



AUSTRALIA PACIFIC LNG PTY LTD

DURHAM RANCH 175

WELL COMPLETION REPORT

PL 203 - QUEENSLAND

Originator:

Jenna Halcro-Dirks, Technical Assistant



Australia Pacific LNG Pty Ltd
ABN 68 001 646 331

Reviewed:

Trevor Marks, Senior Drilling Engineer



Level 1, 144 Montague Road
WEST END QLD 4101

Reviewed:

Scott Fitzgerald, Senior Operations Geologist



Approved:

Oliver Thomas, Senior Petroleum Engineer



November, 2013

WELL CARD

General Data		Well Details			
Well Name:	Durham Ranch 175	Conductor		Surface	Production
Well Type:	Development	Hole			
Field:	Spring Gully	Size	16"	12 1/4"	8 3/4"
Tenure:	PL 203	Depth from Rotary Table	10.88 mRT	510 mRT	980 mRT
Location		Drilling Fluid	N/A	Water-based gel spud mud	Water-based bentonite/ polymer mud
Latitude:	26° 04' 54.11" S	Drill Bits - Size/Type	N/A	12 1/4" Reed RSF516S PDC	8 3/4" Reed S-513M PDC
Longitude:	149° 08' 52.72" E	Casing			
GDA94 Zone 55 Easting:	714 846 E	Size/Weight/Grade	14"	9 5/8"/36 ppf/K 55	7"/23 ppf/N-80
GDA94 Zone 55 Northing:	7 113 497 N	Depth - Bottom of Shoe (mRT)	10.88	508.01	975.05
Elevation		Cement			
Ground Level (mAMSL):	308.21	Interval	Surface Casing: 510 mRT to surface	Production Casing: 980 mRT to surface	
Drill Floor (mAMSL):	312.51	Surface	Pumped 134bbl of 13.5ppg Portland GP cement lead with 2% CaCl, 2% Phenoseal, 2% Bentonite, 0.2% Versaset & 0.25% Flocele additives, followed by 25bbl of 15.6ppg Portland GP cement tail with 1% CaCl, 0.25% Flocele & 2% Phenoseal additives. 63bbl cement to surface. Cement tagged at 495.27mRT.		
Total Depth		Production	Pumped 112.8bbl of 9.5ppg Tuned Lite cement lead with 2% Phenoseal, 0.25% Pol-E-Flake, 0.2% HR-5, 0.6% Halad 344 & 1% CFR-3 additives, followed by 45bbl of 13.5ppg Portland GP cement tail with 2% Phenoseal, 0.25% Pol-E-Flake, 0.4% CFR-4, 1% Cal Seal 60, 0.3% HR-5, 0.5% Halad 344 & 3% Bentonite additives. No cement returns to surface		
Driller:	980 mRT	Mud System Chemicals			
Logger:	955.52 mRT	Name	Unit	Weight	Total
Drilling Rig(s)		Limestone T	10	25kgs	250kgs
Drilling Rig:	Ensign Rig 964	AMC Aus-Ben	320	25kgs	8000kgs
Date Spudded:	5/06/2013	Residrill	69	11kgs	759kgs
Date TD Reached:	8/06/2013	Barite	1	25kgs	25kgs
Date Rig Released:	9/06/2013	Drispac Regular Plus	5	23kgs	115kgs
Well Status on Rig Release Day		Nut Plug Medium	49	25kgs	1225kgs
Cased & Suspended		AMC PAC L	33	25kgs	825kgs
		DynaRed	72	12kgs	864kgs
		Flowzan	3	11kgs	33kgs
		Nut Plug Coarse	13	25kgs	325kgs
		Nut Plug Fine	14	25kgs	350kgs
		Drispac Super Lo Plus	15	23kgs	345kgs
		Stone Dust	11	20kgs	220kgs

SURVEYS

Well Location Survey					
Date	Longitude	Latitude	Ground Level (mAMSL)	Easting	Northing
19/09/2013	149° 08' 52.72" E	26° 04' 54.11" S	308.21	714 846 E	7 113 497 N
Deviation Survey					
See Appendix 7 (Directional Survey)					

Current Schematic

Formation Tops Summary

Conductor Casing: 14" @ 10.88 mRT
Conductor Hole: 16" to 10.88 mRT

Surface Casing: 9 5/8" @ 508.01 mRT
Surface Hole: 12 1/4" to 510 mRT

Production Casing: 7" @ 975.05 mRT
Production Hole: 8 3/4" to 980 mRT

Driller's Depth: 980 mRT

Formation tops were picked by Geoscientists from Wireline Logs & ROP Curve data.

Formations	mRT
Undifferentiated	4.30
Precipice Sst	528.03
Precipice BSF*	559.8
Rewan Fm	631.07
Bandanna Fm	816.82
CRB3	822.84
CRB3 Base	824.39
CRB2	834.51
CRB2 Base	834.89
CRB1	866.12
CRB1 Base	868.75
Kaloola Mbr	869.24
CRK3	871.58
CRK3 Base	881.29
CRK2	899.36
CRK2 Base	904.08
CRK1	922.03
CRK1 Base	923.57

*BSF = Braided Stream Facies

Perforation Details		
Non-Perforated		
Formation	Interval (mRT)	
N/A	N/A	N/A

GEOLOGICAL SUMMARY

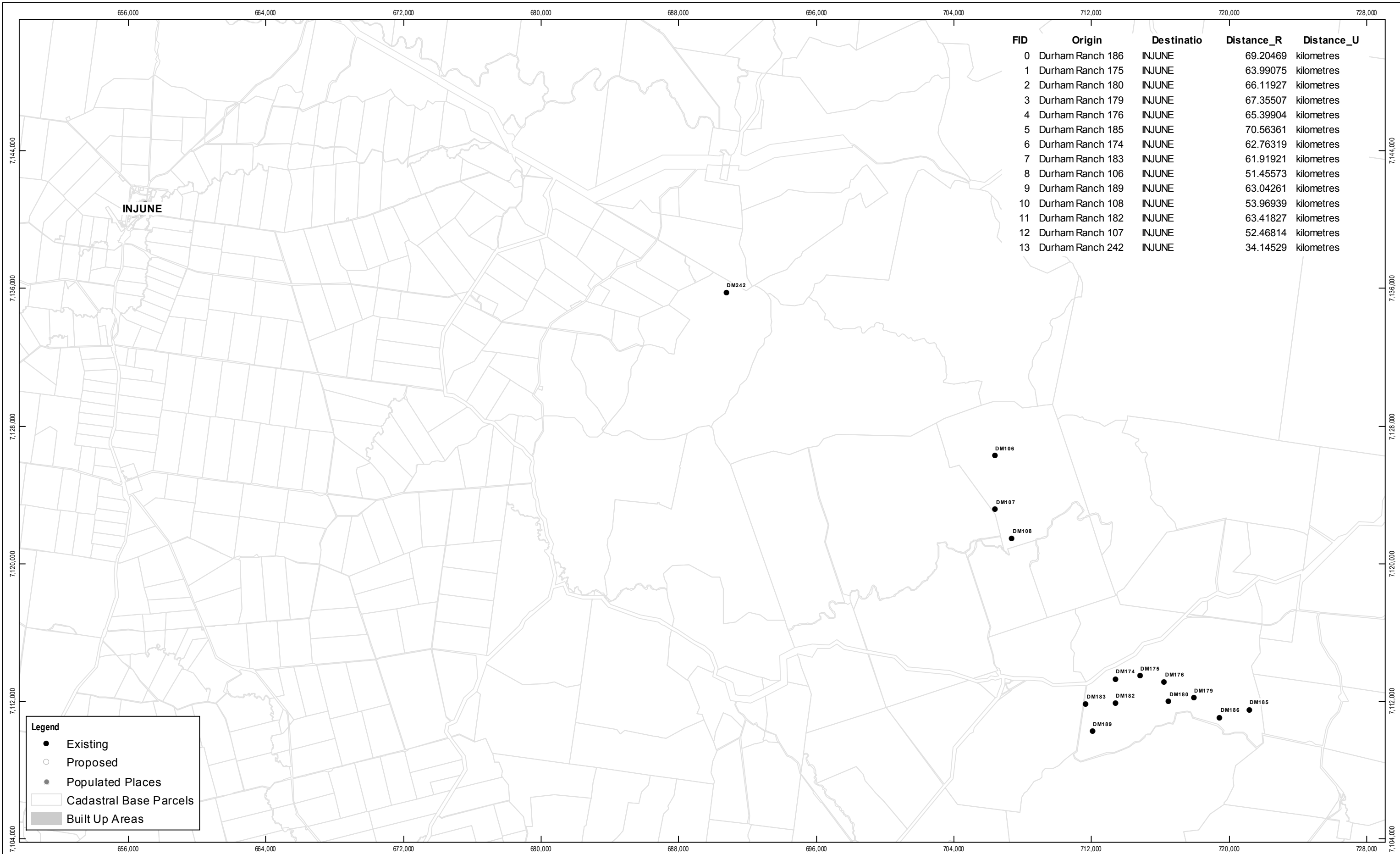
The Spring Gully coal seam gas (CSG) project is captured within tenures ATP 592P, PL 195, PL 200, PL 203, and PL 204, which are located approximately 75km north east of the township of Roma in Central Queensland. The Spring Gully project and the neighbouring Fairview CSG field produce gas from the methane-rich coals of the Bandanna Formation. The Spring Gully & Fairview fields are situated on a regional north-south trending basement high known as the Comet Ridge.

The Late Permian coals within the Comet Ridge were deposited during the thermal sag phase of the Bowen Basin's tectonic history, when rapid regional subsidence allowed the basin-wide development of peat forming environments. The resulting Permian coals are laterally extensive and can be traced throughout the subsurface over much of the Spring Gully & Fairview fields. These coals are stratigraphically equivalent to the Rangal and Baralaba Coal Measures to the north and east respectively and are a very important source of coal seam gas throughout the Bowen Basin.

Drilling within the Spring Gully tenures has established the presence of a relatively thin veneer of Early to Middle Jurassic sediments of the Surat Basin sequence unconformably overlying a variable thickness of Middle Triassic to Late Permian Bowen Basin sediments. The Jurassic strata, which include the Walloon Subgroup, Hutton Sandstone, Evergreen Formation, & Precipice Sandstone, dip regionally towards the south west into the depocentre of the Surat Basin; however tilting has been very minor. The Triassic and Permian strata of the underlying Bowen Basin sequence deepen much more rapidly towards the eastern edge of ATP 592P and into the Taroom Trough. These two sediment packages are separated by the Base Jurassic erosional unconformity, which corresponds to the base of the Precipice Sandstone. This unconformity truncates the Bandanna coals along the western edge of PL 195, PL 203, & PL 200.

In a broad sense the dominant structural features of the Comet Ridge can be characterised by an episodic history of deformation, which has been driven by a compressive tectonic regime. Compression associated with foreland thrust loading during the Early to Middle Triassic was responsible for the closure of the Bowen Basin during the early Late Triassic and led to uplift and erosion of the Bandanna Formation along the western margin of the Comet Ridge. Subsequent compressional folding and faulting in the Middle Cretaceous has accentuated earlier formed features and initiated an extended period of nondeposition and sub-aerial erosion that continues today.

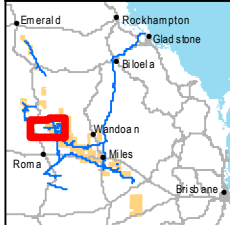
APPENDIX 1 – LOCATION MAP



FID	Origin	Destinatio	Distance_R	Distance_U
0	Durham Ranch 186	INJUNE	69.20469	kilometres
1	Durham Ranch 175	INJUNE	63.99075	kilometres
2	Durham Ranch 180	INJUNE	66.11927	kilometres
3	Durham Ranch 179	INJUNE	67.35507	kilometres
4	Durham Ranch 176	INJUNE	65.39904	kilometres
5	Durham Ranch 185	INJUNE	70.56361	kilometres
6	Durham Ranch 174	INJUNE	62.76319	kilometres
7	Durham Ranch 183	INJUNE	61.91921	kilometres
8	Durham Ranch 106	INJUNE	51.45573	kilometres
9	Durham Ranch 189	INJUNE	63.04261	kilometres
10	Durham Ranch 108	INJUNE	53.96939	kilometres
11	Durham Ranch 182	INJUNE	63.41827	kilometres
12	Durham Ranch 107	INJUNE	52.46814	kilometres
13	Durham Ranch 242	INJUNE	34.14529	kilometres

Legend

- Existing
- Proposed
- Populated Places
- ▭ Cadastral Base Parcels
- ▭ Built Up Areas



Source Information:
 Infrastructure – Origin Energy 2013;
 Cadastre – Queensland Government 2013;
 Built Up Areas – Commonwealth of Australia (Geoscience Australia) 2013.

N

Scale 1:201,490 (at A3)

0 1.5 3 6 9 12
Kilometers

Coordinate System: GDA 1994 MGA Zone 55

Rev	Description	Drawn	Check	QA	Approved	Date
A	Issued For Information Only	MN	HDJ	CS		18/11/2013



Durham Ranch Location Map

Date: 19 November 2013

Map Number	Doc No	Rev
1 of 1	N/A	A
Map ID GISWR_17558		

APPENDIX 2 – DAILY DRILLING REPORTS



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 3/06/2013
 Report #: 1
 Depth Progress: m
 Depth End: 0.00 mKB
 Rig Release Date: 9/06/2013

State QUEENSLAND	Basin BOWEN	District DURHAM RANCH	Lease PL 203	Well Configuration Type VERTICAL
Ground Elevation (m) 309.00	Original KB/RT Elevation (m) 313.30	Original Spud Date 5/06/2013	AFE Duration Total (days)	Days From Spud (days) -1.38
Daily Cost 55,796.20	Cumulative Cost 55,796.20	AFE Amount 544,100.03	AFE + Sup Amount 544,100.03	Project ID# 156589
Planned Depth (TMD) (mKB) 1,109.00	Wellbore Original Hole	Head Count 35.0	Personnel Total Hours (hrs) 140.00	Cum Pers Tot Hr (hrs) 140.00
Like Kind Category Spring Gully Frac	Road Condition Dry	Weather Overcast	Temperature (°C) 20	Wind SW 8km/h

Operations @ Morning Report
 Conducting rig move to Durham Ranch 176

Last 24hr Summary
 Rigged down rig package at Durham Ranch 189R and lowered mast. Conducted pre rig move safety meeting with rig crew and truck drivers. Mobilized carrier, HPU and pipe tub from Durham Ranch 189R to Durham Ranch 180. Decision from town to postpone Durham Ranch 180 due to equipment delays. Continued to rig down at Durham Ranch 189R ready for rig move to Durham Ranch 176 at first light.

24hr Forecast
 Conduct rig move from Durham Ranch 189R to Durham Ranch 176. Spot rig package and rig up on location.

General Remarks
 00:00 - 06:00 Continued to rig down at Durham Ranch 189R ready for rig move to Durham Ranch 176 at first light.

Daily Contacts
 NIGHT DRLG SUPV, TIM PLAIN, 0477 708 239; DAY DRLG SUPV, SHANE KUSHNYRICH, 0477 708 239

Last Casing String
 Conductor, 10.88mKB

Days LTI and Days RI

Days Since Lost Time Incident (days) 94.00	Days Since Recordable Incident (days) 94.00
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Observation Cards (BST, STOP, etc)	No. Rpts
Comment	
1. Operating tags on pipe tub hydraulic levers have faded and hard to see. Need more durable name tags which clearly indicates each function. Notified rig manager and add to CAR.	8
3. Mushroomed wings on some of the hydraulic couplers on the carrier. Notified crew on changeover and make sure all couplers are ground back prior to rig up.	
3. Personnel walked under stinger while operator was in loader. No load was attached. Stopped the job and discussed potential consequences. Notified supervisors.	

Time Log									
Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
14:00	15:00	1.00	4.39	4.39	MIRU	MOVE	RURD	P	Continued to rig down at Durham Ranch 189R ready for rig move to Durham Ranch 180 at first light.
15:00	15:30	0.50	4.39	4.39	MIRU	MOVE	SFTY	P	Conducted pre rig move safety meeting with rig crew and truck drivers. Discussed potential hazard during rig move.
15:30	18:00	2.50	4.39	4.39	MIRU	MOVE	MOB	P	Mobilized carrier, HPU and pipe tub from Durham Ranch 189R to Durham Ranch 180. Spotted loads and continued to rig down at Durham Ranch 189R.
18:00	00:00	6.00	4.39	4.39	MIRU	MOVE	RURD	P	Decision from town to postpone Durham Ranch 180 due to equipment delays. Continued to rig down at Durham Ranch 189R ready for rig move to Durham Ranch 176 at first light.

Fluid / Mud Checks						
Time	Depth (mKB)	Density (lb/gal)	Funnel Viscosity (s/qt)	pH	PV Override (cp)	YP Override (lbf/100ft²)
MBT (lb/bbl)	Chlorides (mg/L)	Calcium (mg/L)	Potassium (mg/L)	Sand (%)	T (fl) (°C)	API Filtrate (mL/30min)
Mud Lost to Hole (bbl)	Mud Lost (Surf) (bbl)	Daily Mud Cost	Cumulative Mud Cost	Cum Mud Lost to Surface (bbl)		Cum Mud Lost to Hol...

Last BOP Drill					
Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date	No. Occur
Accumulator Closing Unit Pump Test					
Accumulator Closing Unit Test					
BOP Drill					
BOP Pressure Test					

Safety Incidents		
Date	Comment	Category

Drill Strings: BHA # <BHA No.??>			
Nozzles (/32")	Depth In (mKB)	Depth Out (mKB)	Comment
Bit Run	Drill Bit	IADC Bit Dull	Length (m)
			BHA ROP (m/hr)



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 3/06/2013
Report #: 1
Depth Progress: m
Depth End: 0.00 mKB
Rig Release Date: 9/06/2013

Drill String Components

Item Description	ID (in)	OD (in)	Jts	Len (m)	Cum Len (m)

Drilling Parameters:

Cum Depth Drilled (m)	Cum Drilling Time (hrs)	Interval ROP (m/hr)	Flow Rate (gpm)	Weight on Bit (lbf)	RPM (rpm)
Stand Pipe Pressure (psi)	Drill Str Wt (1000lbf)	SO Str Wt (1000lbf)	PU Str Wt (1000lbf)	Off-Btm Str Wt (1000lbf)	Drilling Torque

Fluid / Mud Additive Amounts

Description	Consumed	Cost (/unit)	Size	Units

Logs

Type	Date	Run No.	Depth Top (mKB)	Depth Bottom (mKB)	Logging Company

Formations

Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Undifferentiated/WSG			4.30
Eurombah			149.30
Hutton Sandstone			199.30
Upper Evergreen			429.30
Boxvale Sandstone			454.30
Lower Evergreen			474.30
Precipice Sandstone			529.30
Precipice BSF			554.30
Rewan Fm			629.30
Bandanna			869.30
Kaloola			909.30
Black Alley Shale			1,009.30

Pressure Test

Pressure Test	Stage of Oper	Reference	P/T Parameters	Compl...	Date Completed	Confirmed By	Comment
A/B-Section	Wellhead N/U		3000psi/5...	Yes	6/06/2013	DION WILK 0437 212 558	
7" Casing Hanger	Landing Production Casing		3000psi/5...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	
Production Casing	Post Plug Bump		2000psi/10...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 4/06/2013
 Report #: 2
 Depth Progress: m
 Depth End: 0.00 mKB
 Rig Release Date: 9/06/2013

State QUEENSLAND	Basin BOWEN	District DURHAM RANCH	Lease PL 203	Well Configuration Type VERTICAL
Ground Elevation (m) 309.00	Original KB/RT Elevation (m) 313.30	Original Spud Date 5/06/2013	AFE Duration Total (days)	Days From Spud (days) -0.38
Daily Cost 46,436.93	Cumulative Cost 102,233.13	AFE Amount 544,100.03	AFE + Sup Amount 544,100.03	Project ID# 156589
Planned Depth (TMD) (mKB) 1,109.00	Wellbore Original Hole	Head Count 39.0	Personnel Total Hours (hrs) 458.00	Cum Pers Tot Hr (hrs) 598.00
Like Kind Category Spring Gully Frac	Road Condition Dry	Weather Sunny	Temperature (°C) 21	Wind NNE 2km/h

Operations @ Morning Report
 Making up 12-1/4" Bit

Last 24hr Summary
 Continued to rig down at Durham Ranch 189R. Waited on Daylight. Location changed to Durham Ranch 175. Held pre job safety meeting with rig crew and truck drivers. Moved HPU, Carrier and pipe tub from Durham Ranch 180 to Durham Ranch 175. Shifted mini camp, mud tanks, mud pumps, gen shack, flare tank and all ancillary equipment from Durham Ranch 189R to Durham Ranch 175. Spotted loads and commenced rig up. Held pre job safety meeting and raised mast.

