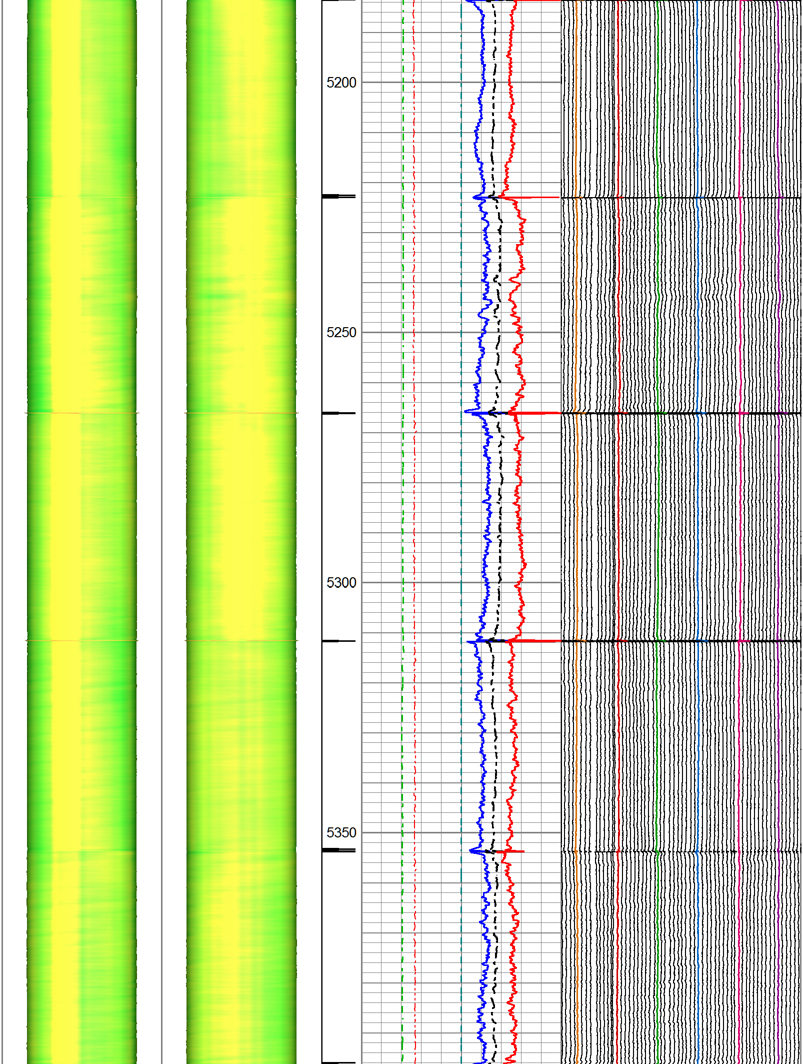


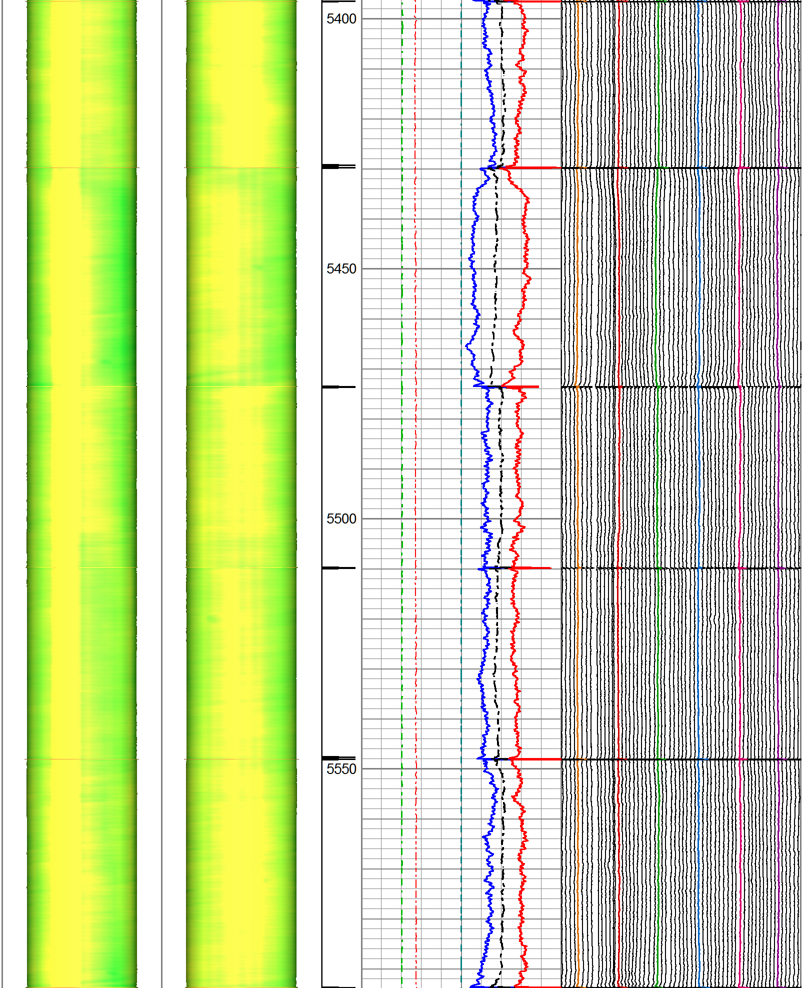


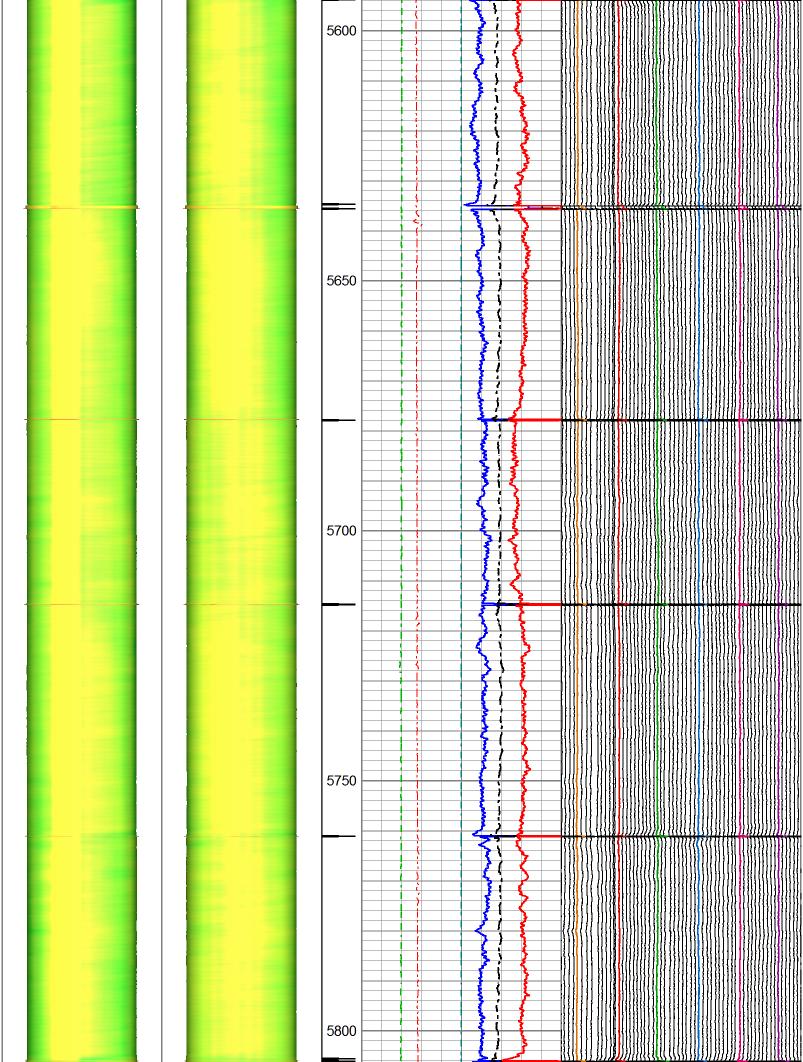


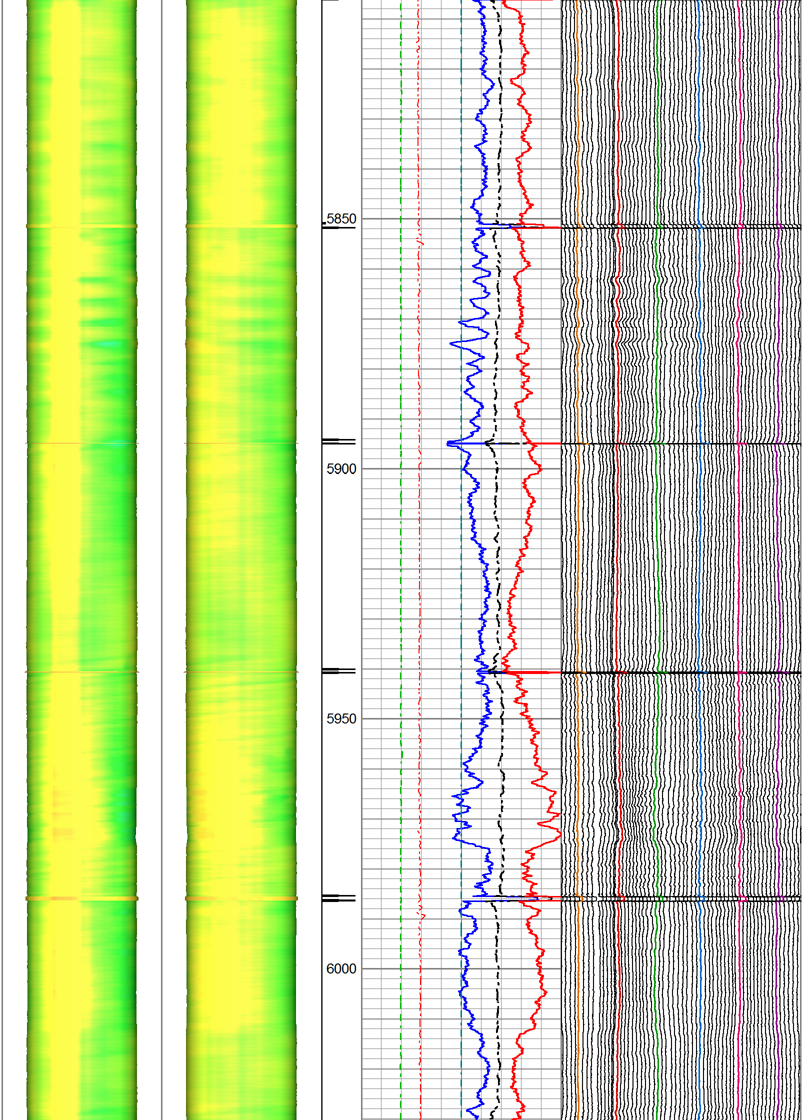


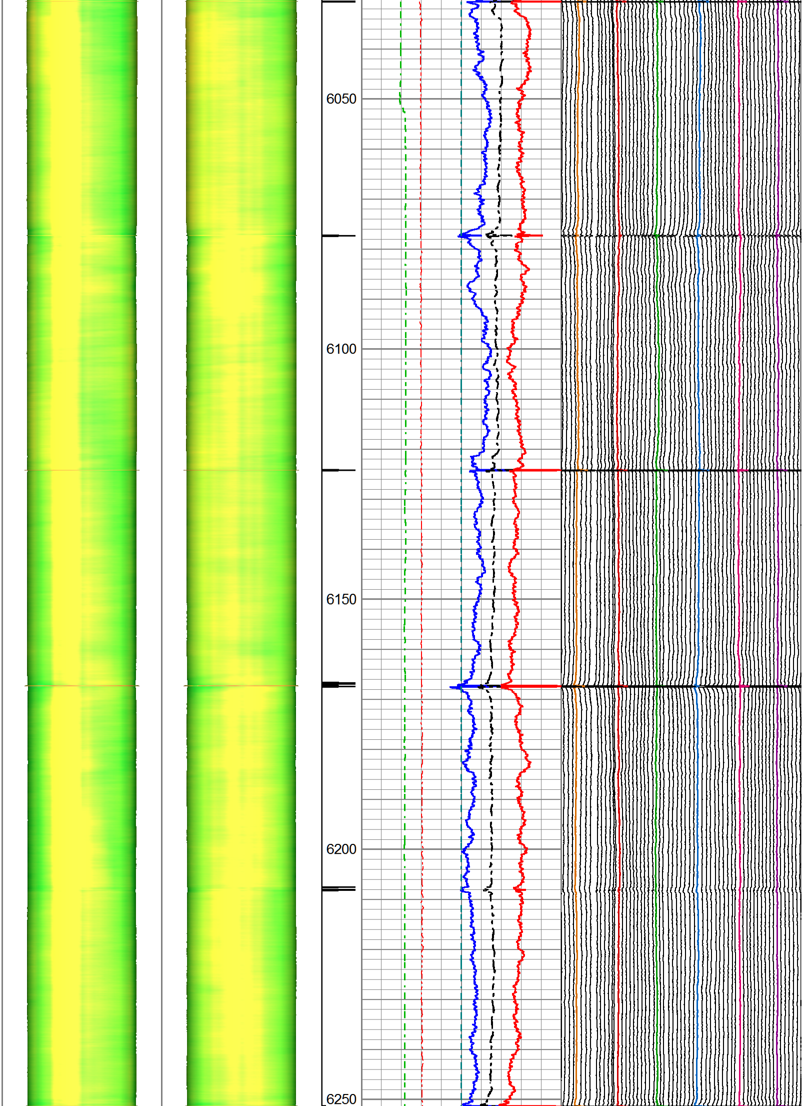