24hr Forecast
 Rig up rig package. Function test ESD's and conduct hazard hunt. Hold Pre Spud meeting. Spud Durham Ranch 175 and drill 12-1/4" surface hole to TD. Pump 2 x Hi Vis pills and circulate hole clean. Pull out of hole.

General Remarks
 00:00 - 03:30 Continued to rig up on location. Rigged up flare and vent lines. Cleaned up lease.
 03:30 - 04:00 Function tested ESD's and conducted Muster Drill with all personnel on location.
 04:00 - 06:00 Strapped 12-1/4" BHA and make up 12-1/4" bit. Conducted pre spud electrical checks

Daily Contacts
 DAY DRLG SUPV, SHANE KUSHNYRICH, 0477 708 239; NIGHT DRLG SUPV, TIM PLAIN, 0477 708 239

Last Casing String
 Conductor, 10.88mKB

Days LTI and Days RI

Days Since Lost Time Incident (days) 95.00	Days Since Recordable Incident (days) 95.00
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Observation Cards (BST, STOP, etc)	No. Rpts
Comment 1. Electrical cable for cellar pump and pressure testing unit left lying around in the dirt. Need to order hose real to hang off hand rail and prevent cable from damage. 2. Broken weld in hand rail support on drill floor. Flagged with danger tape. Notified rig manager and add to CAR. 3. Damaged earthing cable on drill floor. Notified rig manager and correct prior to spud.	8

Time Log									
Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	06:00	6.00	4.39	4.39	MIRU	MOVE	DMOB	T	Waited on Daylight. Continued to rig down at Durham Ranch 189R ready for rig move to Durham Ranch 176 at first light. Location changed to Durham Ranch 175.
06:00	06:30	0.50	4.39	4.39	MIRU	MOVE	SFTY	P	Held pre job safety meeting with rig crew and truck drivers prior to rig move. Discussed speed limits, radio channels, high vis clothing, tying down and checking loads, ECP traffic, PTW and full supervision.
06:30	18:00	11.50	4.39	4.39	MIRU	MOVE	MOB	P	Continued to rig down mini camp and mobilized to Durham Ranch 175. Moved HPU, Carrier and pipe tub from Durham Ranch 180 to Durham Ranch 175. Shifted mini camp, mud tanks, mud pumps, gen shack, flare tank and all ancillary equipment from Durham Ranch 189R to Durham Ranch 175. Spotted loads and commenced rig up.
18:00	22:00	4.00	4.39	4.39	MIRU	MOVE	MOB	P	Continued to rig up rig package. Rigged up pipe tub and tightened pull down lines. Filled mud tank and mixed mud ready for spud. Dressed shakers with API230's.
22:00	22:30	0.50	4.39	4.39	MIRU	MOVE	SFTY	P	Held pre job safety meeting with rig crew prior to raising the mast. Opened permit and reviewed JSA and SOP. Discussed hazards involved with working at heights and pinch points.
22:30	00:00	1.50	4.39	4.39	MIRU	MOVE	RURD	P	Raised mast and secured drill floor. Rigged up drill floor and function tests top drive and pipe arm. Conducted top drive inspection and installed top drive connection clamp bolts with thread lock.

Fluid / Mud Checks						
Time 17:00	Depth (mKB) 4.30	Density (lb/gal) 8.34	Funnel Viscosity (s/qt) 26	pH 10.0	PV Override (cp)	YP Override (lbf/100ft²) 1.0
MBT (lb/bbl) 2.5	Chlorides (mg/L) 200	Calcium (mg/L)	Potassium (mg/L)	Sand (%)	T (fl) (°C)	API Filtrate (mL/30min)
Mud Lost to Hole (bbl)	Mud Lost (Surf) (bbl)	Daily Mud Cost	Cumulative Mud Cost	Cum Mud Lost to Surface (bbl)	Cum Mud Lost to Hol...	



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 4/06/2013
Report #: 2
Depth Progress: m
Depth End: 0.00 mKB
Rig Release Date: 9/06/2013

Last BOP Drill

Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date	No. Occur
Accumulator Closing Unit Pump Test					
Accumulator Closing Unit Test					
BOP Drill					
BOP Pressure Test					

Safety Meetings / Operational Checks

Date	Type	Description	Tour	Comment
4/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Held pre job safety meeting with rig crew and truck drivers prior to rig move.
4/06/2013	Pre-Tour Safety Meeting	Pre-Tour Safety Meeting	Day	Reviewed & discussed operations with rig crew for upcoming tour.
4/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Held pre job safety meeting prior to raising mast.
4/06/2013	Pre-Tour Safety Meeting	Pre-Tour Safety Meeting	Night	Reviewed & discussed operations with rig crew for upcoming tour.

Safety Incidents

Date	Comment	Category

Drill Strings: BHA # <BHA No.??>

Nozzles (3/32")	Depth In (mKB)	Depth Out (mKB)	Comment
Bit Run	Drill Bit		IADC Bit Dull Length (m) BHA ROP (m/hr)

Drill String Components

Item Description	ID (in)	OD (in)	Jts	Len (m)	Cum Len (m)

Drilling Parameters:

Cum Depth Drilled (m)	Cum Drilling Time (hrs)	Interval ROP (m/hr)	Flow Rate (gpm)	Weight on Bit (lbf)	RPM (rpm)
Stand Pipe Pressure (psi)	Drill Str Wt (1000lbf)	SO Str Wt (1000lbf)	PU Str Wt (1000lbf)	Off-Btm Str Wt (1000lbf)	Drilling Torque

Fluid / Mud Additive Amounts

Description	Consumed	Cost (/unit)	Size	Units

Logs

Type	Date	Run No.	Depth Top (mKB)	Depth Bottom (mKB)	Logging Company

Formations

Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Undifferentiated/WSG			4.30
Eurombah			149.30
Hutton Sandstone			199.30
Upper Evergreen			429.30
Boxvale Sandstone			454.30
Lower Evergreen			474.30
Precipice Sandstone			529.30
Precipice BSF			554.30
Rewan Fm			629.30
Bandanna			869.30
Kaloola			909.30
Black Alley Shale			1,009.30

Pressure Test

Pressure Test	Stage of Oper	Reference	P/T Parameters	Compl...	Date Completed	Confirmed By	Comment
A/B-Section	Wellhead N/U		3000psi/5...	Yes	6/06/2013	DION WILK 0437 212 558	
7" Casing Hanger	Landing Production Casing		3000psi/5...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	
Production Casing	Post Plug Bump		2000psi/10...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 5/06/2013
 Report #: 3
 Depth Progress: 478.61 m
 Depth End: 483.00 mKB
 Rig Release Date: 9/06/2013

State QUEENSLAND	Basin BOWEN	District DURHAM RANCH	Lease PL 203	Well Configuration Type VERTICAL
Ground Elevation (m) 309.00	Original KB/RT Elevation (m) 313.30	Original Spud Date 5/06/2013	AFE Duration Total (days)	Days From Spud (days) 0.63
Daily Cost 56,259.79	Cumulative Cost 158,492.92	AFE Amount 544,100.03	AFE + Sup Amount 544,100.03	Project ID# 156589
Planned Depth (TMD) (mKB) 1,109.00	Wellbore Original Hole	Head Count 39.0	Personnel Total Hours (hrs) 459.00	Cum Pers Tot Hr (hrs) 1,057.00
Like Kind Category Spring Gully Frac	Road Condition Dry	Weather Sunny	Temperature (°C) 23	Wind NE 11km/h

Operations @ Morning Report
 Lay out 12.25" bit

Last 24hr Summary
 Continued to rig up on location. Rigged up flare and vent lines. Function tested ESD's and conducted Muster Drill. Conducted hazard hunt and held Pre-Spud meeting. Spudded Durham Ranch 175 with water and Pac R and drilled 12 1/4" surface hole from 10.88m to 180m. Switched to gel based mud system and continued to drill 12-1/4" surface hole to 329mKB. Troubleshoot electrical issue. Rotary not recording on Pason. Continued to drill 12-1/4" surface hole from 329m to 483m.

24hr Forecast
 Drill 12-1/4" surface hole to TD. Pump 2 x hi vis sweeps and circulate hole clean. Pull out of hole and layout BHA. Rig up and run 9-5/8" surface casing and cement in place. Nipple up BOP's and pressure test.

General Remarks
 00:00 - 01:00 Continued to drill 12 1/4" surface hole from 483m to 510mRt, verified bit in the lower evergreen formation. Drlg Parameters: PU/SO/ROT=60/52/56klbs, WOB=20lbs, On/Off btm TQ = 6/2kft/lbs, Surface RPM = 130, SPP-790PSI at 440GPM, MW 9.2ppg, Vis 42. Survey at 496m, INC= 2.02deg, AZM = 30.98deg.
 01:00 - 01:45 Pumped 2 x Hi Vis pills and circulated hole clean.
 01:45 - 02:00 Conducted per job safety meeting with crew prior to tripping operations.
 02:00 - 03:30 Pulled out of hole from 510m to BHA at 148m. At an over all trip rate of 250m/hr.
 03:30 - 03:45 Conducted pre job safety meeting with crew prior to tripping BHA.
 03:45 - 06:00 Continued to pull out of hole with 12.25" BHA form 148m to surface. Flushed XEM survey tool and cleaned and inspected 12.25" bit.

Daily Contacts
 DAY DRLG SUPV, SHANE KUSHNYRICH, 0477 708 239; NIGHT DRLG SUPV, TIM PLAIN, 0477 708 239; NIGHT DRLG SUPV, DION WILK, 0477 708 239

Last Casing String
 Conductor, 10.88mKB

Days LTI and Days RI

Days Since Lost Time Incident (days) 96.00	Days Since Recordable Incident (days) 96.00
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Observation Cards (BST, STOP, etc)	No. Rpts
Comment 1. No Danger tape between hydraulic hoses under the dog house and pipe tub. Set up danger tape and blocked off area. 2. No whip checks on fuel lines from gen shack to HPU. Discussed the importance of whip checks at the pre spud meeting. 3. An alarm started in the doghouse coming from power board on the wall behind the pit bull. Notified rig manager and electrician. Electrician fixed electrical issue.	20

Time Log									
Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	03:30	3.50	4.39	4.39	MIRU	MOVE	RURD	P	Continued to rig up on location. Rigged up flare and vent lines. Cleaned up lease.
03:30	04:00	0.50	4.39	4.39	MIRU	MOVE	RURD	P	Function tested ESD's and conducted Muster Drill with all personnel on location.
04:00	07:30	3.50	4.39	4.39	MIRU	MOVE	RURD	P	Strapped 12-1/4" BHA and make up 12-1/4" bit. Conducted pre spud electrical checks/audits.
07:30	09:00	1.50	10.88	10.88	MIRU	MOVE	PRSP	P	Held Pre-Spud meeting & Hazard Hunt with all personnel on site. Reviewed drilling program and WSDS. Explained importance of safety vs productivity and the relationship between the two.
09:00	10:30	1.50	10.88	32.00	SURFAC	DRILL	DRLG	P	Spud Durham Ranch 175 with water and Pac R then drilled 12 1/4" surface hole from 10.88m to 32m. Drlg Parameters: PU/SO/ROT=21/19/20klbs, WOB=2-4lbs, On/Off btm TQ = 0.6/0.2kft/lbs, Surface RPM = 70, SPP-120PSI at 250GPM, MW 8.5ppg, Vis 31.
10:30	13:00	2.50	32.00	119.00	SURFAC	DRILL	DRLG	P	Continued to drill 12-1/4" surface hole from 32m to 119m. Drlg Parameters: PU/SO/ROT=45/39/41klbs, WOB=18lbs, On/Off btm TQ = 8/2kft/lbs, Surface RPM = 130, SPP-400PSI at 465GPM, MW 8.5ppg, Vis 31. Survey at 50m 0.22 deg AZM 32.31deg. Survey at 100m INC. 0.22deg AZ 32.31. Average ROP with connections 34.8m/hr
13:00	17:00	4.00	119.00	272.00	SURFAC	DRILL	DRLG	P	Continued to drill 12-1/4" surface hole from 119m to 272m. Drlg Parameters: PU/SO/ROT=58/45/49klbs, WOB=15-20lbs, On/Off btm TQ = 7.5/1.5kft/lbs, Surface RPM = 140, SPP-850PSI at 550GPM, MW 8.8ppg, Vis 47. Survey at 250m, INC = 1.41deg. AZM = 66.18deg. Average ROP with connections 50m/hr. At 180m switched to gel based drilling mud to drill through the Hutton Sst.



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 5/06/2013
 Report #: 3
 Depth Progress: 478.61 m
 Depth End: 483.00 mKB
 Rig Release Date: 9/06/2013

Time Log

Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
17:00	18:30	1.50	272.00	329.00	SURFAC	DRILL	DRLG	P	Continued to drill 12-1/4" surface hole from 272m to 329mRt. Drlg Parameters: PU/SO/ROT=59/47/50klbs, WOB=19-22lbs, On/Off btm TQ = 9/2kft/lbs, Surface RPM = 130, SPP-720PSI at 550GPM, MW 8.9ppg, Vis 55. Survey at 300m, INC = 1.41deg, AMZ = 51.68.
18:30	19:00	0.50	329.00	329.00	SURFAC	DRILL	RGRP	P	Rig Service. Rotary not recording on Pason. Troubleshoot electrical issue
19:00	19:30	0.50	329.00	329.00	SURFAC	DRILL	RGRP	T	Troubleshoot electrical issue. Rotary not recording on Pason. Brisbane office decided to drill ahead with Rotary reorder.
19:30	00:00	4.50	329.00	483.00	SURFAC	DRILL	DRLG	P	Continued to drill 12-1/4" surface hole from 359m to 483mRt. Drlg Parameters: PU/SO/ROT=67/51/55klbs, WOB=20lbs, On/Off btm TQ = 6/1.5kft/lbs, Surface RPM = 130, SPP-820PSI at 450GPM, MW 9.1ppg, Vis 45. Survey at 451m, INC = 1.49deg, AZM = 42.32deg.

Fluid / Mud Checks

Time	Depth (mKB)	Density (lb/gal)	Funnel Viscosity (s/qt)	pH	PV Override (cp)	YP Override (lb/100ft ²)
23:30	483.00	9.10	39	9.5	15.0	7.0
MBT (lb/bbl)	Chlorides (mg/L)	Calcium (mg/L)	Potassium (mg/L)	Sand (%)	T (fl) (°C)	API Filtrate (mL/30min)
20.0	400			0.1		7.0
Mud Lost to Hole (bbl)	Mud Lost (Surf) (bbl)	Daily Mud Cost	Cumulative Mud Cost	Cum Mud Lost to Surface (bbl)	Cum Mud Lost to Hol...	
		4,488.20	4,488.20			

Last BOP Drill

Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date	No. Occur
Accumulator Closing Unit Pump Test					
Accumulator Closing Unit Test					
BOP Drill					
BOP Pressure Test					

Safety Meetings / Operational Checks

Date	Type	Description	Tour	Comment
5/06/2013	Test Rig ESD	Test Rig ESD	Night	Function tested rig ESD's
5/06/2013	Muster Drill	Muster Drill	Night	Conduct Muster drill with all personnel on location
5/06/2013	Hazard Hunt	Hazard Hunt	Day	Conducted hazard hunt with all crew members prior to spud.
5/06/2013	Pre-Spud Meeting	Pre-Spud Meeting	Day	Pre spud meeting Drilling operations, safety and hazards found talked about
5/06/2013	Pre-Tour Safety Meeting	Pre-Tour Safety Meeting	Day	Reviewed & discussed operations with rig crew for upcoming tour.
5/06/2013	Pre-Tour Safety Meeting	Pre-Tour Safety Meeting	Night	Reviewed & discussed operations with rig crew for upcoming tour.

Safety Incidents

Date	Comment	Category

Drill Strings: BHA # 1

Nozzles (#32")	Depth In (mKB)	Depth Out (mKB)	Comment	
14/14/14/14/14/14/14	4.39	510.00	Drilled Surface hole from 10.88m to 510m.	
Bit Run	Drill Bit	IADC Bit Dull	Length (m)	BHA ROP (m/hr)
RR9	12 1/4in, Reed-Hyalog, RSF-516S, E153386	2-4-LT-S-X-0-CT-TD	0.25	33.7

Drill String Components

Item Description	ID (in)	OD (in)	Jts	Len (m)	Cum Len (m)
Drill Pipe	3.340	4	38	362.71	510.00
HWDP	2.750	4	3	28.12	147.29
XO sub	2.500	6 1/2	1	0.81	119.17
Drill Collar	2.500	6 1/2	10	94.79	118.36
XO Sub	2.875	8	1	0.74	23.57
Pathfinder XEM Tool	3.250	6 3/4	1	10.17	22.83
XO Sub	2.875	8	2	1.90	12.66
Drill Collar	3.000	8	1	9.29	10.76
Bit Sub - With Float	3.000	8	1	1.22	1.47

Drilling Parameters: 329.00 - 483.00 mKB

Cum Depth Drilled (m)	Cum Drilling Time (hrs)	Interval ROP (m/hr)	Flow Rate (gpm)	Weight on Bit (lbf)	RPM (rpm)
478.61	14.00	34.2	450	20.0	130
Stand Pipe Pressure (psi)	Drill Str Wt (1000lbf)	SO Str Wt (1000lbf)	PU Str Wt (1000lbf)	Off-Btm Str Wt (1000lbf)	Drilling Torque
820.0	55	51	67	55	6.0

Fluid / Mud Additive Amounts

Description	Consumed	Cost (/unit)	Size	Units
Nut Plug C	1.0	28.11		1.0 sacks
Flowzan	2.0	178.89		1.0 sacks
Nut Plug M	3.0	33.40		1.0 sacks
Drispac Plus - Superlo	15.0	130.61		1.0 sacks
Dyna Red F	15.0	35.36		1.0 sacks



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 5/06/2013
Report #: 3
Depth Progress: 478.61 m
Depth End: 483.00 mKB
Rig Release Date: 9/06/2013

Fluid / Mud Additive Amounts

Description	Consumed	Cost (/unit)	Size	Units
AUS-BEN (AUST)	146.0	10.36		1.0 sacks

Logs

Type	Date	Run No.	Depth Top (mKB)	Depth Bottom (mKB)	Logging Company

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/100ft)
5/06/2013	47.00	0.22	32.21	47.00	0.09	0.08	0.05	0.08	0.14
5/06/2013	100.00	0.22	32.31	100.00	0.29	0.25	0.16	0.25	0.00
5/06/2013	250.00	1.41	66.18	249.98	2.35	1.24	2.00	1.24	0.25
5/06/2013	300.00	1.41	61.68	299.97	3.58	1.78	3.10	1.78	0.07
5/06/2013	451.00	1.49	42.32	450.92	7.32	4.11	6.06	4.11	0.10
5/06/2013	496.00	2.02	30.98	495.90	8.62	5.22	6.86	5.22	0.43

Formations

Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Undifferentiated/WSG			4.30
Eurombah			149.30
Hutton Sandstone			199.30
Upper Evergreen			429.30
Boxvale Sandstone			454.30
Lower Evergreen			474.30
Precipice Sandstone			529.30
Precipice BSF			554.30
Rewan Fm			629.30
Bandanna			869.30
Kaloola			909.30
Black Alley Shale			1,009.30

Pressure Test

Pressure Test	Stage of Oper	Reference	P/T Parameters	Compl...	Date Completed	Confirmed By	Comment
A/B-Section	Wellhead N/U		3000psi/5...	Yes	6/06/2013	DION WILK 0437 212 558	
7" Casing Hanger	Landing Production Casing		3000psi/5...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	
Production Casing	Post Plug Bump		2000psi/10...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 6/06/2013
Report #: 4
Depth Progress: 27.00 m
Depth End: 510.00 mKB
Rig Release Date: 9/06/2013

State QUEENSLAND	Basin BOWEN	District DURHAM RANCH	Lease PL 203	Well Configuration Type VERTICAL	
Ground Elevation (m) 309.00	Original KB/RT Elevation (m) 313.30	Original Spud Date 5/06/2013	AFE Duration Total (days)	Days From Spud (days) 1.63	
Daily Cost 121,027.69	Cumulative Cost 279,520.61	AFE Amount 544,100.03	AFE + Sup Amount 544,100.03	Project ID# 156589	Work Order
Planned Depth (TMD) (mKB) 1,109.00	Wellbore Original Hole	Head Count 34.0	Personnel Total Hours (hrs) 399.00	Cum Pers Tot Hr (hrs) 1,456.00	
Like Kind Category Spring Gully Frac	Road Condition Dry	Weather Seasonal	Temperature (°C) 24	Wind NE 13km/h	

Operations @ Morning Report

Trouble shoot top drive rotary issue's

Last 24hr Summary

Continued to drill 12 1/4" surface hole from 483m to 510mRt, verified bit in the lower evergreen formation. Drlg Parameters: PU/SO/ROT=60/52/56klbs, WOB=20lbs, On/Off btm TQ = 6/2kft/lbs, Surface RPM = 130, SPP-790PSI at 440GPM, MW 9.2ppg, Vis 42. Survey at 496m, INC= 2.02deg, AZM = 30.98deg. Pumped 2 x Hi Vis pills and circulated hole clean. Pulled out of hole from 510m to surface. PJSM, rigged to and ran 44jts 9 5/8" surface casing to 508.01Mkb. PJSM, Mixed and pumped 134.bbls (435sxs) of 13.2ppg VeraCem lead slurry at an average rate of 4.7bpm. Then mixed and pumped 25bbl's (116sxs) of 15.6ppg Halcem tail cement at an average of 3.5bpm. Dropped plug and displaced at 3.5bpm with 125bbls of sump water from vac truck. Bumped plug with 1500psi after 125bbls of total displacement and held for 5min. 63bbls of good cement returns to surface. Layed out landing joint & nipped up bop's. Prepared to pressure test bop's and related equipment.

24hr Forecast

RIH w/production BHA, drill production section, wiper trip, continue to drill to section TD, circ, POOH

General Remarks

00:00 - 01:00 Continued to prepare for pressure testing.
 01:00 - 03:30 Function tested BOP's. Pressure tested choke line and choke valves and manifold to 250 psi / 2000 psi for 5min/5min. Pressure tested annular to 250psi/1500psi for 5min/5min. Pressure tested pipe rams and blind rams to 250psi/2000psi for 5min/5min. Pressure tested inner and outer HCR's to 250 psi / 2000 psi for 5min/5min. Pressured test inside BOP and stabbing valve to 250 psi / 2000 psi for 5min/5min.
 03:30 - 04:00 Inspect, service & grease all handling and hydraulic equipment.
 04:00 - 06:00 Trouble shoot top drive rotary issues.

Daily Contacts

NIGHT DRLG SUPV, DION WILK, 0477 708 239; NIGHT DRLG SUPV, TIM PLAIN, 0477 708 239; DAY DRLG SUPV, SHANE KUSHNYRICH, 0477 708 239

Last Casing String

Surface, 508.01mKB

Days LTI and Days RI

Days Since Lost Time Incident (days) 97.00	Days Since Recordable Incident (days) 97.00
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Observation Cards (BST, STOP, etc)

Comment	No. Rpts
1. Worker was seen walking along the sump pit bank on the inside of the fence. The man was told to walk along the outside of the safety fence, so as to have a 100% probability that if he tripped or rolled and ankle, he would/could not fall into sump as he would have the fence as a barrier between him and the pit.	8
2. It was noticed that the pull start on the water pump was not operational.	
3. A small hydraulic leak was found on the drillers side bottom pipe kicker. The leak was tightened and no spill was recorded as the bunding under the pipe arm contained all the fluid.	

Time Log

Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	01:00	1.00	483.00	510.00	SURFAC	DRILL	DRLG	P	Continued to drill 12 1/4" surface hole from 483m to 510mRt, verified bit in the lower evergreen formation. Drlg Parameters: PU/SO/ROT=60/52/56klbs, WOB=20lbs, On/Off btm TQ = 6/2kft/lbs, Surface RPM = 130, SPP-790PSI at 440GPM, MW 9.2ppg, Vis 42. Survey at 496m, INC= 2.02deg, AZM = 30.98deg.
01:00	01:30	0.50	510.00	510.00	SURFAC	CASING	CIRC	P	Pumped 2 x Hi Vis pills and circulated hole clean.
01:30	02:00	0.50	510.00	510.00	SURFAC	CASING	SFTY	P	Conducted per job safety meeting with crew prior to tripping operations.
02:00	05:00	3.00	510.00	510.00	SURFAC	CASING	TRIP	P	Pulled out of hole from 510m to BHA at 148m. At an over all trip rate of 250m/hr.
05:00	05:30	0.50	510.00	510.00	SURFAC	CASING	SFTY	P	Conducted pre job safety meeting with crew prior to tripping BHA.
05:30	06:30	1.00	510.00	510.00	SURFAC	CASING	TRIP	P	Continued to pull out of hole with 12.25" BHA form 148m to 13m. Flushed XEM survey tool.
06:30	07:00	0.50	510.00	510.00	SURFAC	CASING	TRIP	P	Continued to pull out of hole with 12.25" BHA and laid out. Cleaned and inspected 12.25" bit.
07:00	08:30	1.50	510.00	510.00	SURFAC	CASING	TRIP	P	Rigged up floor to run 9-5/8" casing. Removed riser and rigged up cellar pump. Installed 9-5/8" drive sub and prepared 9-5/8" handling gear.
08:30	09:00	0.50	510.00	510.00	SURFAC	CASING	SFTY	P	Held pre job safety meeting with crew prior to running 9-5/8" surface casing.



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 6/06/2013
Report #: 4
Depth Progress: 27.00 m
Depth End: 510.00 mKB
Rig Release Date: 9/06/2013

Time Log									
Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
09:00	13:00	4.00	510.00	510.00	SURFAC	CASING	RNCS	P	Installed 9-5/8" float shoe with thread lock on the first joint and function tested. Installed and thread locked float collar and function tested. ran in hole with 9 5/8" K55, 36ppf, surface casing to 508.01mRT . Ran pipe at 127m/hr average, reduced running rate to 1min per joint to reduce surging. Tight hole at 185m and 350m: washed down 6 joints to 420m at 140 gpm w/92-150psi to clean hole. Called out Halliburton at 7am and to confirm cement job times.
13:00	13:30	0.50	510.00	510.00	SURFAC	CASING	RURD	P	Picked up landing joint and ran in hole. Landed out A-section on conductor. Shoe at 508.01mRT. Installed 2" side out lets and rigged up cellar pump ready for cement job.
13:30	14:00	0.50	510.00	510.00	SURFAC	CEMENT	CIRC	P	Circulated and reciprocated 9-5/8" casing. Zero dynamic losses pumping at 4bbl's/min.
14:00	14:30	0.50	510.00	510.00	SURFAC	CEMENT	SFTY	P	Held pre job safety meeting with rig crew and Halliburton Cementers.
14:30	18:00	3.50	510.00	510.00	SURFAC	CEMENT	CMNT	P	Loaded top plug and installed 9-5/8" cement head. Mixed 20bbls of 8.4ppg gelled spacer. Pumped 10bbls at 4.5bpm though cement head Pressure tested surface lines to 3000psi for 5min. Continued to pump a further 10 bbls gel spacer at 4.5bpm. Mixed and pumped 134.bbls (435sxs) of 13.2ppg VeraCem lead slurry at an average rate of 4.7bpm. Then mixed and pumped 25bbl's (116sxs) of 15.6ppg Halcem tail cement at an average of 3.5bpm. Dropped plug and displaced at 3.5bpm with 125bbls of sump water from vac truck. Bumped plug with 1500psi after 125.6bbls of total displacement and held for 5min. Released pressure and 1bbls bled back to tank, floats held. Cement back after 62.6bbls pumped, 63bbls of good cement returns to surface.
18:00	18:30	0.50	510.00	510.00	SURFAC	CEMENT	RURD	P	PJSM-Rigged down cementers and laid out cement equipment.
18:30	19:00	0.50	510.00	510.00	SURFAC	CEMENT	RURD	P	Removed anti rotation screws and laid out landing joint. Rigged out all 9-5/8" handling gear.
19:00	19:30	0.50	510.00	510.00	SURFAC	CEMENT	SFTY	P	Held pre job safety meeting prior Prior to nipping up BOP's.
19:30	22:00	2.50	510.00	510.00	SURFAC	CEMENT	NUND	P	Nipped up BOP's, installed bell nipple and pressure tested drilling adaptor to 3000psi for 5 min.
22:00	23:30	1.50	510.00	510.00	SURFAC	CEMENT	RGRP	T	Held PJSM to lower mast and lowered mast to repair rotary sensor issues.
23:30	00:00	0.50	510.00	510.00	SURFAC	CEMENT	PRTS	P	Function tested BOP's.

Fluid / Mud Checks							
Time	Depth (mKB)	Density (lb/gal)	Funnel Viscosity (s/qt)	pH	PV Override (cp)	YP Override (lbf/100ft²)	
10:00	510.00	9.10	36	9.0			
MBT (lb/bbl)	Chlorides (mg/L)	Calcium (mg/L)	Potassium (mg/L)	Sand (%)	T (fl) (°C)	API Filtrate (mL/30min)	
Mud Lost to Hole (bbl)	Mud Lost (Surf) (bbl)	Daily Mud Cost	Cumulative Mud Cost	Cum Mud Lost to Surface (bbl)	Cum Mud Lost to Hol...		
0.0	0.0	2,074.31	6,562.51				

Last BOP Drill					
Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date	No. Occur
Accumulator Closing Unit Pump Test					
Accumulator Closing Unit Test					
BOP Drill					
BOP Pressure Test	0	6/06/2013	14	20/06/2013	1

Safety Meetings / Operational Checks				
Date	Type	Description	Tour	Comment
6/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Night	Pre Job safety meeting on laying down BHA
6/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Pre job safety meeting for running 9-5/8" surface casing
6/06/2013	Pre-Tour Safety Meeting	Pre-Tour Safety Meeting	Day	Reviewed & discussed operations with rig crew for upcoming tour.
6/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Held PJSM w/rig crew, Halliburton & WSR prior to conducting surface cement job.
6/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Discussed procedures & hazards w/rig crew prior to nipping up BOP
6/06/2013	BOP Pressure Test	BOP Pressure Test	Day	Open permit and pressure test BOP's as per SOP
6/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Discussed procedures & hazards w/rig crew prior to pressure testing BOP
6/06/2013	Pre-Tour Safety Meeting	Pre-Tour Safety Meeting	Day	Reviewed & discussed operations with rig crew for upcoming tour.

Safety Incidents		
Date	Comment	Category



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 6/06/2013
 Report #: 4
 Depth Progress: 27.00 m
 Depth End: 510.00 mKB
 Rig Release Date: 9/06/2013

Drill Strings: BHA # 1

Nozzles (3/2") 14/14/14/14/14/14/14	Depth In (mKB) 4.39	Depth Out (mKB) 510.00	Comment Drilled Surface hole from 10.88m to 510m.
Bit Run RR9	Drill Bit 12 1/4in, Reed-Hycalog, RSF-516S, E153386	IADC Bit Dull 2-4-LT-S-X-0-CT-TD	Length (m) 0.25
			BHA ROP (m/hr) 33.7

Drill String Components

Item Description	ID (in)	OD (in)	Jts	Len (m)	Cum Len (m)
Drill Pipe	3.340	4	38	362.71	510.00
HWDP	2.750	4	3	28.12	147.29
XO sub	2.500	6 1/2	1	0.81	119.17
Drill Collar	2.500	6 1/2	10	94.79	118.36
XO Sub	2.875	8	1	0.74	23.57
Pathfinder XEM Tool	3.250	6 3/4	1	10.17	22.83
XO Sub	2.875	8	2	1.90	12.66
Drill Collar	3.000	8	1	9.29	10.76
Bit Sub - With Float	3.000	8	1	1.22	1.47

Drilling Parameters: 483.00 - 510.00 mKB

Cum Depth Drilled (m) 505.61	Cum Drilling Time (hrs) 15.00	Interval ROP (m/hr) 27.0	Flow Rate (gpm) 450	Weight on Bit (lbf) 20.0	RPM (rpm) 130
Stand Pipe Pressure (psi) 850.0	Drill Str Wt (1000lbf) 57	SO Str Wt (1000lbf) 52	PU Str Wt (1000lbf) 68	Off-Btm Str Wt (1000lbf) 56	Drilling Torque 6.5

Fluid / Mud Additive Amounts

Description	Consumed	Cost (/unit)	Size	Units
Flowzan	1.0	178.89	1.0	sacks
Nut Plug M	4.0	33.40	1.0	sacks
Dyna Red F	4.0	35.36	1.0	sacks
AMC PAC L	9.0	115.58	1.0	sacks
AUS-BEN (AUST)	56.0	10.36	1.0	sacks

Cement Fluids

Surface Casing cement job - Lead Cement, Top: 4.69 mKB; Bottom: 431.00 mKB

Density (lb/gal) 13.20	Class A	Volume Pumped (bbl) 134.0	Cmnt Rtrn (bbl) 62.6	Top Measurement Method Returns to Surface		
CmprStr 1 (psi) 100.0	CmprStr 2 (psi) 500.0	Time of 1st Compressive Strength Test (hrs) 4.00		Time of 2nd Compressive Strength Test (hrs) 10.10		T(compr str) (°C) 32
Type	Add	Amount	Amount Units	Conc	Conc Unit	
Accelerator	Calcium Chloride	818.0	lb	2.0	%BWOC	
Cement	Class A Cement	435.0	sk	94.0	lb/sk	
Defoamer	NF-6	0.0	lb	0.25	gal/10bbl	
Extender	Bentonite	818.0	lb	2.0	%BWOC	
Lost Circulation Material	Flocele	102.0	lb	0.25	%BWOC	
Lost Circulation Material	Phenoseal	818.0	lb	2.0	%BWOC	
Thixotropic Additive	Versaset	82.0	lb	2.0	%BWOC	

Surface Casing cement job - Tail Cement, Top: 431.00 mKB; Bottom: 510.00 mKB

Density (lb/gal) 15.60	Class A	Volume Pumped (bbl) 25.0	Cmnt Rtrn (bbl) 62.6	Top Measurement Method Returns to Surface		
CmprStr 1 (psi) 100.0	CmprStr 2 (psi) 500.0	Time of 1st Compressive Strength Test (hrs) 2.60		Time of 2nd Compressive Strength Test (hrs) 5.60		T(compr str) (°C) 32
Type	Add	Amount	Amount Units	Conc	Conc Unit	
Accelerator	Calcium Chloride	109.0	lb	1.0	%BWOC	
Cement	Class A Cement	116.0	sk	94.0	lb/sk	
Defoamer	NF-6	0.0	lb	0.25	gal/10bbl	
Lost Circulation Material	Flocele	27.0	lb	0.25	%BWOC	
Lost Circulation Material	Phenoseal	218.0	lb	2.0	%BWOC	

Logs

Type	Date	Run No.	Depth Top (mKB)	Depth Bottom (mKB)	Logging Company

Formations

Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Undifferentiated/WSG			4.30
Eurombah			149.30
Hutton Sandstone			199.30
Upper Evergreen			429.30
Boxvale Sandstone			454.30
Lower Evergreen			474.30
Precipice Sandstone			529.30
Precipice BSF			554.30
Rewan Fm			629.30
Bandanna			869.30
Kaloola			909.30
Black Alley Shale			1,009.30



Daily Drilling
DURHAM RANCH 175
Rig: ENSIGN 64

Report Date: 6/06/2013
Report #: 4
Depth Progress: 27.00 m
Depth End: 510.00 mKB
Rig Release Date: 9/06/2013

Pressure Test

Pressure Test	Stage of Oper	Reference	P/T Parameters	Compl...	Date Completed	Confirmed By	Comment
A/B-Section	Wellhead N/U		3000psi/5...	Yes	6/06/2013	DION WILK 0437 212 558	
7" Casing Hanger	Landing Production Casing		3000psi/5...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	
Production Casing	Post Plug Bump		2000psi/10...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 7/06/2013
 Report #: 5
 Depth Progress: 196.00 m
 Depth End: 706.00 mKB
 Rig Release Date: 9/06/2013

State QUEENSLAND	Basin BOWEN	District DURHAM RANCH	Lease PL 203	Well Configuration Type VERTICAL
Ground Elevation (m) 309.00	Original KB/RT Elevation (m) 313.30	Original Spud Date 5/06/2013	AFE Duration Total (days)	Days From Spud (days) 2.63
Daily Cost 58,399.82	Cumulative Cost 337,920.43	AFE Amount 544,100.03	AFE + Sup Amount 544,100.03	Project ID# 156589
Planned Depth (TMD) (mKB) 1,109.00	Wellbore Original Hole	Head Count 34.0	Personnel Total Hours (hrs) 399.00	Cum Pers Tot Hr (hrs) 1,855.00
Like Kind Category Spring Gully Frac	Road Condition Dry	Weather Mild	Temperature (°C) 24	Wind NNE 9km/h

Operations @ Morning Report
 Drill production hole section @ 885mRT.