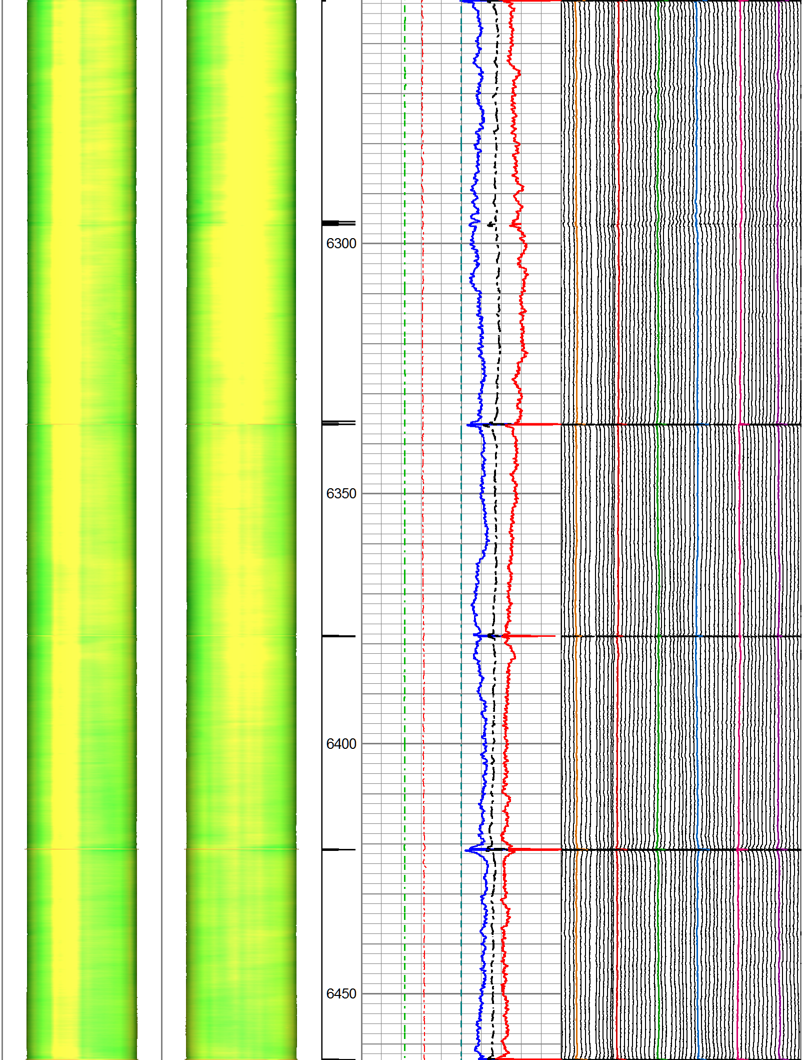


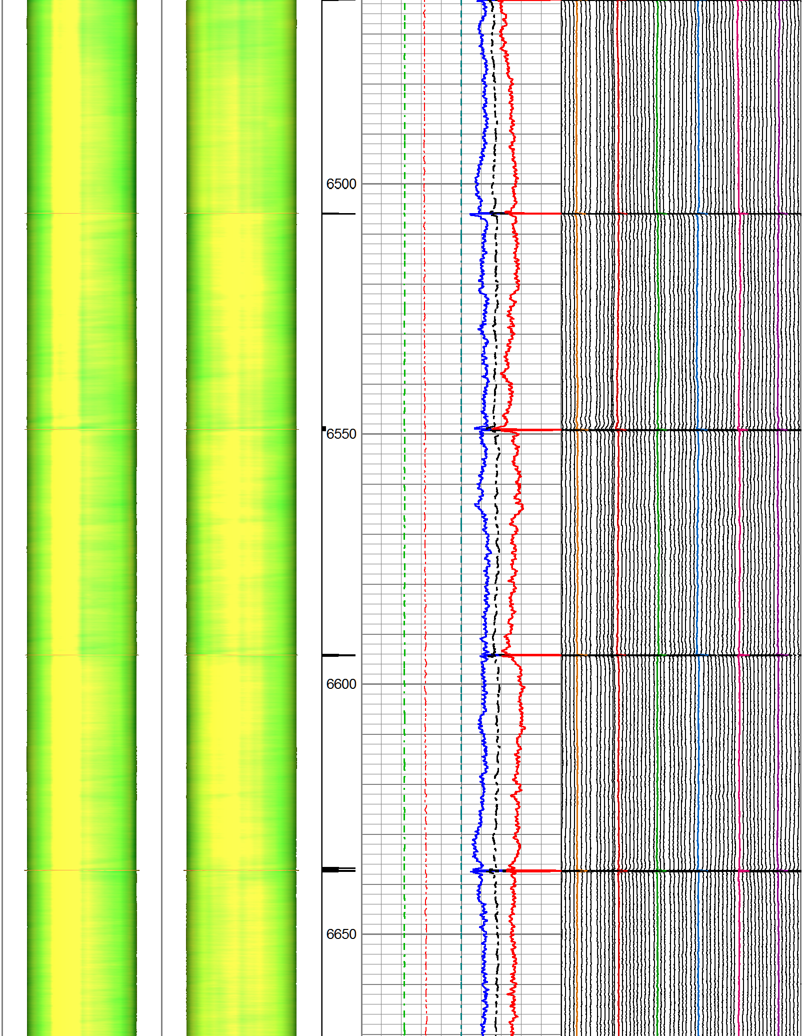


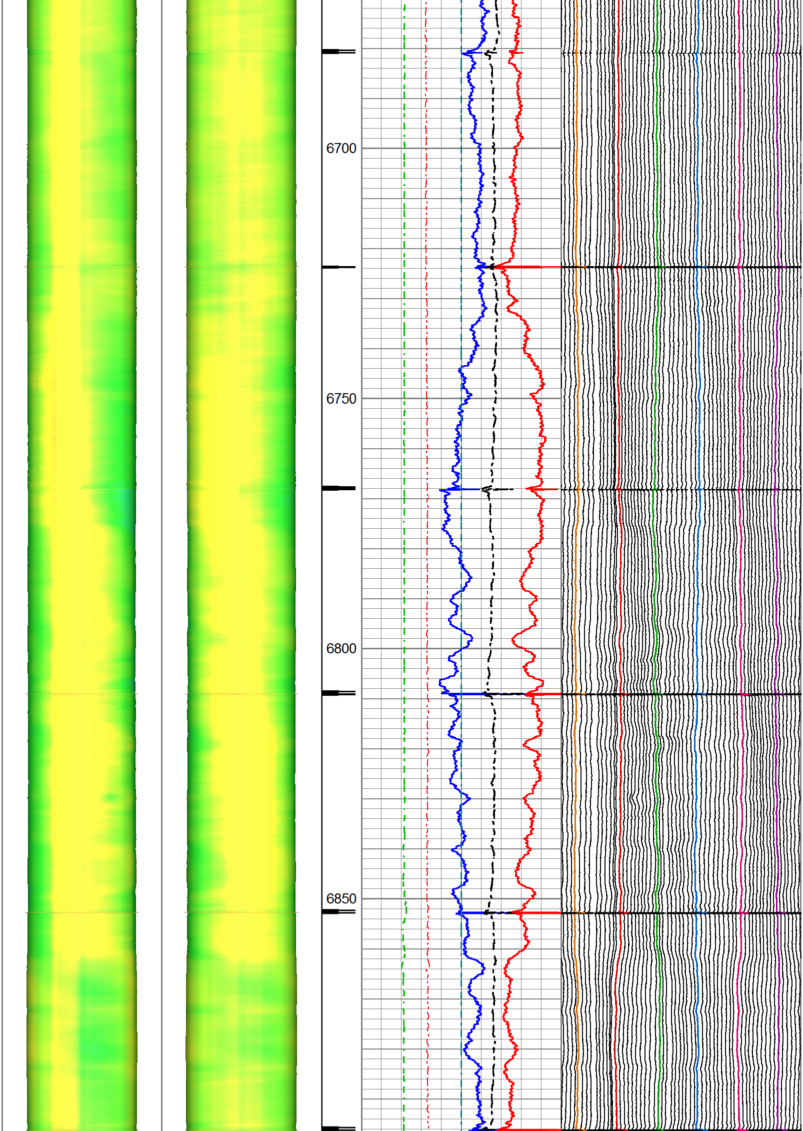


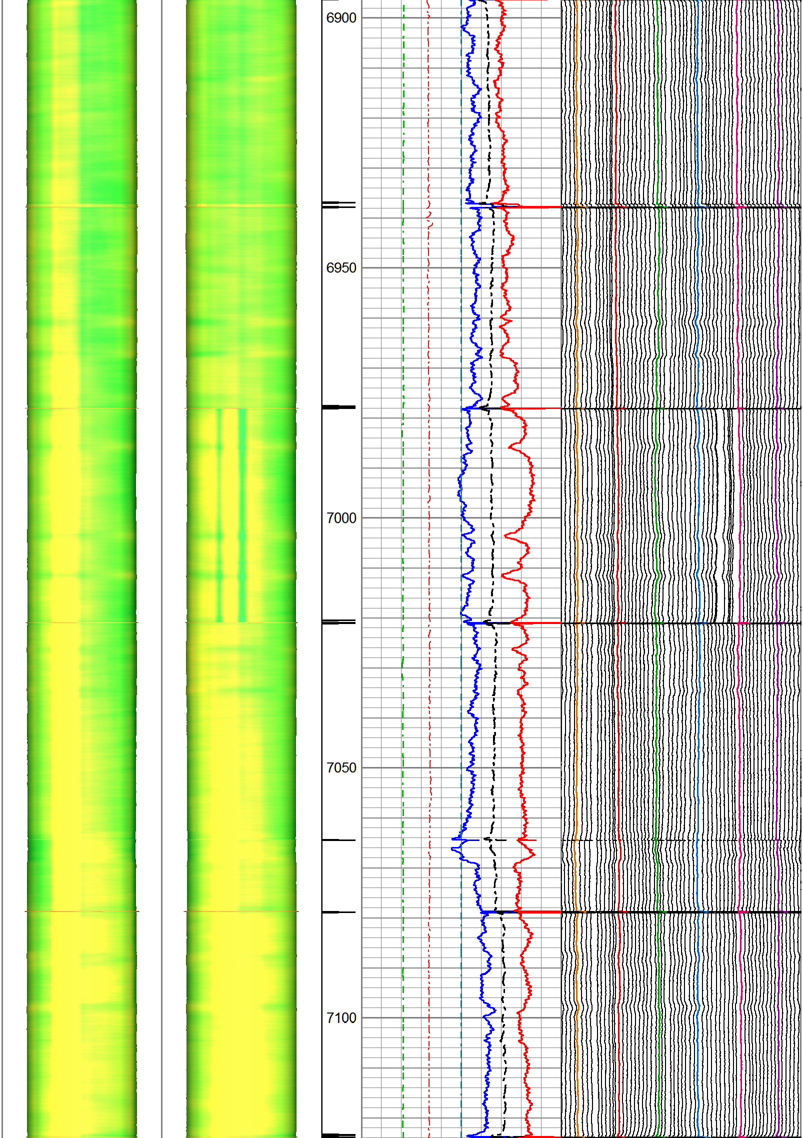


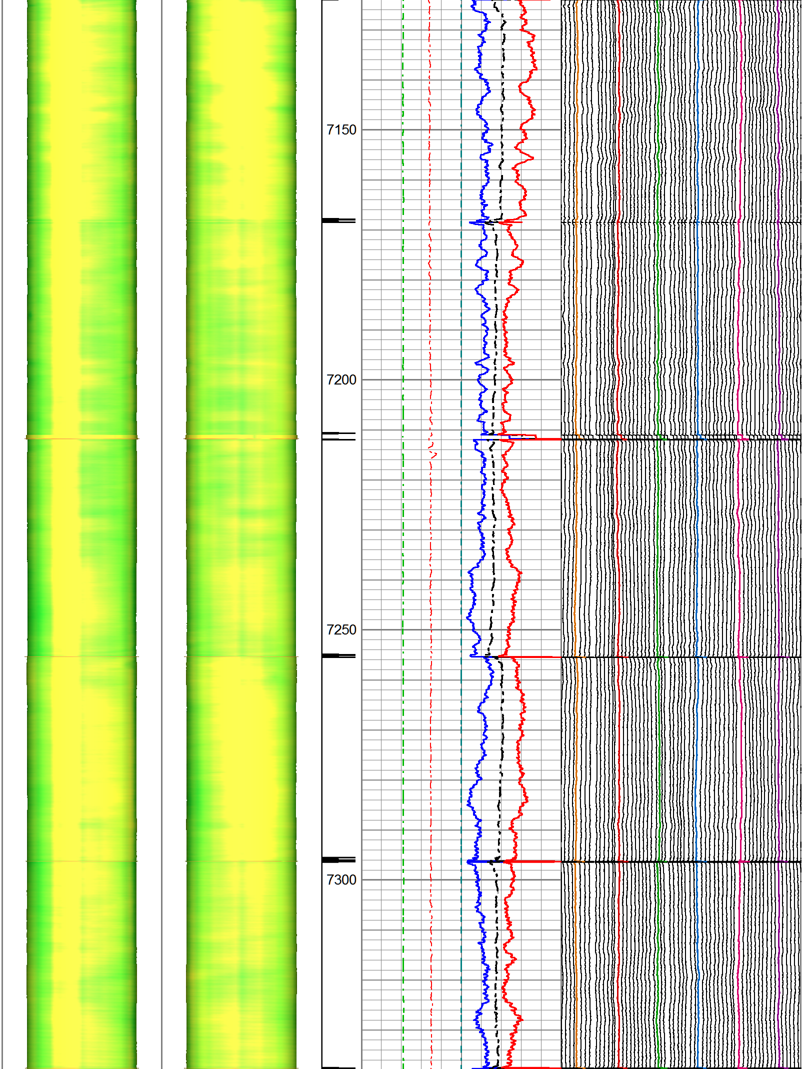


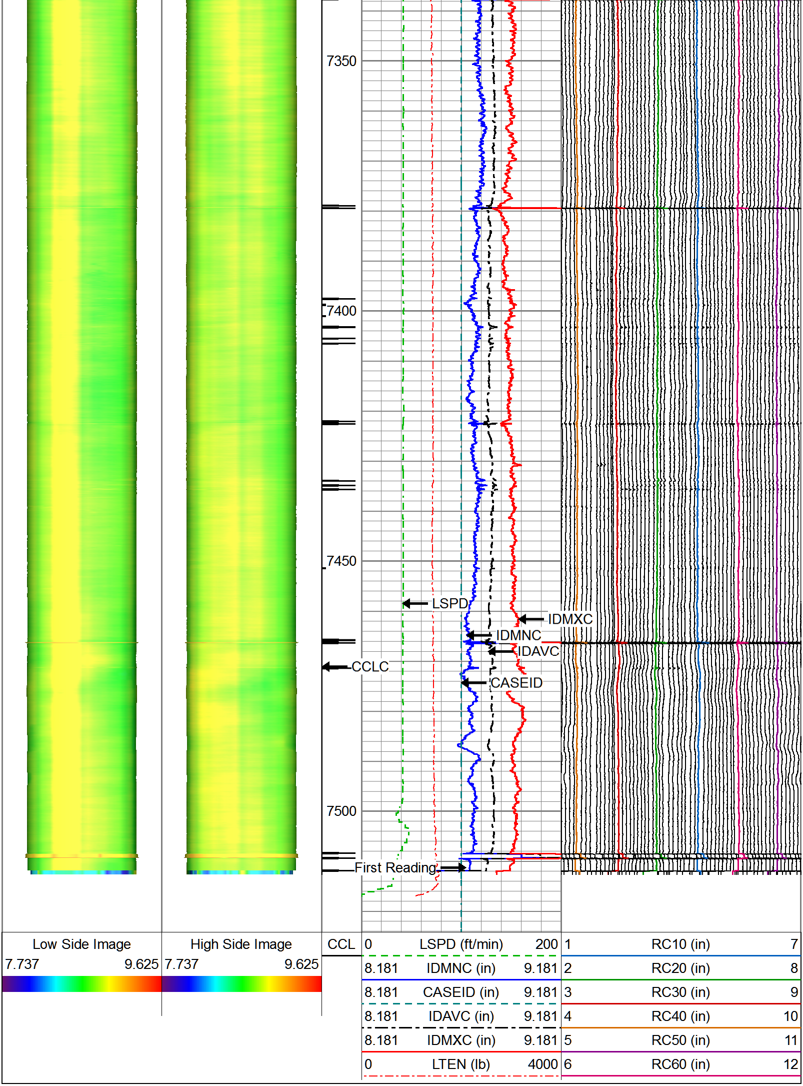












Western Wireline

Repeat Logging Section

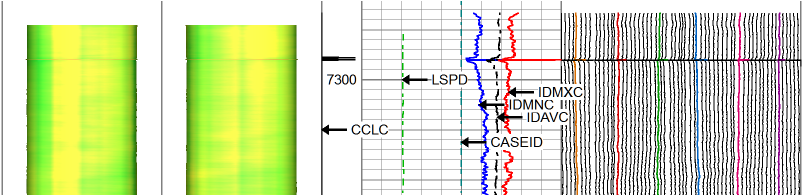
5 inches = 100 feet

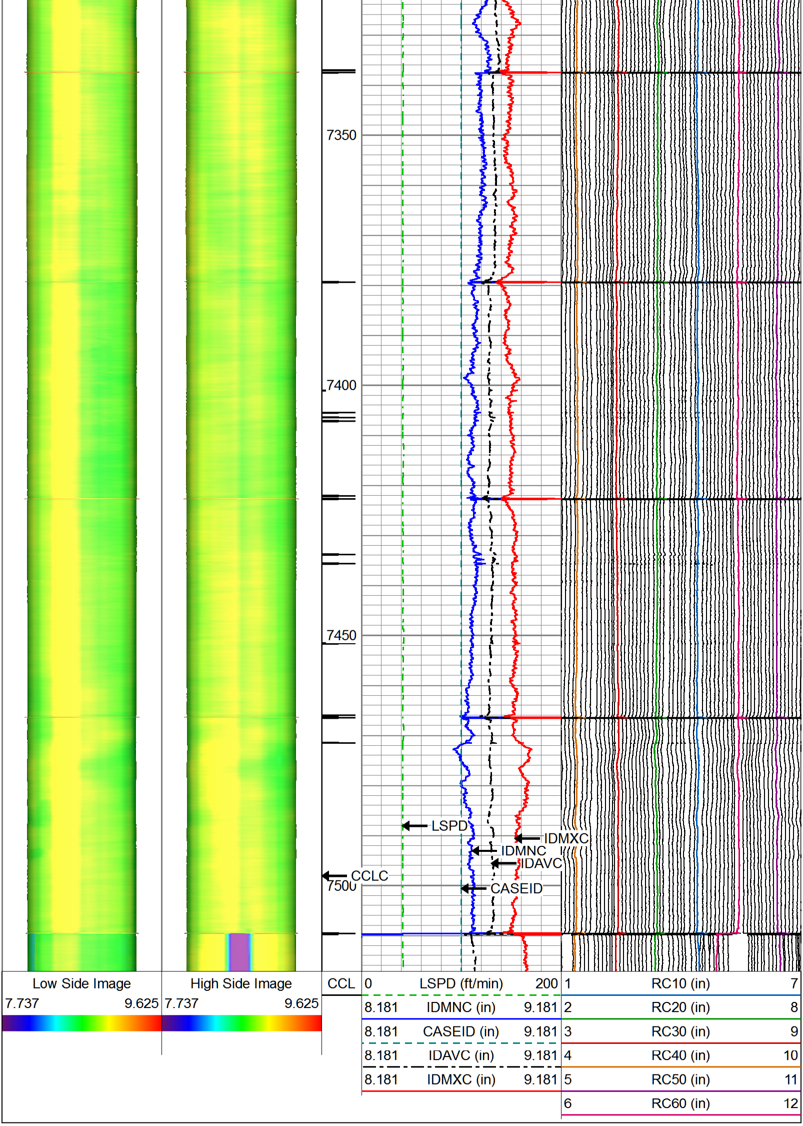
Database File	southerncaliforniagascompanyporter 69c60macgamccl7-8-16.db
Dataset Pathname	pass12
Presentation Format	1b_mac_60_multi arm_gas co edit
Dataset Creation	Fri Jul 08 13:54:41 2016
Charted by	Depth in Feet scaled 1:240