Last 24hr Summary
 Continued to pressure test bop's and related equipment. Trouble shot top drive rotary issues. Made up bit and Ran in hole. Completed casing pressure test to 2000psi -10minutes. Drilled out plug, float collar, cement and shoe as well as 2m of new hole. Performed FIT 12.6ppg EMW achieved. Continued to drill ahead from 212m - 706mRT.

24hr Forecast
 Drill production hole section to TD, POOH, run 7" casing, cement casing, Rig down for move to DM 176.

General Remarks
 00:00 - 01:00 Continued to drill f/ 706m - 754m.
 01:00 - 01:30 Circulated hole clean. Prepare for wiper trip to top of Precipice formation.
 01:30 - 02:00 PJSM prior to starting wiper trip. Flow check well (static).
 02:00 - 02:30 POOH f/754mRT - 626mRT. Tight hole encountered
 02:30 - 03:30 Flow checked and Prepared to RIH f/626m - 754mRT. Ran in hole pumping @ 160gpm @ 420psi.
 03:30 - 06:00 Continued to drill f/ 754mRT - 885mRT. 20k WOB, 520gpm, 2110psi SPP, 3000-4000ft/lbs torque.

Daily Contacts
 NIGHT DRLG SUPV, TIM PLAIN, 0477 708 239; DAY DRLG SUPV, SHANE KUSHNYRICH, 0477 708 239; NIGHT DRLG SUPV, DION WILK, 0477 708 239

Last Casing String
 Surface, 508.01mKB

Days LTI and Days RI

Days Since Lost Time Incident (days) 98.00	Days Since Recordable Incident (days) 98.00
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Observation Cards (BST, STOP, etc)

Comment	No. Rpts
1. Rails on stairs to Origin tool shack do not have a place to install safety retainer pins. 2. The guard on the grinder in the tool room is missing.. Item tagged and locked out until a new guard can be sourced. 3. A green rig hand was mixing mud chems without a facemask on. He was told to always wear a mask while mixing chems.	11

Time Log

Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	03:30	3.50	510.00	510.00	SURFAC	CEMENT	PRTS	P	Function tested BOP's. Pressure tested choke line and choke valves and manifold to 250 psi / 2000 psi for 5min/5min. Pressure tested annular to 250psi/1500psi for 5min/5min. Pressure tested pipe rams and blind rams to 250psi/2000psi for 5min/5min. Pressure tested inner and outer HCR's to 250 psi / 2000 psi for 5min/5min. Pressured test inside BOP and stabbing valve to 250 psi / 2000 psi for 5min/5min.
03:30	04:00	0.50	510.00	510.00	SURFAC	CEMENT	SVRG	P	Inspect, service & grease all handling and hydraulic equipment.
04:00	08:00	4.00	510.00	510.00	SURFAC	CEMENT	RGRP	T	Trouble shooted and repaired rotary sensor malfunction. Held tool box safety meeting and raised mast. Tested rotary sensor to ensure it's function and reliability.
08:00	10:00	2.00	510.00	510.00	SURFAC	CEMENT	PRTS	P	Pressure tested annular 250psi low at 5min and 1500psi high at 5min. Pressure tested pipe rams 250psi low and 2000psi hi at 5min.
10:00	10:30	0.50	510.00	510.00	SURFAC	CEMENT	SFTY	P	Safety meeting to lay out test plug and to pick up 8-3/4" BHA.
10:30	14:30	4.00	510.00	510.00	SURFAC	CEMENT	TRIP	P	Picked 8-3/4" motorised (Hemi drill 7/8 lobe 5 stage SN# 700-40-1215482) drilling assembly and ran in the hole to 494m and tagged cement.
14:30	15:00	0.50	510.00	510.00	SURFAC	CEMENT	SFTY	P	BOP drill muster drill with Ensign crew and 3rd party's. Discussed well control, crew positions and responsibilities.
15:00	15:30	0.50	510.00	510.00	SURFAC	CEMENT	CIRC	P	Circulated hole clean, removed air from drill string and set up for casing pressure test.
15:30	16:00	0.50	510.00	510.00	SURFAC	CEMENT	PRTS	P	Pressure tested casing to 2000psi for 10min. Staged fluid volume in .05bbl increments to 590psi with .5bbl for FIT.
16:00	17:30	1.50	510.00	510.00	SURFAC	CEMENT	DRLG	P	Drilled out float collar, cement, float shoe and 2m of new formation from 494m to 512m. Parameters WOB 6-10k lbs, PR 300gpm, SPP 550psi, TQ 1-2.5k ft/lbs
17:30	18:00	0.50	510.00	512.00	SURFAC	CEMENT	CIRC	P	Circulated hole clean at 300gpm, worked shoe area and flow checked 10min.
18:00	18:30	0.50	512.00	512.00	SURFAC	CEMENT	FIT	P	Performed FIT with 361psi surface applied pressue, 8.4mud wt and achieved EMW=12.6ppg.
18:30	19:00	0.50	512.00	522.00	PROD1	DRILL	DRLG	P	Drilled ahead from 512m to 522mRt.
19:00	19:30	0.50	522.00	522.00	PROD1	DRILL	DRLG	T	Repaired stand pipe SIDPP gauge.



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 7/06/2013
 Report #: 5
 Depth Progress: 196.00 m
 Depth End: 706.00 mKB
 Rig Release Date: 9/06/2013

Time Log

Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
19:30	00:00	4.50	522.00	706.00	PROD1	DRILL	DRLG	P	Drilled ahead from 522m to 706mRt.

Fluid / Mud Checks

Time 05:20	Depth (mKB) 840.00	Density (lb/gal) 8.90	Funnel Viscosity (s/qt) 47	pH 9.5	PV Override (cp)	YP Override (lbf/100ft²)
MBT (lb/bbl)	Chlorides (mg/L)	Calcium (mg/L)	Potassium (mg/L)	Sand (%)	T (fl) (°C)	API Filtrate (mL/30min)
Mud Lost to Hole (bbl)	Mud Lost (Surf) (bbl)	Daily Mud Cost 8,874.44	Cumulative Mud Cost 15,436.95	Cum Mud Lost to Surface (bbl)	Cum Mud Lost to Hol...	

Last BOP Drill

Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date	No. Occur
Accumulator Closing Unit Pump Test					
Accumulator Closing Unit Test					
BOP Drill	0	7/06/2013	1	8/06/2013	1
BOP Pressure Test	1	6/06/2013	13	20/06/2013	1

Safety Meetings / Operational Checks

Date	Type	Description	Tour	Comment
7/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Pre-Job Safety Meeting prior to raising mast.
7/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Pre-Job Safety Meeting prior to laying out test plug.
7/06/2013	Pre-Tour Safety Meeting	Pre-Tour Safety Meeting	Day	Pre-Tour Safety Meeting Reviewed & discussed operations with rig crew for upcoming tour.
7/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Pre-Job Safety Meeting prior to making up bit and 8.75" bha.
7/06/2013	BOP Drill	BOP Drill	Day	BOP Drill held with crew, OE WSR, and Rig manager.
7/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Pre-Job Safety Meeting prior to FIT test.

Safety Incidents

Date	Comment	Category

Drill Strings: BHA # 2

Nozzles (3/2")	Depth In (mKB) 510.00	Depth Out (mKB) 980.00	Comment Drilled f/510m-980m
Bit Run 1	Drill Bit 8 3/4in, Reed-Hycalog, S-513M, E171173	IADC Bit Dull 0-0-NO-A-0-0-NO-TD	Length (m) 0.25
			BHA ROP (m/hr) 47.0

Drill String Components

Item Description	ID (in)	OD (in)	Jts	Len (m)	Cum Len (m)
Drill Pipe	3.340	4	87	834.64	980.12
HWDP	2.570	4	3	28.11	145.48
XO Sub	2.813	6 1/4	1	0.81	117.37
Drill Collar	2.813	6 1/2	10	94.80	116.56
MWD - Pathfinder XEM tool	2.000	6 5/16	1	10.90	21.76
XO Sub	2.813	6 1/4	1	1.54	10.86
Float Sub	2.870	6 9/16	1	0.77	9.32
Mud Motor 7/8 Lobe 5 stage, 0.30gal/rev	2.870	6 3/4	1	8.30	8.55

Drilling Parameters: 510.00 - 706.00 mKB

Cum Depth Drilled (m) 196.00	Cum Drilling Time (hrs) 4.00	Interval ROP (m/hr) 49.0	Flow Rate (gpm) 400	Weight on Bit (lbf) 20.0	RPM (rpm) 50
Stand Pipe Pressure (psi) 1,100.0	Drill Str Wt (1000lbf) 60	SO Str Wt (1000lbf) 59	PU Str Wt (1000lbf) 63	Off-Btm Str Wt (1000lbf) 60	Drilling Torque 4.0

Fluid / Mud Additive Amounts

Description	Consumed	Cost (/unit)	Size	Units
Dyna Red F	8.0	35.36	1.0	sacks
Nut Plug M	10.0	33.40	1.0	sacks
AMC PAC L	14.0	115.58	1.0	sacks
AUS-BEN (AUST)	54.0	10.36	1.0	sacks
Residril	64.0	95.00	1.0	sacks

Logs

Type	Date	Run No.	Depth Top (mKB)	Depth Bottom (mKB)	Logging Company

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/100ft)
7/06/2013	610.00	1.19	37.71	609.85	11.68	7.88	8.62	7.88	0.23
7/06/2013	700.00	1.01	302.70	699.84	12.43	9.05	8.53	9.05	0.55
7/06/2013	800.00	0.62	93.30	799.84	12.63	9.50	8.32	9.50	0.48
7/06/2013	900.00	0.70	214.72	899.83	12.36	8.96	8.52	8.96	0.35



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 7/06/2013
Report #: 5
Depth Progress: 196.00 m
Depth End: 706.00 mKB
Rig Release Date: 9/06/2013

Survey Data

Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	Depart (m)	NS (m)	EW (m)	VS (m)	DLS (°/100ft)
7/06/2013	980.00	0.79	241.48	979.83	11.36	8.30	7.75	8.30	0.14

Formations

Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Undifferentiated/WSG			4.30
Eurombah			149.30
Hutton Sandstone			199.30
Upper Evergreen			429.30
Boxvale Sandstone			454.30
Lower Evergreen			474.30
Precipice Sandstone			529.30
Precipice BSF			554.30
Rewan Fm			629.30
Bandanna			869.30
Kaloola			909.30
Black Alley Shale			1,009.30

Pressure Test

Pressure Test	Stage of Oper	Reference	P/T Parameters	Compl...	Date Completed	Confirmed By	Comment
A/B-Section	Wellhead N/U		3000psi/5...	Yes	6/06/2013	DION WILK 0437 212 558	
7" Casing Hanger	Landing Production Casing		3000psi/5...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	
Production Casing	Post Plug Bump		2000psi/10...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 8/06/2013
 Report #: 6
 Depth Progress: 274.00 m
 Depth End: 980.00 mKB
 Rig Release Date: 9/06/2013

State QUEENSLAND	Basin BOWEN	District DURHAM RANCH	Lease PL 203	Well Configuration Type VERTICAL	
Ground Elevation (m) 309.00	Original KB/RT Elevation (m) 313.30	Original Spud Date 5/06/2013	AFE Duration Total (days)	Days From Spud (days) 3.63	
Daily Cost 137,574.92	Cumulative Cost 475,495.35	AFE Amount 544,100.03	AFE + Sup Amount 544,100.03	Project ID# 156589	Work Order
Planned Depth (TMD) (mKB) 1,109.00	Wellbore Original Hole	Head Count 32.0	Personnel Total Hours (hrs) 375.00	Cum Pers Tot Hr (hrs) 2,230.00	
Like Kind Category Spring Gully Frac	Road Condition Dry	Weather Seasonal	Temperature (°C) 25	Wind SE 11km/h	

Operations @ Morning Report
Running 7" production casing

Last 24hr Summary

Continued to drill f/ 706m - 754m. Circulated hole clean. Prepare for wiper trip to top of Precipice formation. PJSM prior to starting wiper trip. Flow check well (static). POOH f/754mRT - 626mRT. Tight hole encountered. Flow checked and Prepared to RIH f/626m - 754mRT. Ran in hole pumping @ 160gpm @ 420psi. Continued to drill f/ 754mRT - 950mRT. Loss circulation encountered. LCM pill pumped and losses cured. Continued to drill f/ 950mRT- 980mRT. Circulate hole clean. POOH with flow checks (pump out of hole from 980mRT - 508mRT). BOP drill held. Layed out BHA. Broke bit and layed out mud motor. PJSM-Rigged to run 7" production casing.

24hr Forecast

Run 7" casing, cement casing, install wellhead, release rig to DM 176, move rig to DM 176, rig up to spud well

General Remarks

00:00 - 06:00 PJSM- Rigged to and ran 7" production casing.(Thread locked shoe and float collar, also tested float valves)

Daily Contacts

NIGHT DRLG SUPV, TIM PLAIN, 0477 708 239; NIGHT DRLG SUPV, DION WILK, 0477 708 239; DAY DRLG SUPV, SHANE KUSHNYRICH, 0477 708 239

Last Casing String

Production, 975.05mKB

Days LTI and Days RI

Days Since Lost Time Incident (days) 99.00	Days Since Recordable Incident (days) 99.00
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Observation Cards (BST, STOP, etc)

Comment	No. Rpts
1. While mixing cement, a fitting was loose on the bulker unit, causing a discharge of 10 liters of cement onto the lease.	5
2. While cementing it was noticed that a third party hand was not wearing his full PPE. The man was instructed to wear ppe at all times.	
3. It was noticed that the middle handle on the 7" casing slips was broken. A new handle was sourced and installed on the slips.	

Time Log

Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	01:00	1.00	706.00	754.00	PROD1	DRILL	DRLG	P	Continued to drill 8 3/4" production hole from 706m to 754m. PU/SO/ROT=74/63/72klbs, WOB=15-19lbs, On/Off btm TQ=5500kft/lbs, pump rate 360gpm, diff 400-500psi, PP 1200psi. Average ROP with connections 48m/hr.
01:00	01:30	0.50	754.00	754.00	PROD1	DRILL	CIRC	P	Circulated hole clean. Prepare for wiper trip to top of Precipice formation.
01:30	02:00	0.50	754.00	754.00	PROD1	DRILL	SFTY	P	PJSM prior to starting wiper trip. Flow check well (static).
02:00	03:30	1.50	754.00	754.00	PROD1	DRILL	TRIP	P	POOH f/754mRT - 626mRT. Tight hole encountered. Flow checked and Prepared to RIH f/626m - 754mRT. Ran in hole pumping @ 160gpm @ 420psi.
03:30	08:00	4.50	754.00	957.00	PROD1	DRILL	DRLG	P	Drilled 8 3/4" production hole from 754m to 957mRT. PU/SO/ROT=74/63/70klbs, WOB=15-20lbs, On/Off btm TQ=8000kft/lbs, pump rate 350-500gpm, diff 500psi, PP 2100psi, survey at 900m 0.7 deg AZ 214.72deg. Average ROP w/connections 47m/hr.
08:00	10:30	2.50	957.00	957.00	PROD1	DRILL	COND	T	Complete losses at 957m (initial losses at 940m). Mixed and pumped 20 bbls of high vis sweep with LCM blend to slow complete losses. Mixed up LCM #4 (pre-mixed prior but lost due to Derrick Man mistake). Pumped and spotted at loss zone and allowed to soak for 1hr. 0 static losses and 0 dynamic losses at 400gpm.
10:30	11:00	0.50	957.00	980.00	PROD1	DRILL	DRLG	P	Drilled 8 3/4" production hole from 957m to 980m. PU/SO/ROT=78/66/76klbs, WOB=15-20lbs, On/Off btm TQ=8000kft/lbs, pump rate 500gpm, diff 400-500psi, PP 2000psi, survey at 970m 0.79 deg AZ 241.48deg. Average ROP w/connections 46m/hr.
11:00	13:00	2.00	980.00	980.00	PROD1	CASING	CIRC	P	Pump 2x high vis sweeps (70vis) and circulated 2x bottoms up (5400stks). Reduced pump rate to due losses 250gpm 0 static and 0 dynamic at 250gpm.
13:00	18:30	5.50	980.00	980.00	PROD1	CASING	TRIP	P	Pumped out of the hole 780m to 654mRT at an over-all average rate of 163m/hr. Pumped and back reamed from 654m to 510m at an average 41m/hr. Flow checked at 976m, 936m, 510m: Well static
18:30	19:00	0.50	980.00	980.00	PROD1	CASING	SFTY	P	Conducted BOP drill with rig crew rig manager and OE WSR. Discussed well control procedures and everyone's roles and responsibilities.
19:00	23:00	4.00	980.00	980.00	PROD1	CASING	TRIP	P	Continued to POOH from 510m to surface at an over-all average rate of 50m/hr. Flow checked at 980m, 930m, 490m, 155m, and surface. Well static



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 8/06/2013
Report #: 6
Depth Progress: 274.00 m
Depth End: 980.00 mKB
Rig Release Date: 9/06/2013

Time Log									
Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
23:00	23:30	0.50	980.00	980.00	PROD1	CASING	TRIP	P	Cleaned, flushed, oiled mud motor and checked bearing play 0 mm. Then laid out. Hole static.
23:30	00:00	0.50	980.00	980.00	PROD1	CASING	SFTY	P	Held Pjsm with OE WSR, rig crew, Ensign RM and HSE. Discussed operational safety and crew responsibilities. Discussed immediate hazrds associated with the job which included: hand placement, roughneck dangers, pinch points between pipe arm, gripper pressure, stump hazards and rolling tubulars.

Fluid / Mud Checks							
Time	Depth (mKB)	Density (lb/gal)	Funnel Viscosity (s/qt)	pH	PV Override (cp)	YP Override (lb/100ft ²)	
12:00	980.00	9.10	42	9.5			
MBT (lb/bbl)	Chlorides (mg/L)	Calcium (mg/L)	Potassium (mg/L)	Sand (%)	T (fl) (°C)	API Filtrate (mL/30min)	
Mud Lost to Hole (bbl)	Mud Lost (Surf) (bbl)	Daily Mud Cost	Cumulative Mud Cost	Cum Mud Lost to Surface (bbl)	Cum Mud Lost to Hol...		
		6,685.20	22,122.15				

Last BOP Drill					
Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date	No. Occur
Accumulator Closing Unit Pump Test					
Accumulator Closing Unit Test					
BOP Drill	0	8/06/2013	1	9/06/2013	2
BOP Pressure Test	2	6/06/2013	12	20/06/2013	1

Safety Meetings / Operational Checks				
Date	Type	Description	Tour	Comment
8/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Night	Pre-Job Safety Meeting prior to wiper trip.
8/06/2013	Pre-Tour Safety Meeting	Pre-Tour Safety Meeting	Night	Reviewed & discussed operations with rig crew for upcoming tour.
8/06/2013	BOP Drill	BOP Drill	Day	Conducted BOP drill prior to Laying out 8.75" BHA.
8/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Night	Pre Job safety meeting on laying down 8-3/4" BHA. Discussed hazards involved with dog collars and reviewed JSA.
8/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Night	Pre-Job Safety Meeting prior to running 7" casing.
8/06/2013	Pre-Tour Meeting	Pre-Tour Meeting	Night	Reviewed & discussed operations with rig crew for upcoming tour.