Low Side Image		High Side Image		CCL
7.737	9.625	7.737	9.625	

0	LSPD (ft/min)	200
8.181	IDMNC (in)	9.181
8.181	CASEID (in)	9.181
8.181	IDAVC (in)	9.181
8.181	IDMXC (in)	9.181

1	RC10 (in)	7
2	RC20 (in)	8
3	RC30 (in)	9
4	RC40 (in)	10
5	RC50 (in)	11
6	RC60 (in)	12



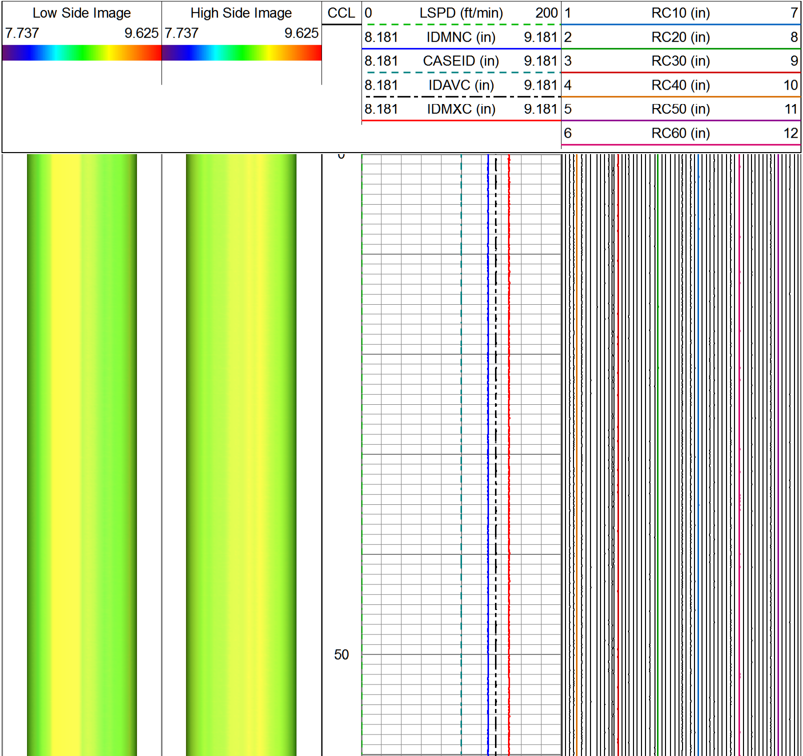


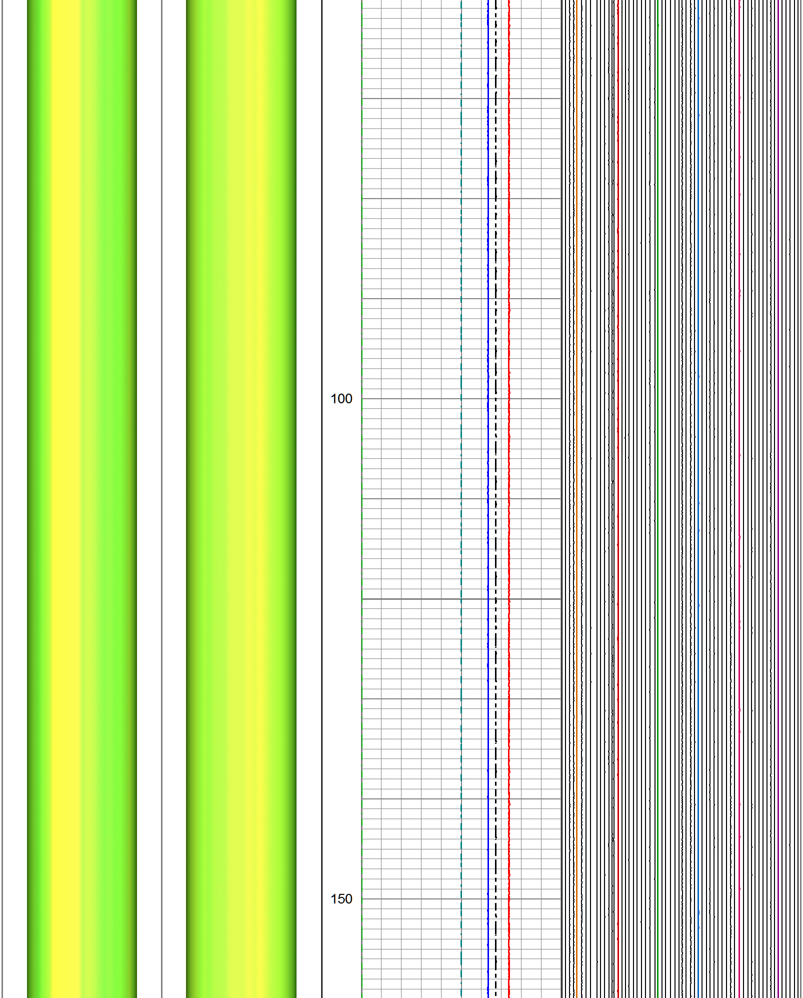
Western Wireline

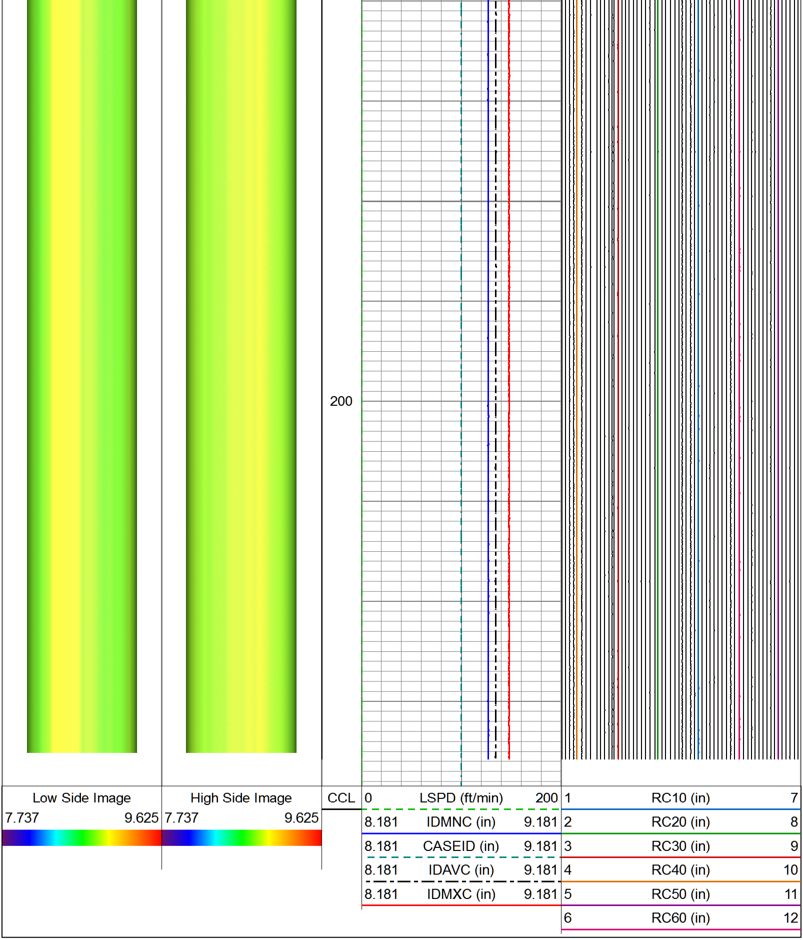
9 5/8 47# Down Hole Static Time Drive

Time Driven @100 Feet MD

Database File	southerncaliforniagascompanyporter 69c60macgamccl7-8-16.db
Dataset Pathname	Down Hole Time
Presentation Format	1b_mac_60_multi arm_gas co edit
Dataset Creation	Fri Jul 08 18:49:14 2016
Charted by	Time scaled 360/hour







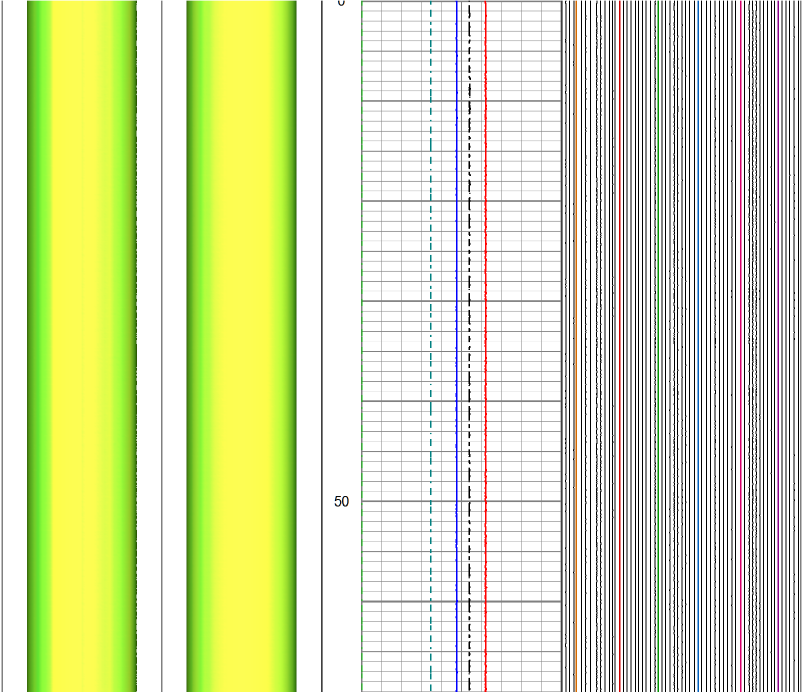
Western Wireline

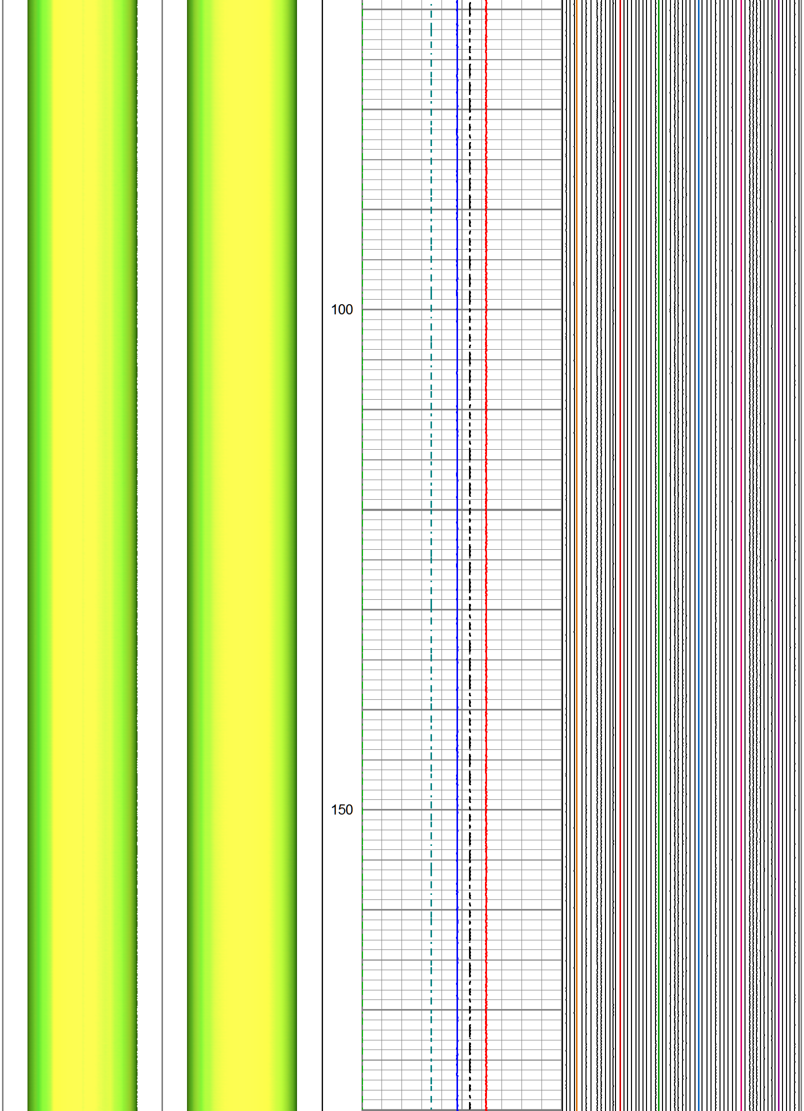
9.625 40# Casing Surface Check For QC

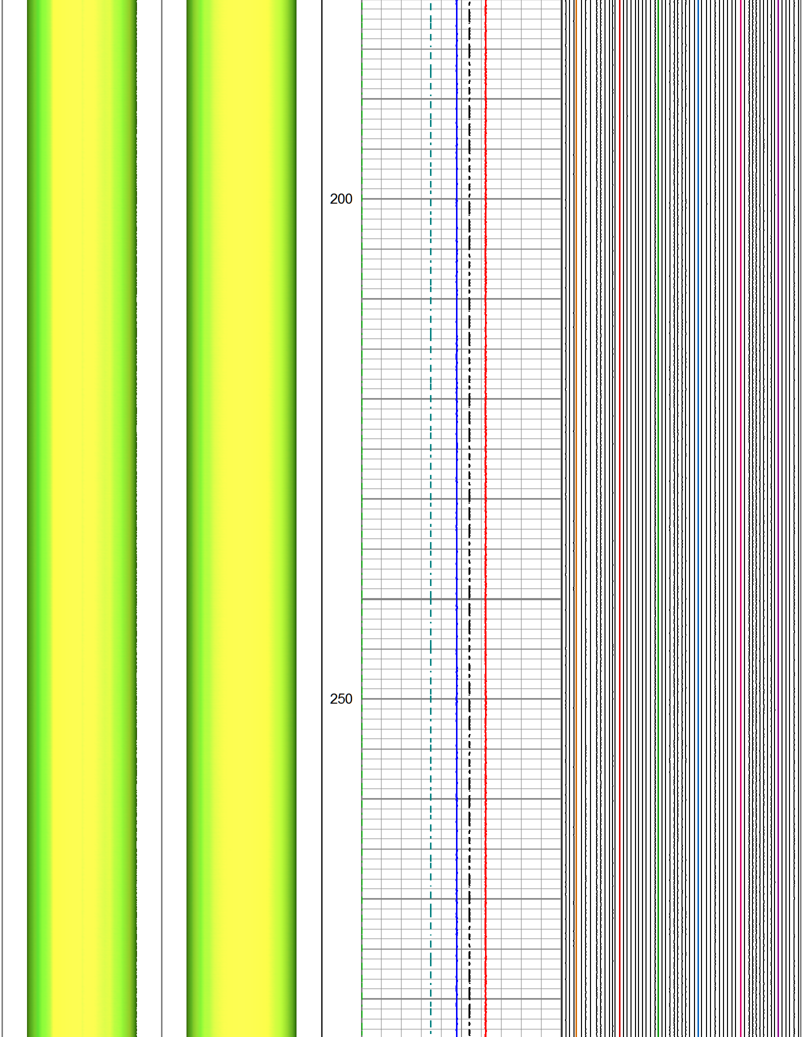
Time Driven

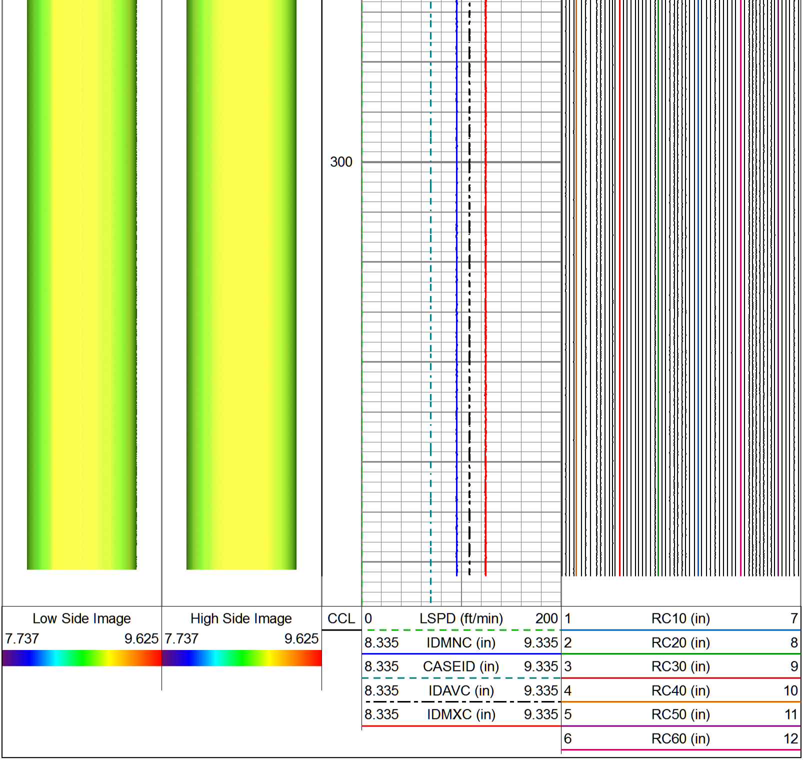
Database File	southerncaliforniagascompanyporter 69c60macgamccl7-8-16.db
Dataset Pathname	pass15
Presentation Format	1b_mac_60_multi arm_gas co edit
Dataset Creation	Fri Jul 08 17:47:50 2016
Charted by	Time scaled 360/hour

Low Side Image	High Side Image	CCL						
7.737 9.625	7.737 9.625		0	LSPD (ft/min)	200	1	RC10 (in)	7
			8.335	IDMNC (in)	9.335	2	RC20 (in)	8
			8.335	CASEID (in)	9.335	3	RC30 (in)	9
			8.335	IDAVC (in)	9.335	4	RC40 (in)	10
			8.335	IDMXC (in)	9.335	5	RC50 (in)	11
						6	RC60 (in)	12









Western Wireline

Pre Job Verification In 8" Calibration Ring

time Driven

Database File	southerncaliforniagascompanyporter 69c60macgamccl7-8-16.db
Dataset Pathname	pre
Presentation Format	1B9A7C~1
Dataset Creation	Fri Jul 08 18:47:57 2016