Safety Incidents		
Date	Comment	Category

Drill Strings: BHA # 2			
Nozzles (f/32")	Depth In (mKB)	Depth Out (mKB)	Comment
	510.00	980.00	Drilled f/510m-980m
Bit Run	Drill Bit	IADC Bit Dull	Length (m)
1	8 3/4in, Reed-Hycalog, S-513M, E171173	0-0-NO-A-0-0-NO-TD	0.25
			BHA ROP (m/hr)
			47.0

Drill String Components						
Item Description	ID (in)	OD (in)	Jts	Len (m)	Cum Len (m)	
Drill Pipe	3.340	4	87	834.64	980.12	
HWDP	2.570	4	3	28.11	145.48	
XO Sub	2.813	6 1/4	1	0.81	117.37	
Drill Collar	2.813	6 1/2	10	94.80	116.56	
MWD - Pathfinder XEM tool	2.000	6 5/16	1	10.90	21.76	
XO Sub	2.813	6 1/4	1	1.54	10.86	
Float Sub	2.870	6 9/16	1	0.77	9.32	
Mud Motor 7/8 Lobe 5 stage, 0.30gal/rev	2.870	6 3/4	1	8.30	8.55	

Drilling Parameters: 706.00 - 980.00 mKB					
Cum Depth Drilled (m)	Cum Drilling Time (hrs)	Interval ROP (m/hr)	Flow Rate (gpm)	Weight on Bit (lbf)	RPM (rpm)
470.00	10.00	45.7	500	20.0	60
Stand Pipe Pressure (psi)	Drill Str Wt (1000lbf)	SO Str Wt (1000lbf)	PU Str Wt (1000lbf)	Off-Btm Str Wt (1000lbf)	Drilling Torque
2,100.0	82	79	85	82	5.0

Fluid / Mud Additive Amounts				
Description	Consumed	Cost (/unit)	Size	Units
Stonedust	11.0	13.53	1.0	sacks
Residrill	5.0	95.00	1.0	sacks
Nut Plug M	32.0	33.40	1.0	sacks
Nut Plug F	14.0	35.60	1.0	sacks
Nut Plug C	12.0	28.11	1.0	sacks
Limestone T	10.0	28.13	1.0	sacks
Dyna Red F	45.0	35.36	1.0	sacks
Drispac Plus - Regular	5.0	142.83	1.0	sacks
AUS-BEN (AUST)	40.0	10.36	1.0	sacks



Daily Drilling
DURHAM RANCH 175
Rig: ENSIGN 64

Report Date: 8/06/2013
 Report #: 6
 Depth Progress: 274.00 m
 Depth End: 980.00 mKB
 Rig Release Date: 9/06/2013

Fluid / Mud Additive Amounts

Description	Consumed	Cost (/unit)	Size	Units
AMC PAC L	10.0	115.58	1.0	sacks

Logs

Type	Date	Run No.	Depth Top (mKB)	Depth Bottom (mKB)	Logging Company

Formations

Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Undifferentiated/WSG			4.30
Eurombah			149.30
Hutton Sandstone			199.30
Upper Evergreen			429.30
Boxvale Sandstone			454.30
Lower Evergreen			474.30
Precipice Sandstone			529.30
Precipice BSF			554.30
Rewan Fm			629.30
Bandanna			869.30
Kaloola			909.30
Black Alley Shale			1,009.30

Pressure Test

Pressure Test	Stage of Oper	Reference	P/T Parameters	Compl...	Date Completed	Confirmed By	Comment
A/B-Section	Wellhead N/U		3000psi/5...	Yes	6/06/2013	DION WILK 0437 212 558	
7" Casing Hanger	Landing Production Casing		3000psi/5...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	
Production Casing	Post Plug Bump		2000psi/10...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 9/06/2013
 Report #: 7
 Depth Progress: 0.00 m
 Depth End: 980.00 mKB
 Rig Release Date: 9/06/2013

State QUEENSLAND	Basin BOWEN	District DURHAM RANCH	Lease PL 203	Well Configuration Type VERTICAL
Ground Elevation (m) 309.00	Original KB/RT Elevation (m) 313.30	Original Spud Date 5/06/2013	AFE Duration Total (days)	Days From Spud (days) 4.46
Daily Cost 119,472.34	Cumulative Cost 594,967.69	AFE Amount 544,100.03	AFE + Sup Amount 544,100.03	Project ID# 156589
Planned Depth (TMD) (mKB) 1,109.00	Wellbore Original Hole	Head Count 32.0	Personnel Total Hours (hrs) 375.00	Cum Pers Tot Hr (hrs) 2,605.00
Like Kind Category Spring Gully Frac	Road Condition Good	Weather Cloudy	Temperature (°C) 23	Wind SW 15km/h

Operations @ Morning Report
 Rig released..See Durham Ranch 176

Last 24hr Summary
 Rigged to and ran 7" production casing to 975.05mRT(Thread locked shoe and float collar, also tested float valves). Experienced fluid losses @ casing setting depth. Cured losses. Waited on Halliburton cements. Pumped 112.8bbbls of tuned light lead slurry at 9.5ppg at a rate of 3.9BPM and 45bbbls of 13.5ppg CBM Cem tail cement slurry at 3.5bbbls/min. Dropped top plug and switched to biocide treated water for displacement. Displaced 40bbbls at 3.4bbl/min, 10bbbls at 3bbl/min, 20bbbls at 2.5bbbls/min and 53bbbls at 1-2bbl/min. Total displacement 123bbbl's. No cement or spacer returns to surface. Final circulating pressure 400psi, bumped plug and held 2000psi for 10min. float held and 1bbl bled back. Cement returns to surface 0bbbls. Rigged down Bop's and rig package. Rig released @ 20:00hrs 9/06/2013.

24hr Forecast
 Rig down rig package, move rig to DM 176, rig up to spud well.

General Remarks
 Rig released to Durham Ranch 176 @ 20:00 hrs 9/6/2013. See Durham Ranch 176.

Daily Contacts
 DAY DRLG SUPV, SHANE KUSHNYRICH, 0477 708 239; NIGHT DRLG SUPV, TIM PLAIN, 0477 708 239; NIGHT DRLG SUPV, DION WILK, 0477 708 239

Last Casing String
 Production, 975.05mKB

Days LTI and Days RI

Days Since Lost Time Incident (days) 100.00	Days Since Recordable Incident (days) 100.00
--	---

Observation Cards (BST, STOP, etc)	Comment	No. Rpts
1. A hose on the day tank had a small leak. The hose was changed out for a new one.		5
2. The windshield wipers on the doghouse are in disrepair and need to be changed out.		
3. It was noticed that the middle handle on the 7" casing slips was broken. A new handle was sourced and installed on the slips.		

Time Log									
Start Time	End Time	Dur (hrs)	Depth Start (mKB)	Depth End (mKB)	Phase	Op Code	Activity Code	Time P-T-X	Operation
00:00	07:00	7.00	980.00	980.00	PROD1	CASING	RNCS	P	Ran in the hole with 7", 23 lb/ft N80 production casing to 960m filling every 5 joints. Tagged bridge at 960m and washed down to 980mRT TD, with 8m fill.
07:00	08:00	1.00	980.00	980.00	PROD1	CASING	CIRC	P	Circulated two times bottoms at 3.6bbl/min SPP 82psi.
08:00	09:00	1.00	980.00	980.00	PROD1	CASING	CIRC	T	Encured losses of 240bbl/hr. Pumped 80bbbls of LCM pill#4 and cured.
09:00	12:30	3.50	980.00	980.00	PROD1	CASING	CIRC	T	Halliburton arrived at 0700hrs, they were called from camp at 0500hrs. Crew brought pumper to location, but had to go back to camp to retrieve bulkers. Crew had to call Roma for missed chemicals on DM 175 order. Rigged in units to perform cement job. Landed out 7" casing hanger as Halliburton got close to being rigged in at 1120hrs.
12:30	13:00	0.50	980.00	980.00	PROD1	CEMENT	SFTY	P	Held safety meeting with crew, Halliburton crew and OE WSR. Discussd hazards associated with cement job.: pressures, chemicals, rig up and communication
13:00	13:30	0.50	980.00	980.00	PROD1	CEMENT	CMNT	P	Blended 9.5ppg tuned light cement for lead.
13:30	16:30	3.00	980.00	980.00	PROD1	CEMENT	CMNT	P	Pumped 10bbl's of 9.5bbl gel spacer and pressure tested surface lines to 3000psi for 5min. Continued to pump a further 10bbl's of spacer. Pumped 112.8bbbls of tuned light lead slurry at 9.5ppg at a rate of 3.9BPM and 45bbbls of 13.5ppg CBM Cem tail cement slurry at 3.5bbbls/min. Dropped top plug and switched to biocide treated water for displacement. Displaced 40bbbls at 3.4bbl/min, 10bbbls at 3bbl/min, 20bbbls at 2.5bbbls/min and 53bbbls at 1-2bbl/min. Total displacement 123bbbl's. No cement or spacer returns to surface. Final circulating pressure 400psi, bumped plug and held 2000psi for 10min. float held and 1bbl bled back. Cement returns to surface 0bbbls.
16:30	17:00	0.50	980.00	980.00	DEMOB	MOVE	RURD	P	Rigged down halliburton.
17:00	20:00	3.00	980.00	980.00	DEMOB	MOVE	RURD	P	Unscrewed landing joint and laid out. Nipped down BOP and laid out. Cleaned mud tanks. Rig released @ 20:00hrs 9/6/2013.

Fluid / Mud Checks						
Time	Depth (mKB)	Density (lb/gal)	Funnel Viscosity (s/qt)	pH	PV Override (cp)	YP Override (lbf/100ft²)
12:00	980.00	8.90	34	9.0		
MBT (lb/bbl)	Chlorides (mg/L)	Calcium (mg/L)	Potassium (mg/L)	Sand (%)	T (fl) (°C)	API Filtrate (mL/30min)
Mud Lost to Hole (bbl)	Mud Lost (Surf) (bbl)	Daily Mud Cost	Cumulative Mud Cost	Cum Mud Lost to Surface (bbl)	Cum Mud Lost to Hol...	
			22,122.15			



Daily Drilling

DURHAM RANCH 175

Rig: ENSIGN 64

Report Date: 9/06/2013
Report #: 7
Depth Progress: 0.00 m
Depth End: 980.00 mKB
Rig Release Date: 9/06/2013

Last BOP Drill

Type	Days Since Last Check (days)	Last Date	Days Until Next Check (days)	Next Date	No. Occur
Accumulator Closing Unit Pump Test					
Accumulator Closing Unit Test					
BOP Drill	0	8/06/2013	1	10/06/2013	2
BOP Pressure Test	2	6/06/2013	12	21/06/2013	1

Safety Meetings / Operational Checks

Date	Type	Description	Tour	Comment
9/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Held PJSM w/rig crew & WSR prior to making up 7" production casing and running in hole. Discussed hazards involved and role and responsibilities.
9/06/2013	Pre-Tour Safety Meeting	Pre-Tour Safety Meeting	Day	Reviewed & discussed operations with rig crew for upcoming tour.
9/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Held PJSM w/rig crew, Halliburton & WSR prior to conducting production cement job.
9/06/2013	Pre-Job Safety Meeting	Pre-Job Safety Meeting	Day	Discussed procedures & hazards w/rig crew, prior to nipping down the BOP's

Safety Incidents

Date	Comment	Category

Drill Strings: BHA # <BHA No.??>

Nozzles (32")	Depth In (mKB)	Depth Out (mKB)	Comment
Bit Run	Drill Bit	IADC Bit Dull	Length (m) BHA ROP (m/hr)

Drill String Components

Item Description	ID (in)	OD (in)	Jts	Len (m)	Cum Len (m)

Drilling Parameters:

Cum Depth Drilled (m)	Cum Drilling Time (hrs)	Interval ROP (m/hr)	Flow Rate (gpm)	Weight on Bit (lbf)	RPM (rpm)
Stand Pipe Pressure (psi)	Drill Str Wt (1000lbf)	SO Str Wt (1000lbf)	PU Str Wt (1000lbf)	Off-Btm Str Wt (1000lbf)	Drilling Torque

Fluid / Mud Additive Amounts

Description	Consumed	Cost (/unit)	Size	Units

Cement Fluids

Production Casing cement job - Lead Cement, Top: 4.65 mKB; Bottom: 664.50 mKB

Density (lb/gal)	Class	Volume Pumped (bbl)	Cmnt Rtrn (bbl)	Top Measurement Method	
9.50	A	112.3	0.0		
CmprStr 1 (psi)	CmprStr 2 (psi)	Time of 1st Compressive Strength Test (hrs)	Time of 2nd Compressive Strength Test (hrs)	T(compr str) (°C)	
900.0	1,602.0	24.00	72.00	52	
Type	Add	Amount	Amount Units	Conc	Conc Unit
Cement	9.5 ppg TLC R1	200.0	sk		lb/sk
Defoamer	NF-6	0.0	gal	0.25	gal/10bbl
Fluid Loss	Halad 344	120.0	lb	0.6	%BWOC
Friction Reducer	CFR-3	200.0	lb	1.0	%BWOC
Lost Circulation Material	Phenoseal	400.0	lb	2.0	%BWOC
Lost Circulation Material	Pol-E-Flake	50.0	lb	0.25	%BWOC
Retarder	HR-5	40.0	lb	0.2	%BWOC

Production Casing cement job - Tail Cement, Top: 664.50 mKB; Bottom: 980.00 mKB

Density (lb/gal)	Class	Volume Pumped (bbl)	Cmnt Rtrn (bbl)	Top Measurement Method	
13.50	A	45.0	0.0		
CmprStr 1 (psi)	CmprStr 2 (psi)	Time of 1st Compressive Strength Test (hrs)	Time of 2nd Compressive Strength Test (hrs)	T(compr str) (°C)	
100.0	1,947.0	3.50	24.00	61	
Type	Add	Amount	Amount Units	Conc	Conc Unit
Accelerator	Cal Seal 60	145.0	lb	1.0	%BWOC
Cement	35:65 Poz A	167.0	sk		lb/sk
Defoamer	NF-6	0.0	gal	0.25	gal/10bbl
Extender	Bentonite	436.0	lb	3.0	%BWOC
Fluid Loss	Halad 344	73.0	lb	0.5	%BWOC
Friction Reducer	CFR-3	58.0	lb	0.4	%BWOC
Lost Circulation Material	Phenoseal	291.0	lb	2.0	%BWOC
Lost Circulation Material	Pol-E-Flake	36.0	lb	0.25	%BWOC
Retarder	HR-5	44.0	lb	0.3	%BWOC

Logs

Type	Date	Run No.	Depth Top (mKB)	Depth Bottom (mKB)	Logging Company



Daily Drilling
DURHAM RANCH 175
 Rig: ENSIGN 64

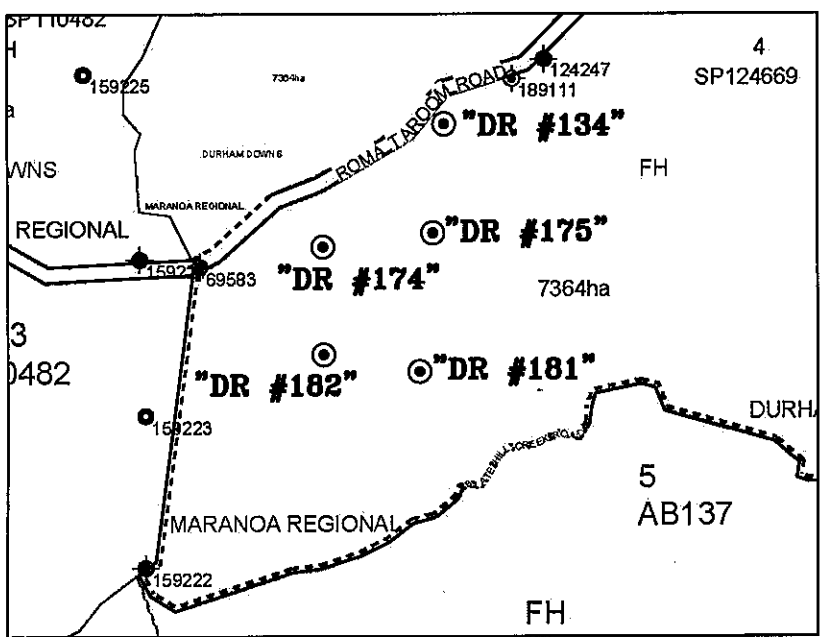
Report Date: 9/06/2013
 Report #: 7
 Depth Progress: 0.00 m
 Depth End: 980.00 mKB
 Rig Release Date: 9/06/2013

Formations			
Formation Name	Drill Top MD (mKB)	Drill Top TVD (mKB)	Prog Top TVD (mKB)
Undifferentiated/WSG			4.30
Eurombah			149.30
Hutton Sandstone			199.30
Upper Evergreen			429.30
Boxvale Sandstone			454.30
Lower Evergreen			474.30
Precipice Sandstone			529.30
Precipice BSF			554.30
Rewan Fm			629.30
Bandanna			869.30
Kaloola			909.30
Black Alley Shale			1,009.30

Pressure Test							
Pressure Test	Stage of Oper	Reference	P/T Parameters	Compl...	Date Completed	Confirmed By	Comment
A/B-Section	Wellhead N/U		3000psi/5...	Yes	6/06/2013	DION WILK 0437 212 558	
7" Casing Hanger	Landing Production Casing		3000psi/5...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	
Production Casing	Post Plug Bump		2000psi/10...	Yes	9/06/2013	SHANE KUSHNYRICH 0437 212 558	