Charted by	Time scaled 360/hour

Low Side Image	High Side Image	CCL						
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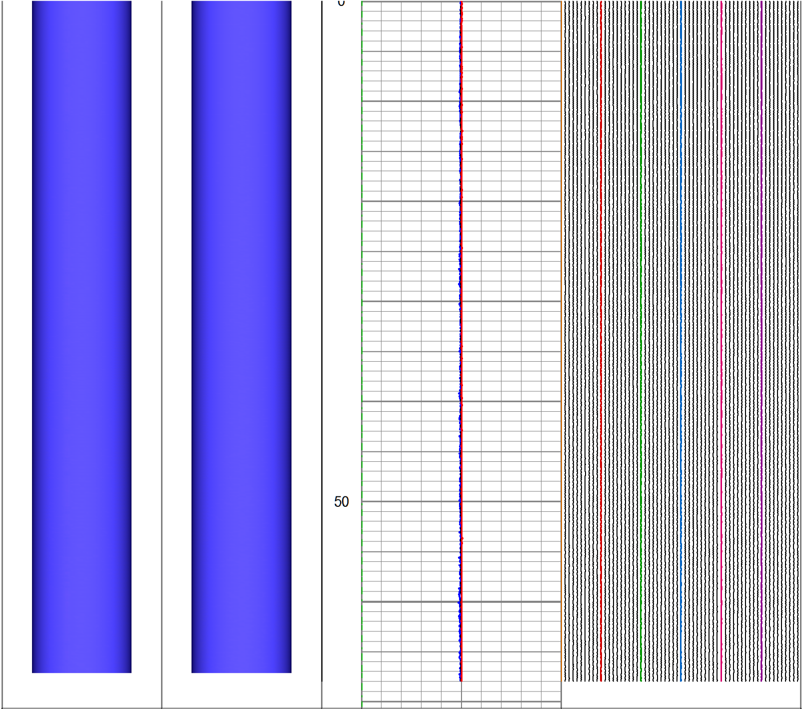
			7.5	IDMNC (in)	8.5	2	RC20 (in)	8
			7.5	CASEID (in)	8.5	3	RC30 (in)	9
			7.5	IDAVC (in)	8.5	4	RC40 (in)	10
			7.5	IDMXC (in)	8.5	5	RC50 (in)	11
						6	RC60 (in)	12



Low Side Image	High Side Image	CCL						
7.737 9.625	7.737 9.625		0	LSPD (ft/min)	200	1	RC10 (in)	7
			7.5	IDMNC (in)	8.5	2	RC20 (in)	8
			7.5	CASEID (in)	8.5	3	RC30 (in)	9
			7.5	IDAVC (in)	8.5	4	RC40 (in)	10
			7.5	IDMXC (in)	8.5	5	RC50 (in)	11
						6	RC60 (in)	12

Western Wireline

Post Job Verification In 8" Calibration Ring

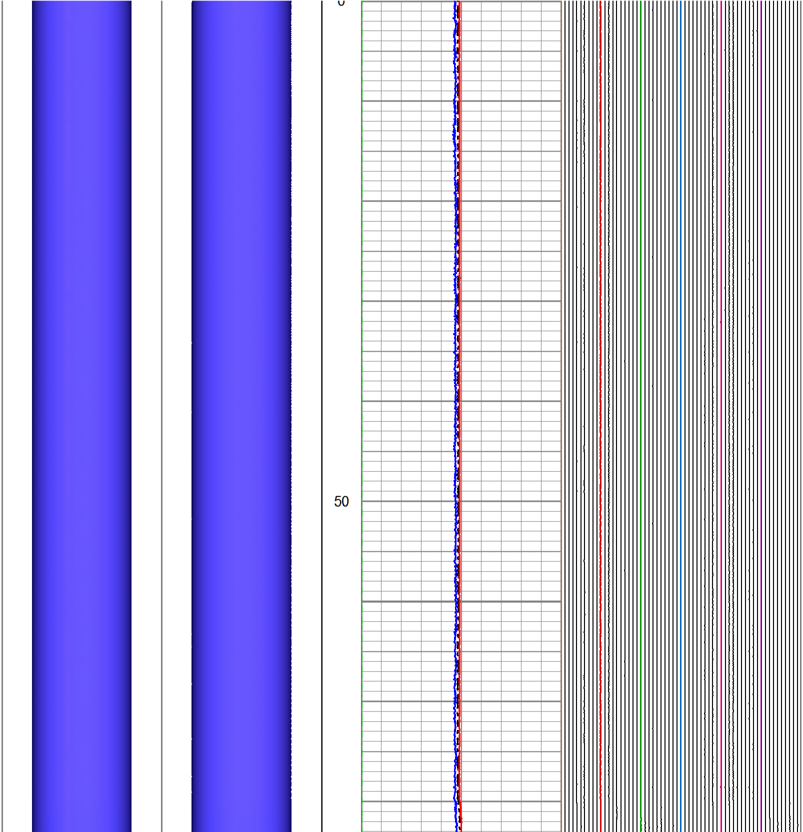
Time Driven

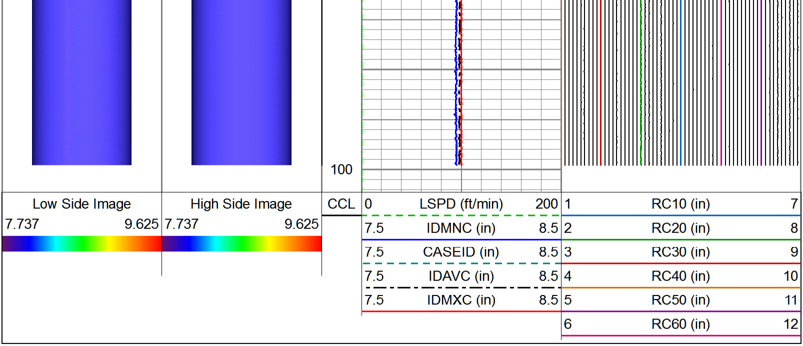
Database File	southerncaliforniagascompanyporter 69c60macgamccl7-8-16.db
Dataset Pathname	PPOOST
Presentation Format	1b_mac_60_multi arm_gas co edit
Dataset Creation	Fri Jul 08 18:57:16 2016
Charted by	Time scaled 360/hour