APPENDIX 3 – WELL LOCATION SURVEY

SURVEY PLAN



Locality

MGA CO-ORDINATES ZONE 55

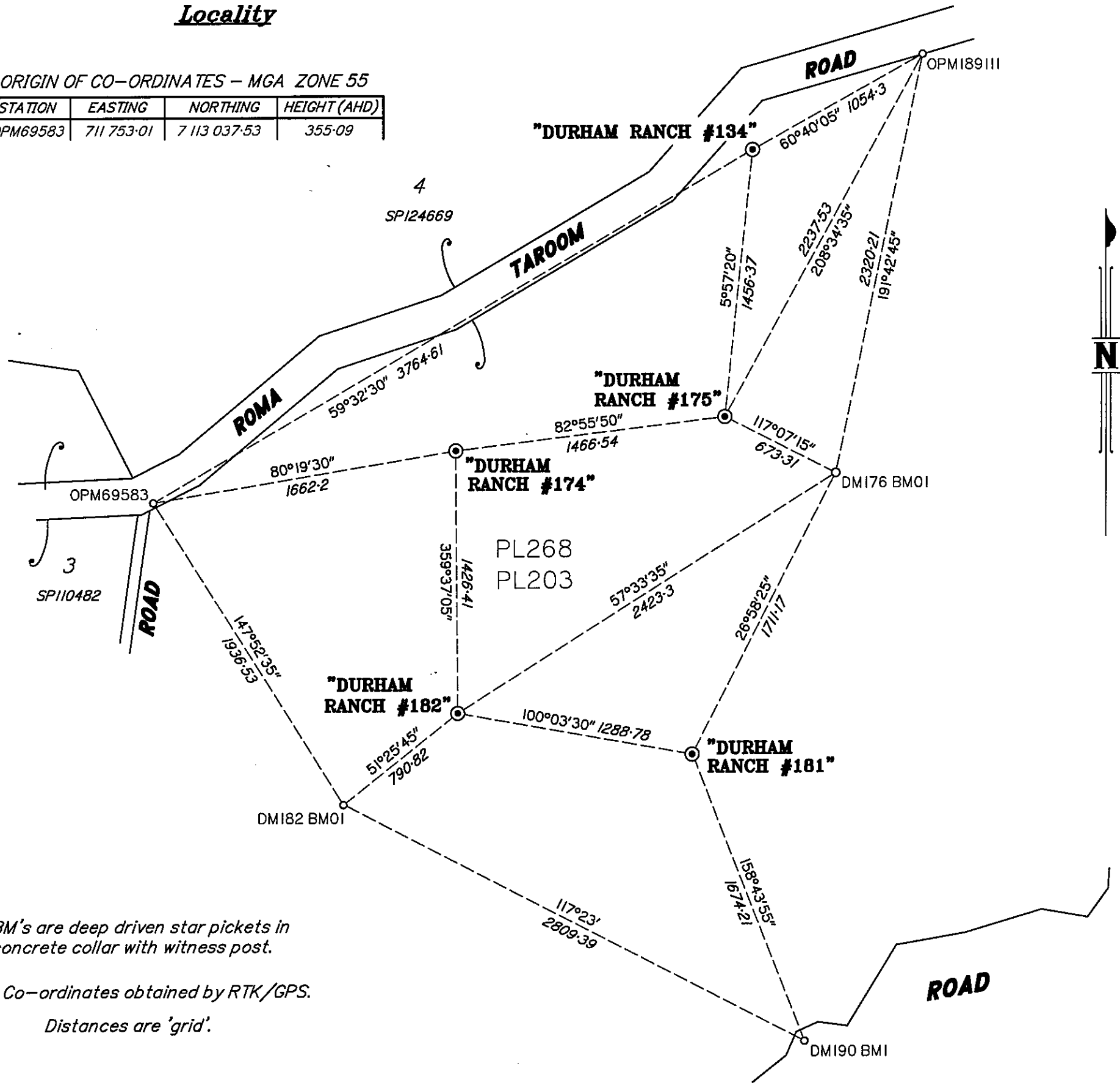
STATION	EASTING	NORTHING	HT (AHD)
OPM189111	715 917-025	7 115 462-22	289-32
DM182 BM01	712 782-740	7 111 397-468	337-842
DM176 BM01	715 446-065	7 113 190-42	314-89
DM190 BM01	715 277-21	7 110 105-38	323-235
"DURHAM RANCH #134"	714 997-93	7 114 945-79	308-350 (GL)
"DURHAM RANCH #174"	713 391-495	7 113 316-87	321-140 (GL)
"DURHAM RANCH #175"	714 846-81	7 113 497-34	308-210 (GL)
"DURHAM RANCH #181"	714 669-93	7 111 665-48	304-580 (GL)
"DURHAM RANCH #182"	713 401-02	7 111 890-56	328-940 (GL)

GEOGRAPHICAL CO-ORDINATES GDA ZONE 55

STATION	LATITUDE	LONGITUDE	CONVERGENCE
"DURHAM RANCH #134"	-26°04'06.98351"	149°08'57.29742"	0°56'41.441"
"DURHAM RANCH #174"	-26°05'00.75562"	149°08'00.47692"	0°56'18.242"
"DURHAM RANCH #175"	-26°04'54.11621"	149°08'52.72088"	0°56'41.015"
"DURHAM RANCH #181"	-26°05'53.71741"	149°08'47.44442"	0°56'40.698"
"DURHAM RANCH #182"	-26°05'47.08346"	149°08'01.66028"	0°56'20.312"

ORIGIN OF CO-ORDINATES - MGA ZONE 55

STATION	EASTING	NORTHING	HEIGHT (AHD)
OPM69583	711 753-01	7 113 037-53	355-09

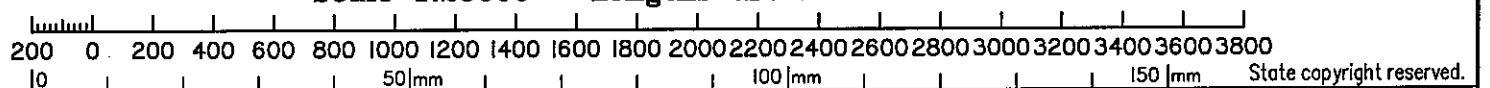


BM's are deep driven star pickets in concrete collar with witness post.

Co-ordinates obtained by RTK/GPS.

Distances are 'grid'.

Scale 1:25000 - Lengths are in Metres.



I, Andrew John CAMPBELL hereby certify that I have surveyed the location of the petroleum well as shown on this plan, that the survey was performed in accordance with the Petroleum and Gas (Production and Safety) Act 2004 and associated Regulations and Standards and achieves the accuracies of the Standards and the survey was completed on 19/09/13.

A.J. Campbell Licensed Surveyor
Date 27.9.2013

MINING RESOURCES

Plan of "Durham Ranch #134, #174, #175, #181 & 182"

PARISH: **DURHAM** COUNTY: **Aberdeen**
LOCALITY: **Durham Downs** LOCAL AUTHORITY: **Maranoa R.C.**

SCALE: **1:25000**

Mining District: **Dalby**

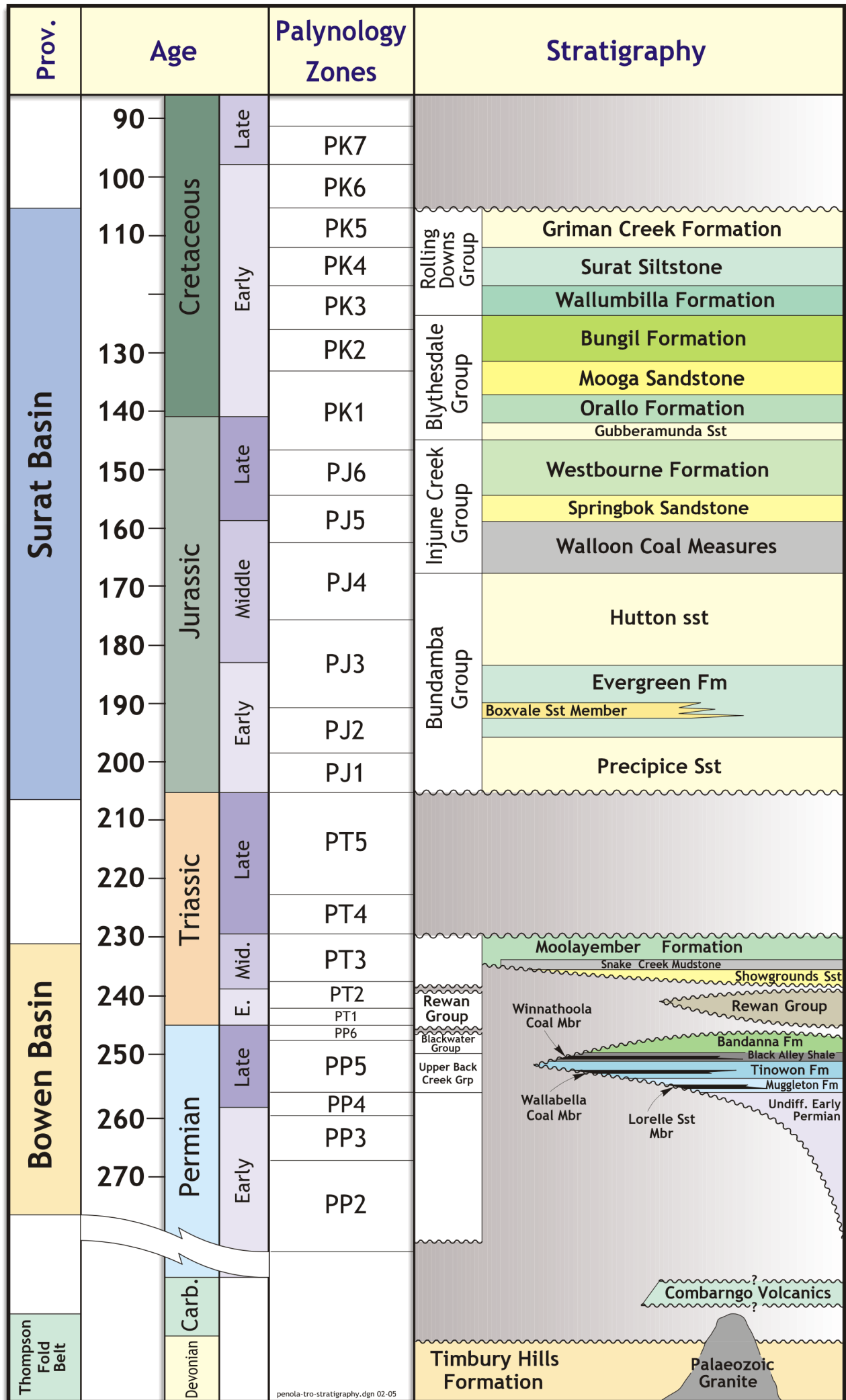
MP43742

Catalogued: Examined: Registered: Chief Surveyor

Drawn by: **MAL** Meridian: **MGA by RTK/GPS**

Field Notes: **NO**

APPENDIX 4 – BOWEN BASIN STRATIGRAPHY



APPENDIX 5 – CASING TALLIES



Casing Tally

DURHAM RANCH 175

Hint: You must first enter the Casing Section information. You can then enter joints through a casing tally if you want. Double-click on the tally section of this report then click on the "Edit Tally" button that will appear on the right side of the window on the right.

Casing Section Information

Casing Description Surface	Set Depth (mKB) 508.01	Run Date 6/06/2013
-------------------------------	---------------------------	-----------------------

Casing Run Tally

Run?	Ref No.	Item Description	OD Nominal (in)	Wt (lbs/ft)	Grade	Top Thread	Len (m)	Centralized?	Ext Jwly	Top (mKB)	Cum Len (m)
Yes	1	Float shoe	9 5/8	36.00	K-55	BTC	0.50	No		507.51	0.50
Yes	1	Casing Joints	9 5/8	36.00	K-55	BTC	11.86	Yes		495.65	12.36
Yes	1	Float Collar	9 5/8	36.00	K-55	BTC	0.38	No		495.27	12.74
Yes	2	Casing Joints	9 5/8	36.00	K-55	BTC	11.49	Yes		483.78	24.23
Yes	3	Casing Joints	9 5/8	36.00	K-55	BTC	11.59	No		472.19	35.82
Yes	4	Casing Joints	9 5/8	36.00	K-55	BTC	11.57	No		460.62	47.39
Yes	5	Casing Joints	9 5/8	36.00	K-55	BTC	11.75	Yes		448.87	59.14
Yes	6	Casing Joints	9 5/8	36.00	K-55	BTC	11.70	No		437.17	70.84
Yes	7	Casing Joints	9 5/8	36.00	K-55	BTC	11.77	No		425.40	82.61
Yes	8	Casing Joints	9 5/8	36.00	K-55	BTC	11.66	Yes		413.74	94.27
Yes	9	Casing Joints	9 5/8	36.00	K-55	BTC	11.76	No		401.98	106.03
Yes	10	Casing Joints	9 5/8	36.00	K-55	BTC	11.31	No		390.67	117.34
Yes	11	Casing Joints	9 5/8	36.00	K-55	BTC	11.22	Yes		379.45	128.56
Yes	12	Casing Joints	9 5/8	36.00	K-55	BTC	11.25	No		368.20	139.81
Yes	13	Casing Joints	9 5/8	36.00	K-55	BTC	11.34	No		356.86	151.15
Yes	14	Casing Joints	9 5/8	36.00	K-55	BTC	11.12	Yes		345.74	162.27
Yes	15	Casing Joints	9 5/8	36.00	K-55	BTC	11.12	No		334.62	173.39
Yes	16	Casing Joints	9 5/8	36.00	K-55	BTC	11.12	No		323.50	184.51
Yes	17	Casing Joints	9 5/8	36.00	K-55	BTC	11.01	Yes		312.49	195.52
Yes	18	Casing Joints	9 5/8	36.00	K-55	BTC	11.08	No		301.41	206.60
Yes	19	Casing Joints	9 5/8	36.00	K-55	BTC	11.35	No		290.06	217.95
Yes	20	Casing Joints	9 5/8	36.00	K-55	BTC	11.30	Yes		278.76	229.25
Yes	21	Casing Joints	9 5/8	36.00	K-55	BTC	11.12	No		267.64	240.37
Yes	22	Casing Joints	9 5/8	36.00	K-55	BTC	11.07	No		256.57	251.44
Yes	23	Casing Joints	9 5/8	36.00	K-55	BTC	11.22	Yes		245.35	262.66
Yes	24	Casing Joints	9 5/8	36.00	K-55	BTC	11.17	No		234.18	273.83
Yes	25	Casing Joints	9 5/8	36.00	K-55	BTC	11.23	No		222.95	285.06
Yes	26	Casing Joints	9 5/8	36.00	K-55	BTC	11.13	Yes		211.82	296.19
Yes	27	Casing Joints	9 5/8	36.00	K-55	BTC	11.12	No		200.70	307.31
Yes	28	Casing Joints	9 5/8	36.00	K-55	BTC	11.70	No		189.00	319.01
Yes	29	Casing Joints	9 5/8	36.00	K-55	BTC	11.62	Yes		177.38	330.63
Yes	30	Casing Joints	9 5/8	36.00	K-55	BTC	11.19	No		166.19	341.82
Yes	31	Casing Joints	9 5/8	36.00	K-55	BTC	11.12	No		155.07	352.94
Yes	32	Casing Joints	9 5/8	36.00	K-55	BTC	11.15	Yes		143.92	364.09
Yes	33	Casing Joints	9 5/8	36.00	K-55	BTC	11.85	No		132.07	375.94
Yes	34	Casing Joints	9 5/8	36.00	K-55	BTC	11.68	No		120.39	387.62
Yes	35	Casing Joints	9 5/8	36.00	K-55	BTC	11.78	Yes		108.61	399.40
Yes	36	Casing Joints	9 5/8	36.00	K-55	BTC	10.96	No		97.65	410.36
Yes	37	Casing Joints	9 5/8	36.00	K-55	BTC	11.82	No		85.83	422.18
Yes	38	Casing Joints	9 5/8	36.00	K-55	BTC	11.27	Yes		74.56	433.45
Yes	39	Casing Joints	9 5/8	36.00	K-55	BTC	11.73	No		62.83	445.18
Yes	40	Casing Joints	9 5/8	36.00	K-55	BTC	11.87	No		50.96	457.05
Yes	41	Casing Joints	9 5/8	36.00	K-55	BTC	11.73	Yes		39.23	468.78
Yes	42	Casing Joints	9 5/8	36.00	K-55	BTC	11.28	No		27.95	480.06
Yes	43	Casing Joints	9 5/8	36.00	K-55	BTC	11.42	No		16.53	491.48
Yes	44	Casing Joints	9 5/8	36.00	K-55	BTC	11.63	No		4.90	503.11
Yes	1	9-5/8" STS Casing Head	9 5/8	36.00	K-55		0.71	No		4.19	503.82



Casing Tally

DURHAM RANCH 175

Hint: You must first enter the Casing Section information. You can then enter joints through a casing tally if you want. Double-click on the tally section of this report then click on the "Edit Tally" button that will appear on the right side of the window on the right.

Casing Section Information		
Casing Description Production	Set Depth (mKB) 975.05	Run Date 8/06/2013

Casing Run Tally

Run?	Ref No.	Item Description	OD Nominal (in)	Wt (lbs/ft)	Grade	Top Thread	Len (m)	Centralized?	Ext Jwly	Top (mKB)	Cum Len (m)
Yes	1	Float Shoe	7	23.00	N-80	BTC	0.50	No		974.55	0.50
Yes	2	Casing Joints	7	23.00	N-80	BTC	11.13	Yes		963.42	11.63
Yes	3	Casing Joints	7	23.00	N-80	BTC	11.17	No		952.25	22.80
Yes	4	Float Collar	7	23.00	N-80	BTC	0.37	Yes		951.88	23.17
Yes	5	Casing Joints	7	23.00	N-80	BTC	11.26	No		940.62	34.43
Yes	6	Casing Joints	7	23.00	N-80	BTC	11.22	Yes		929.40	45.65
Yes	7	Casing Joints	7	23.00	N-80	BTC	11.42	No		917.98	57.07
Yes	8	Casing Joints	7	23.00	N-80	BTC	11.46	Yes		906.52	68.53
Yes	9	Casing Joints	7	23.00	N-80	BTC	11.62	No		894.90	80.15
Yes	10	Casing Joints	7	23.00	N-80	BTC	11.16	Yes		883.74	91.31
Yes	11	Casing Joints	7	23.00	N-80	BTC	11.30	No		872.44	102.61
Yes	12	Casing Joints	7	23.00	N-80	BTC	11.22	Yes		861.22	113.83
Yes	13	Casing Joints	7	23.00	N-80	BTC	11.45	No		849.77	125.28
Yes	14	Casing Joints	7	23.00	N-80	BTC	11.12	Yes		838.65	136.40
Yes	15	Casing Joints	7	23.00	N-80	BTC	11.18	No		827.47	147.58
Yes	16	Casing Joints	7	23.00	N-80	BTC	11.01	Yes		816.46	158.59
Yes	17	Casing Joints	7	23.00	N-80	BTC	11.15	No		805.31	169.74
Yes	18	Casing Joints	7	23.00	N-80	BTC	11.15	Yes		794.16	180.89
Yes	19	Casing Joints	7	23.00	N-80	BTC	11.36	No		782.80	192.25
Yes	20	Casing Pup Joints	7	23.00	N-80	BTC	1.05	Yes		771.75	193.30
Yes	21	Casing Joints	7	23.00	N-80	BTC	11.31	Yes		770.44	204.61
Yes	22	Casing Joints	7	23.00	N-80	BTC	11.20	No		759.24	215.81
Yes	23	Casing Joints	7	23.00	N-80	BTC	11.53	Yes		747.71	227.34
Yes	24	Casing Joints	7	23.00	N-80	BTC	11.33	No		736.38	238.67
Yes	25	Casing Joints	7	23.00	N-80	BTC	11.24	Yes		725.14	249.91
Yes	26	Casing Joints	7	23.00	N-80	BTC	11.21	No		713.93	261.12
Yes	27	Casing Joints	7	23.00	N-80	BTC	11.21	Yes		702.72	272.33
Yes	28	Casing Joints	7	23.00	N-80	BTC	11.36	No		691.36	283.69
Yes	29	Casing Joints	7	23.00	N-80	BTC	11.14	Yes		680.22	294.83
Yes	30	Casing Joints	7	23.00	N-80	BTC	11.15	No		669.07	305.98
Yes	31	Casing Joints	7	23.00	N-80	BTC	11.04	Yes		658.03	317.02
Yes	32	Casing Joints	7	23.00	N-80	BTC	11.40	No		646.63	328.42
Yes	33	Casing Joints	7	23.00	N-80	BTC	11.05	Yes		635.58	339.47
Yes	34	Casing Joints	7	23.00	N-80	BTC	11.39	No		624.19	350.86
Yes	35	Casing Joints	7	23.00	N-80	BTC	10.95	Yes		613.24	361.81
Yes	36	Casing Joints	7	23.00	N-80	BTC	11.22	No		602.02	373.03
Yes	37	Casing Joints	7	23.00	N-80	BTC	11.10	Yes		590.92	384.13
Yes	38	Casing Joints	7	23.00	N-80	BTC	11.32	No		579.60	395.45
Yes	39	Casing Joints	7	23.00	N-80	BTC	11.02	Yes		568.58	406.47
Yes	40	Casing Joints	7	23.00	N-80	BTC	11.13	No		557.45	417.60
Yes	41	Casing Joints	7	23.00	N-80	BTC	11.32	Yes		546.13	428.92
Yes	42	Casing Joints	7	23.00	N-80	BTC	11.23	No		534.90	440.15
Yes	43	Casing Joints	7	23.00	N-80	BTC	10.90	Yes		524.00	451.05
Yes	44	Casing Joints	7	23.00	N-80	BTC	11.26	No		512.74	462.31
Yes	45	Casing Joints	7	23.00	N-80	BTC	11.00	Yes		501.74	473.31
Yes	46	Casing Joints	7	23.00	N-80	BTC	11.24	No		490.50	484.55
Yes	47	Casing Joints	7	23.00	N-80	BTC	11.22	Yes		479.28	495.77
Yes	48	Casing Joints	7	23.00	N-80	BTC	11.35	No		467.93	507.12
Yes	49	Casing Joints	7	23.00	N-80	BTC	11.34	No		456.59	518.46
Yes	50	Casing Joints	7	23.00	N-80	BTC	11.30	Yes		445.29	529.76
Yes	51	Casing Joints	7	23.00	N-80	BTC	10.93	No		434.36	540.69
Yes	52	Casing Joints	7	23.00	N-80	BTC	11.44	No		422.92	552.13
Yes	53	Casing Joints	7	23.00	N-80	BTC	11.30	Yes		411.62	563.43
Yes	54	Casing Joints	7	23.00	N-80	BTC	11.05	No		400.57	574.48
Yes	55	Casing Joints	7	23.00	N-80	BTC	11.32	No		389.25	585.80
Yes	56	Casing Joints	7	23.00	N-80	BTC	11.50	Yes		377.75	597.30
Yes	57	Casing Joints	7	23.00	N-80	BTC	11.10	No		366.65	608.40
Yes	58	Casing Joints	7	23.00	N-80	BTC	11.38	No		355.27	619.78



Casing Tally

DURHAM RANCH 175

Hint: You must first enter the Casing Section information. You can then enter joints through a casing tally if you want. Double-click on the tally section of this report then click on the "Edit Tally" button that will appear on the right side of the window on the right.

Casing Run Tally

Run?	Ref No.	Item Description	OD Nominal (in)	Wt (lbs/ft)	Grade	Top Thread	Len (m)	Centralized?	Ext Jwly	Top (mKB)	Cum Len (m)
Yes	59	Casing Joints	7	23.00	N-80	BTC	10.90	Yes		344.37	630.68
Yes	60	Casing Joints	7	23.00	N-80	BTC	11.14	No		333.23	641.82
Yes	61	Casing Joints	7	23.00	N-80	BTC	11.35	No		321.88	653.17
Yes	62	Casing Joints	7	23.00	N-80	BTC	11.31	Yes		310.57	664.48
Yes	63	Casing Joints	7	23.00	N-80	BTC	11.40	No		299.17	675.88
Yes	64	Casing Joints	7	23.00	N-80	BTC	11.18	No		287.99	687.06
Yes	65	Casing Joints	7	23.00	N-80	BTC	11.39	Yes		276.60	698.45
Yes	66	Casing Joints	7	23.00	N-80	BTC	11.00	No		265.60	709.45
Yes	67	Casing Joints	7	23.00	N-80	BTC	11.39	No		254.21	720.84
Yes	68	Casing Joints	7	23.00	N-80	BTC	11.04	Yes		243.17	731.88
Yes	69	Casing Joints	7	23.00	N-80	BTC	10.96	No		232.21	742.84
Yes	70	Casing Joints	7	23.00	N-80	BTC	11.26	No		220.95	754.10
Yes	71	Casing Joints	7	23.00	N-80	BTC	11.37	Yes		209.58	765.47
Yes	72	Casing Joints	7	23.00	N-80	BTC	11.52	No		198.06	776.99
Yes	73	Casing Joints	7	23.00	N-80	BTC	11.81	No		186.25	788.80
Yes	74	Casing Joints	7	23.00	N-80	BTC	11.65	Yes		174.60	800.45
Yes	75	Casing Joints	7	23.00	N-80	BTC	11.50	No		163.10	811.95
Yes	76	Casing Joints	7	23.00	N-80	BTC	11.28	No		151.82	823.23
Yes	77	Casing Joints	7	23.00	N-80	BTC	10.95	Yes		140.87	834.18
Yes	78	Casing Joints	7	23.00	N-80	BTC	10.98	No		129.89	845.16
Yes	79	Casing Joints	7	23.00	N-80	BTC	11.56	No		118.33	856.72
Yes	80	Casing Joints	7	23.00	N-80	BTC	11.63	Yes		106.70	868.35
Yes	81	Casing Joints	7	23.00	N-80	BTC	11.28	No		95.42	879.63
Yes	82	Casing Joints	7	23.00	N-80	BTC	11.95	No		83.47	891.58
Yes	83	Casing Joints	7	23.00	N-80	BTC	11.35	Yes		72.12	902.93
Yes	84	Casing Joints	7	23.00	N-80	BTC	11.27	No		60.85	914.20
Yes	85	Casing Joints	7	23.00	N-80	BTC	11.32	No		49.53	925.52
Yes	86	Casing Joints	7	23.00	N-80	BTC	11.22	Yes		38.31	936.74
Yes	87	Casing Joints	7	23.00	N-80	BTC	10.95	No		27.36	947.69
Yes	88	Casing Joints	7	23.00	N-80	BTC	11.31	No		16.05	959.00
Yes	89	Casing Joints	7	23.00	N-80	BTC	11.37	No		4.68	970.37
Yes	90	7" STS Casing Hanger	7	23.00	N-80	BTC	0.54	No		4.14	970.91

APPENDIX 6 – CEMENTING SERVICE REPORTS

Origin Energy

Level 3, 135 Coronation Drive
Milton QLD 4064

Durham Ranch 175 Ensign 964 Cement Program

Prepared for Ryan Robertson
4th June, 2013
Revision: 1

Submitted by David O'Hagan
Halliburton Australia Pty. Ltd.
Level 17, 444 Queen St, Brisbane QLD 4000
Ph: +61 7 3811 6014
Email: David.O'Hagan@Halliburton.com

HALLIBURTON



4th June, 2013

TO: Origin Energy
ATT: Ryan Robertson
RE: Durham Ranch 175 – Cement Program Rev.1

Hey Ryan,

Please find attached Durham Ranch 175 Cement Program for review and approval.

Included are cement slurry recommendations for the following:

- 9 5/8” Surface Casing to 501mMD
 - 13.5 ppg VersaCem lead slurry from 431m to surface with 70% OH excess
 - 15.6 ppg HalCem tail slurry from TD to 431m with 70% OH excess

- 7” Production Casing to 1106mMD
 - 9.5 ppg Tuned Light™ lead slurry from 629m to surface with 446% OH Excess
 - 13.5ppg CBMCem™ tail slurry from TD to 629m with 0% OH Excess

NOTE: 446% OH Excess on the Lead cement yields 50 bbl returns

Our services for the requested work will be coordinated through Halliburton Roma. Point of contact is Todd Bradshaw and Doug Stansbie on 07 4622 4588. Should you require any additional information regarding slurry design please do not hesitate to contact the Brisbane office on 07 3811 6017.

Regards,

David O’Hagan
Technical Professional
Cementing

cc:	Alasdair Wood	Halliburton Brisbane
	William Farrelly	Halliburton Brisbane
	Jason Li	Halliburton Brisbane
	Peter Hede	Halliburton Roma
	Brad Poole	Halliburton Roma
	Anton Trinchini	Halliburton Roma

Revision History

<i>Rev. 0</i>	<i>Initial Program</i>
<i>Rev.1</i>	<i>Changed depths</i>

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1.0 Cementing Work Methods

1. Cement Properties

You must choose a cement slurry that is designed to meet downhole conditions and solve the problems specific to each casing string.

2. Wait on Cement Time:

You must hold the cement slurry in place and under pressure until it reaches its' initial set without disturbing it. A cement slurry is a time-dependent liquid and must be allowed to undergo a hydration reaction to produce a competent cement sheath. A fresh cement slurry can be worked (thickening or pump time) as long as it is in a liquid state and before going through its' transition phase. If the cement slurry is not allowed to transition without being disturbed, it may be subjected to changes in density, dilution, settling, water separation, and gas cutting that may lead to a lack of zonal isolation and possible bridging in the annulus.

3. Pipe Movement:

Pipe movement may be one of the single most influential factors in mud removal. Reciprocation and/or rotation mechanically breaks up gelled mud and changes the flow patterns in the annulus to improve displacement efficiency.

4. Mud Properties (for Cementing):

Rheology:

Plastic Viscosity (PV) < 15 centipoise (cp)

Yield Point (YP) < 10 lb/100 ft²

These properties should be reviewed with the Mud Engineer, Drilling Engineer, and Company Representative(s) to ensure no hole problems are created.

Gel Strength:

The 10-second/10-minute gel strength values should be such that the 10-second and 10-minute readings are close together or flat (i.e. 5/6). The 30-minute reading should be less than 20 lb/100 ft².

Fluid Loss:

Decreasing the filtrate loss into a permeable zone enhances the creation of a thin, competent filter cake. A thin, competent filter cake created by a low fluid loss mud system is desirable over a thick, partially gelled filter cake. The fluid loss value should be < 15 cc's (ideal would be 5 cc's).

5. Circulation:

Prior to cementing circulate hole volume twice, or until well conditioned mud (refer to 4) is being returned to the surface. There should be no cutting in the mud returns. An annular velocity of 260 feet per minute is optimum (SPE/IADC 18617), if possible.

6. Flow Rate:

Turbulent flow is the most desirable flow regime for mud removal. If turbulence cannot be achieved pump at as high a flow rate that can practically and safely be used to create the maximum flow energy. The highest mud removal is achieved when the maximum flow energy is obtained.

- 7. Pipe Centralization:**
Cement will take the path of least resistance; therefore proper centralization is important to help prevent the casing from contacting the borehole wall. A minimum standoff of 70% should be targeted for optimum displacement efficiency, whilst also taking ECD management into consideration.
- 8. Rat Hole:**
A weighted viscous pill placed in the rat hole prior to cementing will minimize the risk of higher density cement mixing with lower density mud when the well is static.
- 9. Top and Bottom Plugs:**
A Top and Bottom plug are recommended to be run on all primary casing jobs. The bottom plug should be run after the spacer and ahead of the first cement slurry.
- 10. Spacers and Flushes:**
Spacers and/or flushes should be used to prevent contamination between the cement slurry and the drilling fluid. They are also used to clean the wellbore and aid with bonding. To determine the volume, either a minimum of 10 minutes contact time or 1000 ft. of annular fill, whichever is greater, is recommended.

2.0 9 5/8" Surface Casing

9 5/8in Casing Details

JOB PARAMETERS

Casing measured depth:	501m	BHST temperature:	44°C
True vertical depth:	501m	BHCT temperature:	31°C
Depth to top lead:	Surface	Drilling mud type:	WBM
Depth to top tail:	431m	Drilling mud density:	9.00ppg

WELLBORE

Casing/Tubing	
0-501m	9 5/8in 36ppf Casing (K-55 BTC)
Annulus	
0-431m	12.25in open hole (70% excess)
431-501m	12.25in open hole (70% excess)

SPACERS

Spacer - 20.0bbl Gelled Spacer at 8.34ppg		
Freshwater	41.72 gal/bbl	(64m OH annular fill / 3min contact time)
WG-19	2.50 lb/bbl	Estimated Pv: 1cP
60% Acetic Acid	0.05 gal/bbl	

Contact times are based on the displacement rate.

LEAD CEMENT - VersaCem™

Composition		Properties	
Standard Cement SL		Surface density:	13.50 ppg
Bentonite Australia	2.00 %BWOC	Surface yield:	1.73 ft ³ /sk
Calcium Chloride	2.00 %BWOC	Total mixing fluid:	8.99 gal/sk
Versaset	0.20 %BWOC	Thickening time (70 Bc):	3:00+
Phenoseal LCM	2.00 %BWOC	Free water vert at 31°C:	<1 %
Pol-E-Flake	0.25 %BWOC	Comp strength at 32°C:	100 psi in 4 hrs
Freshwater	8.99 gal/sk	Comp strength at 32°C:	500 psi in 10.1 hrs
NF-6	0.25 gal/10bbIMF	Comp strength at 32°C:	1,159 psi in 24 hrs

Note that %BWOC are based on a 94 lb sack

TAIL CEMENT - HalCem™

Composition		Properties	
Standard Cement SL		Surface density:	15.60 ppg
Calcium Chloride	1.00 %BWOC	Surface yield:	1.20 ft ³ /sk
Phenoseal LCM	2.00 %BWOC	Total mixing fluid:	5.16 gal/sk
Pol-E-Flake	0.25 %BWOC	Thickening time (70 Bc):	1:30+
Freshwater	5.16 gal/sk	Free water vert at 31°C:	<1 %
NF-6	0.25 gal/10bbIMF	Comp strength at 32°C	100 psi in 2.6 hrs
		Comp strength at 32°C	500 psi in 5.6 hrs
		Comp strength at 32°C	2,458 psi in 24 hrs

Note that %BWOC are based on a 94 lb sack

VOLUME CALCULATIONS

Lead Cement

9 5/8in Casing / 12.25in hole volume	431 m x 0.1830 bbl/m	78.9 bbl
9 5/8in Casing / 12.25in hole excess	0.70 x 78.9 bbl	55.2 bbl
<i>Total lead slurry volume =</i>		<i>134.1 bbl</i>

Quantity of lead cement	134.1 bbl x 5.6146 / 1.73 ft ³ /sk	435 sacks
Quantity of lead mix fluid	435 sacks x 8.99 gal/sk	93.1 bbl

Tail Cement

9 5/8in Casing / 12.25in hole volume	70 m x 0.1830 bbl/m	12.8 bbl
9 5/8in Casing / 12.25in hole excess	0.70 x 12.8 bbl	9.0 bbl
Shoe track volume	12 m x 0.2536 bbl/m	3.0 bbl
<i>Total tail slurry volume =</i>		<i>24.8 bbl</i>

Quantity of tail cement	24.8 bbl x 5.6146 / 1.20 ft ³ /sk	116 sacks
Quantity of tail mix fluid	116 sacks x 5.16 gal/sk	14.3 bbl

Displacement

9 5/8in Casing volume	489 m x 0.2536 bbl/m	124.0 bbl
<i>Total displacement volume =</i>		<i>124.0 bbl</i>

The final job calculations are to be completed on location by cementer, based on actual well parameters. All calculations from slurry volumes to additive dosages & requirements must be verified by the independent calculations of the drilling rep.

PUMPING SCHEDULE & TIMES

	Volume (bbl)	Rate (bbl/min)	Time (min)	
Make up lines & pressure test:	N/A	N/A	30	
Circulate 1 x Casing volume:	127.0	8.0	16	
Pump spacers:	20.0	6.0	3	
Release ball/bottom plug:	N/A	N/A	5	
Mix & pump lead cement:	134.1	4.0	34	
Mix & pump tail cement:	24.8	4.0	6	
Release dart/top plug:	N/A	N/A	5	
Pump displacement:	124.0	6.0	21	
<i>Total job time (including circulation):</i>			<i>120 min</i>	<i>2hr 00min</i>
<i>Minimum lead cement thickening time (with 1hr safety factor):</i>			<i>126 min</i>	<i>2hr 06min</i>
<i>Minimum tail cement thickening time (with 1hr safety factor):</i>			<i>92 min</i>	<i>1hr 32min</i>

MINIMUM MATERIAL REQUIREMENTS

Spacer - Gelled Spacer

Freshwater	19.9 bbl
WG-19	50 lb
60% Acetic Acid	1 gal

Lead Cement

Standard Cement SL	435 sacks
Bentonite Australia	818 lbs
Calcium Chloride	818 lbs
Versaset	82 lbs
Phenoseal LCM	818 lbs
Pol-E-Flake	102 lbs
Freshwater	93.1 bbl
NF-6	3 gals

Tail Cement

Standard Cement SL	116 sacks
Calcium Chloride	109 lbs
Phenoseal LCM	218 lbs
Pol-E-Flake	27 lbs
Freshwater	14.3 bbl
NF-6	1 gals

These are estimates calculated on the information given. Calculations should be confirmed on the job site well in advance.

JOB PROCEDURE

1. Mobilize cementing crew.
2. Pre-job safety meeting and review JSA's.
3. Rig up surface lines for Cement Unit and Cement Head, and load Top Plug.
4. Mix **20.0 bbls** of Gelled Spacer on Cement Unit at **8.4 ppg**.

<i>Total Freshwater</i>	=	<i>19.9 bbl</i>
<i>Total 60% Acetic Acid</i>	=	<i>1 gal</i>
<i>Total WG-19</i>	=	<i>50 lb</i>
5. Rig to circulate through Cement Head below TopPlug.
6. Set Cement Unit pressure kick-outs at **3000 psi**.
7. Pump first **10.0 bbls** of Gelled Spacer.
8. Pressure test surface lines to **3000 psi**.
9. Pump remaining **10.0 bbls** of Gelled Spacer.
10. Mix and Pump **134.1 bbls** (435 sacks) of VersaCem™ lead slurry at **13.50 ppg**.

<i>Density</i>	=	<i>13.50 ppg</i>
<i>Yield</i>	=	<i>1.73 ft³/sk</i>
<i>Water Requirement</i>	=	<i>8.99 gal/sk</i>
11. Mix and Pump **24.8 bbls** (116 sacks) of HalCem™ tail slurry at **15.60 ppg**.

<i>Density</i>	=	<i>15.60 ppg</i>
<i>Yield</i>	=	<i>1.20 ft³/sk</i>
<i>Water Requirement</i>	=	<i>5.16 gal/sk</i>
12. Drop Top Plug.
13. Displace Top Plug with a total of **124.0 bbls*** of displacement fluid.
 - Pump 114.0 bbls at 5 – 6 bpm
 - Pump remaining 10.0 bbls at 1 - 2 bpm
 - Note and record volumes of any spacer / cement returns to surface.