Low Side Image		High Side Image		CCL
7.737	9.625	7.737	9.625	

0	LSPD (ft/min)	200
7.5	IDMNC (in)	8.5
7.5	CASEID (in)	8.5
7.5	IDAVC (in)	8.5
7.5	IDMXC (in)	8.5

1	RC10 (in)	7
2	RC20 (in)	8
3	RC30 (in)	9
4	RC40 (in)	10
5	RC50 (in)	11
6	RC60 (in)	12





Calibration Report

Database File SouthernCaliforniaGasCompanyPorter 69c60MacGamCcl7-8-16.db
Dataset Pathname mergdepth1.1
Dataset Creation Tue Jul 12 08:47:55 2016

60 Arm Multi Sensor Caliper Calibration Report

Serial Number: 111249
Tool Model: 60_INCL
Performed: Fri Jul 08 13:07:33 2016

Ref ID:	5.00	6.00	7.00	8.00	9.00	in
Arm1	2.47	2.97	3.49	3.96	4.48	
Arm2	2.39	2.91	3.45	3.97	4.51	
Arm3	2.69	3.18	3.71	4.18	4.67	
Arm4	2.44	2.91	3.43	3.92	4.41	
Arm5	2.75	3.22	3.74	4.21	4.68	
Arm6	2.65	3.14	3.69	4.20	4.68	
Arm7	2.53	3.01	3.55	4.06	4.54	
Arm8	2.42	2.89	3.41	3.92	4.39	
Arm9	2.63	3.10	3.62	4.12	4.57	
Arm10	2.72	3.17	3.67	4.17	4.61	
Arm11	2.46	2.97	3.54	4.11	4.58	
Arm12	2.54	3.02	3.57	4.11	4.56	
Arm13	2.46	2.95	3.50	4.07	4.52	
Arm14	2.61	3.09	3.64	4.19	4.62	
Arm15	2.57	3.01	3.51	4.02	4.42	
Arm16	2.23	2.70	3.22	3.77	4.19	
Arm17	2.62	3.10	3.65	4.21	4.63	
Arm18	1.81	2.33	2.93	3.58	4.08	
Arm19	2.40	2.88	3.41	3.97	4.40	
Arm20	2.58	3.06	3.57	4.11	4.52	
Arm21	2.33	2.80	3.31	3.86	4.27	
Arm22	2.42	2.91	3.42	3.96	4.39	
Arm23	2.44	2.95	3.49	4.08	4.52	
Arm24	2.68	3.18	3.71	4.27	4.69	
Arm25	2.48	2.99	3.52	4.09	4.55	
Arm26	2.09	2.58	3.08	3.64	4.09	
Arm27	2.43	2.95	3.47	4.04	4.50	
Arm28	2.62	3.12	3.64	4.19	4.64	
Arm29	2.61	3.11	3.59	4.11	4.56	
Arm30	2.22	2.76	3.28	3.82	4.31	

* Bad

Ref ID:	5.00	6.00	7.00	8.00	9.00	in	
Arm31	2.90	3.40	3.87	4.38	4.83		
Arm32	2.41	2.93	3.41	3.92	4.39		
Arm33	2.31	2.83	3.31	3.83	4.33		
Arm34	4.01	3.33	2.60	1.89	1.13		*
Arm35	2.18	2.73	3.23	3.77	4.31		
Arm36	2.55	3.08	3.56	4.06	4.56		
Arm37	2.49	3.02	3.46	3.95	4.47		
Arm38	2.36	2.90	3.38	3.88	4.41		
Arm39	2.61	3.13	3.57	4.04	4.54		
Arm40	2.44	3.03	3.54	4.07	4.64		
Arm41	2.70	3.20	3.64	4.10	4.62		
Arm42	2.73	3.25	3.71	4.18	4.70		
Arm43	2.41	2.91	3.36	3.83	4.35		
Arm44	2.35	2.86	3.32	3.79	4.34		
Arm45	2.34	2.87	3.34	3.82	4.39		
Arm46	2.43	2.95	3.42	3.87	4.42		
Arm47	2.32	2.84	3.31	3.76	4.33		
Arm48	2.80	3.32	3.78	4.23	4.78		
Arm49	2.12	2.65	3.13	3.58	4.16		
Arm50	2.79	3.30	3.76	4.20	4.74		
Arm51	2.59	3.13	3.63	4.11	4.70		
Arm52	2.56	3.06	3.53	3.96	4.50		
Arm53	2.51	3.02	3.51	3.97	4.52		
Arm54	2.29	2.77	3.24	3.69	4.25		
Arm55	2.49	3.01	3.53	4.00	4.56		
Arm56	2.56	3.07	3.59	4.06	4.61		
Arm57	2.65	3.17	3.67	4.12	4.65		
Arm58	2.39	2.87	3.36	3.82	4.34		
Arm59	2.52	3.05	3.59	4.09	4.63		
Arm60	2.28	2.78	3.29	3.76	4.30		

* Bad

PROBE verifications Calibration Report

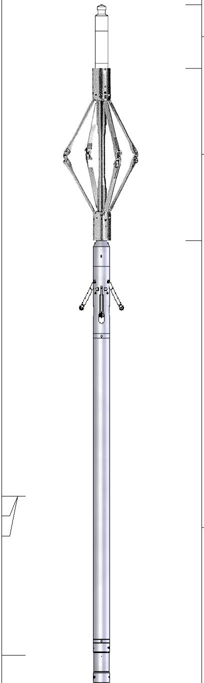
	Pre Verification	Post Verification	Casing Check	
Performed:	Fri Jul 08 13:05:56 2016	Wed Mar 02 16:31:46 2016		
Ref ID:	8.00	7.00	0.00	in
Min.	7.97	6.98	0.00	in
Max.	8.00	7.03	0.00	in
Avg.	7.99	7.01	0.00	in
Dia1	7.99	7.02	0.00	in
Dia2	7.98	7.02	0.00	in
Dia3	7.99	7.01	0.00	in
Dia4	7.97	7.01	0.00	in
Dia5	7.99	7.00	0.00	in
Dia6	7.99	7.02	0.00	in
Dia7	7.99	7.00	0.00	in
Dia8	7.99	7.01	0.00	in
Dia9	7.99	6.98	0.00	in
Dia10	8.00	7.01	0.00	in
Dia11	7.99	7.00	0.00	in
Dia12	8.00	7.00	0.00	in
Dia13	8.00	7.03	0.00	in
Dia14	7.99	7.02	0.00	in
Dia15	8.00	6.99	0.00	in
Dia16	8.00	6.98	0.00	in
Dia17	7.99	7.00	0.00	in
Dia18	8.00	7.02	0.00	in
Dia19	8.00	7.02	0.00	in
Dia20	8.00	7.00	0.00	in
Dia21	7.99	7.00	0.00	in
Dia22	7.99	7.00	0.00	in
Dia23	7.99	7.00	0.00	in
Dia24	7.99	7.00	0.00	in
Dia25	7.99	6.99	0.00	in
Dia26	7.98	7.01	0.00	in

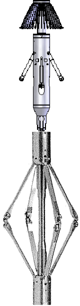
Dia27	7.98	7.00	0.00	in
Dia28	7.98	7.00	0.00	in
Dia29	7.99	7.00	0.00	in
Dia30	7.98	7.02	0.00	in

Inclinometer Calibration Report

Performed: (Not Performed)

	Low Read.	High Read.	Low Ref.	High Ref.	
X Accelerometer	0.00	1.00	0.00	1.00	gee
Y Accelerometer	0.00	1.00	0.00	1.00	gee
Z Accelerometer	0.00	1.00	0.00	1.00	gee

Sensor	Offset (ft)	Schematic	Description	Length (ft)	O.D. (in)	Weight (lb
			CHD-STNDRD Standard Cable Head	1.00	1.44	5.00
			CENT-2_75GSB GS Bottom Centralizer	2.69	2.75	20.00
ACCZ ACCY ACCX	7.69 7.69 7.69		Probe_MFCAL-60_INCL (111249) Probe 60 Arm Caliper	9.00	3.62	
ETEMP	5.19					

Meas	4.35					
			CENT-2_75GSB GS Bottom Centralizer	2.69	2.75	20.00

Dataset: SouthernCaliforniaGasCompanyPorter 69c60MacGamCcl7-8-16.db: field/well/run1/mergdepth1.1
Total length: 15.38 ft
Total weight: 45.00 lb
O.D.: 3.62 in

Western Wireline

Company	Southern California Gas Company		
Well	Porter 69C		
Field	Aliso Canyon		
County	Los Angeles		
State	California	Country	U.S.A.