NOTE: Pump at lower rates if Company Man requests
- * **Actual Displacement Volumes are to be calculated based on Casing Tally.**
14. Bump Top Plug.
15. Pressure test casing for **5 minutes** (Do not hold any longer than 10 min as you may run the risk of creating a micro-annulus)
16. Check floats and record volume returns.
17. End job and rig down.

3.0 7" Production Casing

7in Casing Details

JOB PARAMETERS

Casing measured depth:	1,106m	BHST temperature:	64°C
True vertical depth:	1,106m	BHCT temperature:	38°C
Depth to top lead:	Surface	Drilling mud type:	WBM
Depth to top tail:	629m	Drilling mud density:	8.60ppg

WELLBORE

Casing/Tubing

0-1,106m 7in 23ppf Casing (K-55 BTC)

Annulus

0-501m 9 5/8in 36ppf casing (8.921in ID)
 501-629m 8.75in open hole (446% excess)
 629-1,106m 8.75in open hole

SPACERS

Spacer - 20.0bbl Gelled Spacer at 9.50ppg

Freshwater	38.90 gal/bbl	(42m OH annular fill / 5min contact time)
WG-19	2.50 lb/bbl	Estimated Pv: 1cP
60% Acetic Acid	0.05 gal/bbl	
NaCl -12%	72.19 lb/bbl	

Contact times are based on the displacement rate.

LEAD CEMENT - Tuned Light™

Composition		Properties	
9.5ppg TLC R1		Surface density:	9.50 ppg
HR-5	0.20 %BWOC	Surface yield:	3.15 ft ³ /sk
Halad-344	0.60 %BWOC	Downhole density:	9.74 ppg
Phenoseal LCM	2.00 %BWOC	Downhole yield:	3.09 ft ³ /sk
Pol-E-Flake	0.25 %BWOC	Total mixing fluid:	11.85 gal/sk
Cement Australia GP	20.80 %BWOC	Thickening time (70 Bc):	2:30+
CFR-3	1.00 %BWOC	Free water vert at 38°C:	0.0 %
Freshwater	11.85 gal/sk	Fluid loss at 38°C:	54 cc/30min
NF-6	0.25 gal/10bbIMF	Comp strength at 52°C:	900 psi in 24 hrs
		Comp strength at 52°C:	1,349 psi in 48 hrs
		Comp strength at 52°C:	1,602 psi in 72 hrs

Note that %BWOC are based on a 100 lb sack, since of the 100.5 lb sack of blend only 100 lb is cement.

TAIL CEMENT - CBMCem™

Composition		Properties	
35:65 Poz A Cement		Surface density:	13.50 ppg
Bentonite Australia	3.00 %BWOC	Surface yield:	1.51 ft ³ /sk
Halad-344	0.50 %BWOC	Total mixing fluid:	7.09 gal/sk
HR-5	0.30 %BWOC	Thickening time (70 Bc):	2:00+
Cal Seal 60	1.00 %BWOC	Free water vert at 38°C:	0.0 %
CFR-3	0.40 %BWOC	Fluid loss at 38°C:	15 cc/30min
Phenoseal LCM	2.00 %BWOC	Comp strength at 61°C	100 psi in 3.5 hrs
Pol-E-Flake	0.25 %BWOC	Comp strength at 61°C	500 psi in 5.5 hrs
Freshwater	7.08 gal/sk	Comp strength at 61°C	1,947 psi in 24 hrs
NF-6	0.25 gal/10bblMF		

Note that %BWOC are based on a 87 lb sack

VOLUME CALCULATIONS

Lead Cement

7in Casing / 9 5/8in casing volume	501 m x 0.0975 bbl/m	48.8 bbl
7in Casing / 8.75in hole volume	128 m x 0.0878 bbl/m	11.2 bbl
7in Casing / 8.75in hole excess	4.46 x 11.2 bbl	50.1 bbl
<i>Total lead slurry volume =</i>		<i>110.2 bbl</i>

Quantity of lead cement	110.2 bbl x 5.6146 / 3.09 ft ³ /sk	200 sacks
Quantity of lead mix fluid	200 sacks x 11.85 gal/sk	56.4 bbl

Tail Cement

7in Casing / 8.75in hole volume	477 m x 0.0878 bbl/m	41.9 bbl
Shoe track volume	24 m x 0.1292 bbl/m	3.1 bbl
<i>Total tail slurry volume =</i>		<i>45.0 bbl</i>

Quantity of tail cement	45.0 bbl x 5.6146 / 1.51 ft ³ /sk	167 sacks
Quantity of tail mix fluid	167 sacks x 7.09 gal/sk	28.2 bbl

Displacement

7in Casing volume	1,082 m x 0.1292 bbl/m	139.7 bbl
<i>Total displacement volume =</i>		<i>139.7 bbl</i>

The final job calculations are to be completed on location by cementer, based on actual well parameters. All calculations from slurry volumes to additive dosages & requirements must be verified by the independent calculations of the drilling rep.

PUMPING SCHEDULE & TIMES

	Volume (bbl)	Rate (bbl/min)	Time (min)
Make up lines & pressure test:	N/A	N/A	30
Circulate 1 x Casing volume:	142.8	8.0	18
Pump spacers:	20.0	6.0	3
Release ball/bottom plug:	N/A	N/A	5
Mix & pump lead cement:	110.2	4.0	28
Mix & pump tail cement:	45.0	4.0	11
Release dart/top plug:	N/A	N/A	5
Pump displacement:	139.7	4.0	35

<i>Total job time (including circulation):</i>	<i>135 min</i>	<i>2hr 15min</i>
<i>Minimum lead cement thickening time (with 1hr safety factor):</i>	<i>139 min</i>	<i>2hr 19min</i>
<i>Minimum tail cement thickening time (with 1hr safety factor):</i>	<i>111 min</i>	<i>1hr 51min</i>

MINIMUM MATERIAL REQUIREMENTS

Spacer - Gelled Spacer

Freshwater	18.5 bbl
WG-19	50 lb
60% Acetic Acid	1 gal
NaCl -12%	1,444 lb

Lead Cement

9.5ppg TLC R1	200 sacks
HR-5	40 lbs
Halad-344	120 lbs
Phenoseal LCM	400 lbs
Pol-E-Flake	50 lbs
Cement Australia GP	4,160 lbs
CFR-3	200 lbs
Freshwater	56.4 bbl
NF-6	2 gals

Tail Cement

35:65 Poz A Cement	167 sacks
Bentonite Australia	436 lbs
Halad-344	73 lbs
HR-5	44 lbs
Cal Seal 60	145 lbs
CFR-3	58 lbs
Phenoseal LCM	291 lbs
Pol-E-Flake	36 lbs
Freshwater	28.2 bbl
NF-6	1 gals

These are estimates calculated on the information given. Calculations should be confirmed on the job site well in advance.

JOB PROCEDURE

1. Mobilize cementing crew.
2. Pre-job safety meeting and review JSA's.
3. Rig up surface lines for Cement Unit and Cement Head, and load Top Plug.
4. Rig to circulate through Cement Head below Top Plug.
5. Mix **20.0 bbls** of Gelled Spacer on Cement Unit at **9.5 ppg**.

<i>Total Freshwater</i>	=	<i>18.5 bbl</i>
<i>Total 60% Acetic Acid</i>	=	<i>1 gal</i>
<i>Total WG-19</i>	=	<i>50 lb</i>
<i>Total NaCl</i>	=	<i>1444 lb</i>

NOTE: Weigh up Gelled Spacer to match mud density (Max 9.5 ppg)

6. Mix **112.2 bbls** surface volume / **110.2 bbls** downhole volume (200 sacks – Pods 1,2 and 3) of Tuned Light™ lead slurry at **9.5 ppg** on Batch Mixer. Check slurry density with pressurized mud balance. Company man and cement operator to confirm **9.5 ppg** slurry density check prior to pumping. Due to nature of the additives in the slurry the surface density may approach down hole density. If surface density exceeds down hole then call engineer. Time mixing time for each pod to determine downhole pump rate. The downhole pump rate should be less than mixing time to ensure pod 3 is thoroughly mixed without causing any shutdowns.

<i>Surface Density</i>	=	<i>9.50 ppg</i>
<i>Down hole Density</i>	=	<i>9.74 ppg</i>
<i>Surface Yield</i>	=	<i>3.15 ft³/sk</i>
<i>Down hole Yield</i>	=	<i>3.09 ft³/sk</i>
<i>Water requirement</i>	=	<i>11.86 gal/sk</i>
Total mix water	=	56.4 bbls

NOTE: Do not start batch mixing until the well is completely conditioned and ready for cementing (Long batch mixing times drastically reduces cement slurry thickening time)

7. Set Cement Unit pressure kick-outs at **3000 psi**.
8. Pump first **10.0 bbls** of Spacer – Gelled Spacer.
9. Pressure test surface lines to **3000 psi**.
10. Pump remaining **10.0 bbls** of Spacer – Gelled Spacer.
11. Pump **49.1 bbls** of Tuned Light™ lead slurry at **9.5 ppg**. (Pod 1)
12. Pump **49.1 bbls** of Tuned Light™ lead slurry at **9.5 ppg**. (Pod 2)
13. Pump **14.0 bbls** of Tuned Light™ lead slurry at **9.5 ppg**. (Pod 3)
14. Mix and pump **45.0 bbls** (167 sacks) of CBMCem™ tail cement slurry at **13.5 ppg**.

<i>Density</i>	=	<i>13.5 ppg</i>
<i>Yield</i>	=	<i>1.51 ft³/sk</i>
<i>Water Requirement</i>	=	<i>7.09 gal/sk</i>

15. Drop Top Plug.
16. Displace Top Plug with a total of **139.7 bbls*** of displacement fluid.
 - *Pump 54.7 bbls at 4 bpm*
 - *Pump 50.0 bbls at 3 bpm*
 - *Pump remaining 35.0 bbls at 1 - 2 bpm*
 - *Note and record volumes of any spacer / cement returns to surface*

NOTE: Pump lower rates if Company Man requests

*** Actual Displacement Volumes are to be calculated based on Casing Tally**

17. Land Top Plug.
18. Pressure test casing for **10 minutes** (Do not hold any longer than 10 min as you may run the risk of creating a micro-annulus)
19. Check floats and record volume returns.
20. End job and rig down.

4.0 9 5/8" Centralization

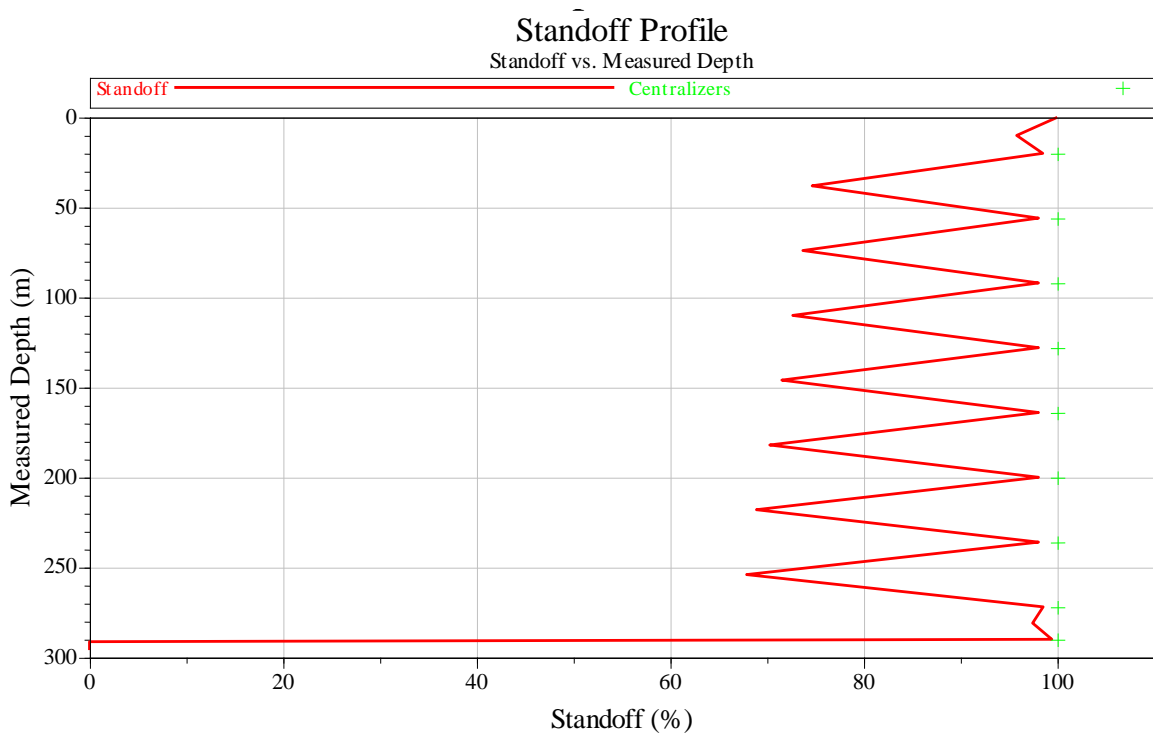
Centralization simulations based on the following:
 Based on Halliburton Bow Centralizers
 Assume Max 3 deg Deviation.

- 1 Bow-Spring Centralizer Mid First Joint
- 1 Bow-Spring Centralizer on 2nd casing collar from shoe
- 1 Bow-Spring Centralizer every 3 joints on casing collar to surface
- Average Joint length used: 12.0m

4.1 Centralizer Specifications

Description	Type	Casing Dia., in	Hole Dia., in	Nom. Dia., in
700 Series Imperial Bow Centralizer	BS	9.625	12.250	13.500

4.2 Centralized Intervals



5.0 7" Centralization

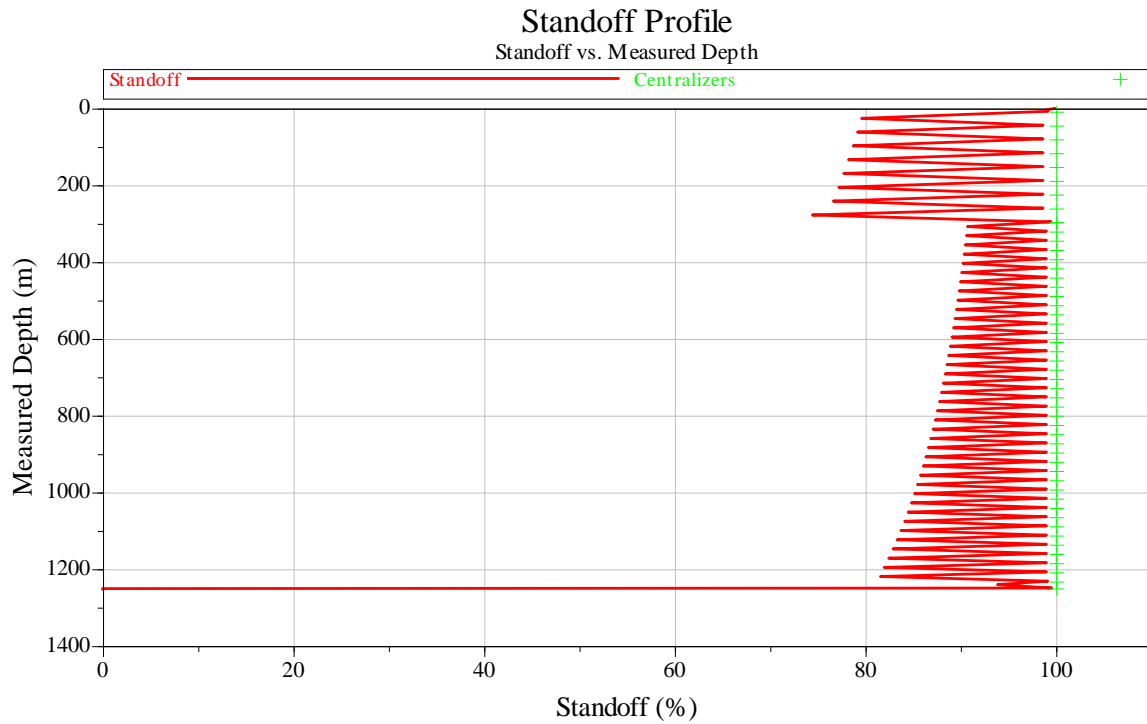
Centralization simulations based on the following:
 Based on Halliburton Bow Centralizers
 Assume Max 3 deg Deviation.

- 1 Bow-Spring Centralizer Mid First Joint above shoe
- 1 Bow-Spring Centralizer every 2nd casing collar from shoe to 1st Joint inside Surface Casing
- 1 Bow-Spring Centralizer every 3rd casing collar from 1st Joint inside Surface Casing to Surface
- Average Joint length used: 12.0m

5.1 Centralizer Specifications

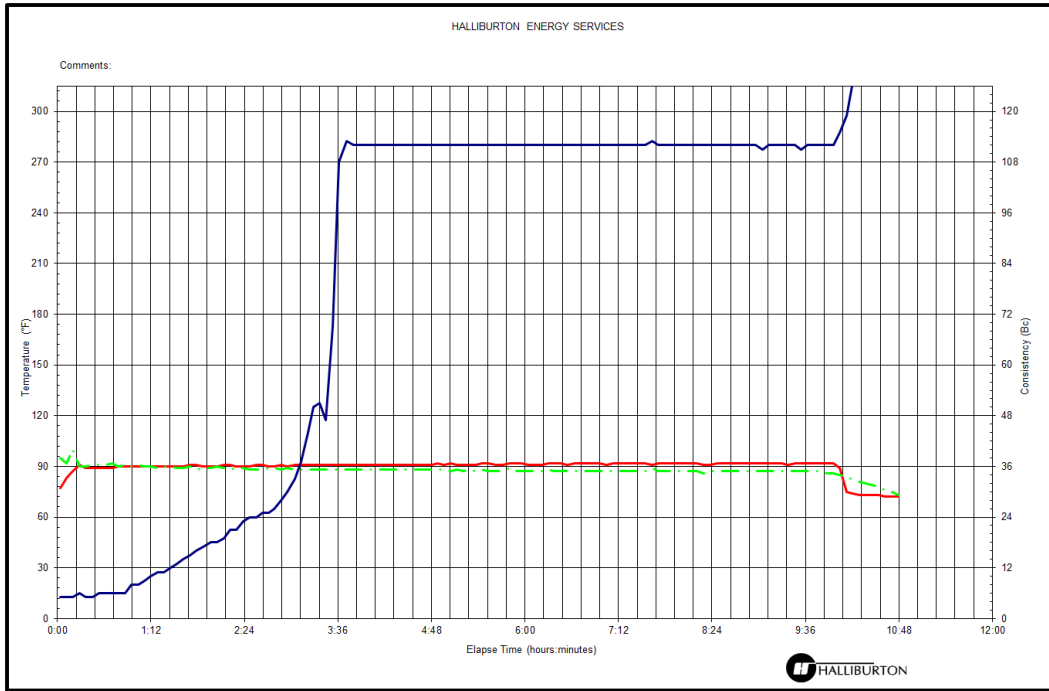
Description	Type	Casing Dia., in	Hole Dia., in	Nom. Dia., in
700 Series Imperial Bow Centralizer	BS	7.000	8.750	10.000

5.2 Centralized Intervals

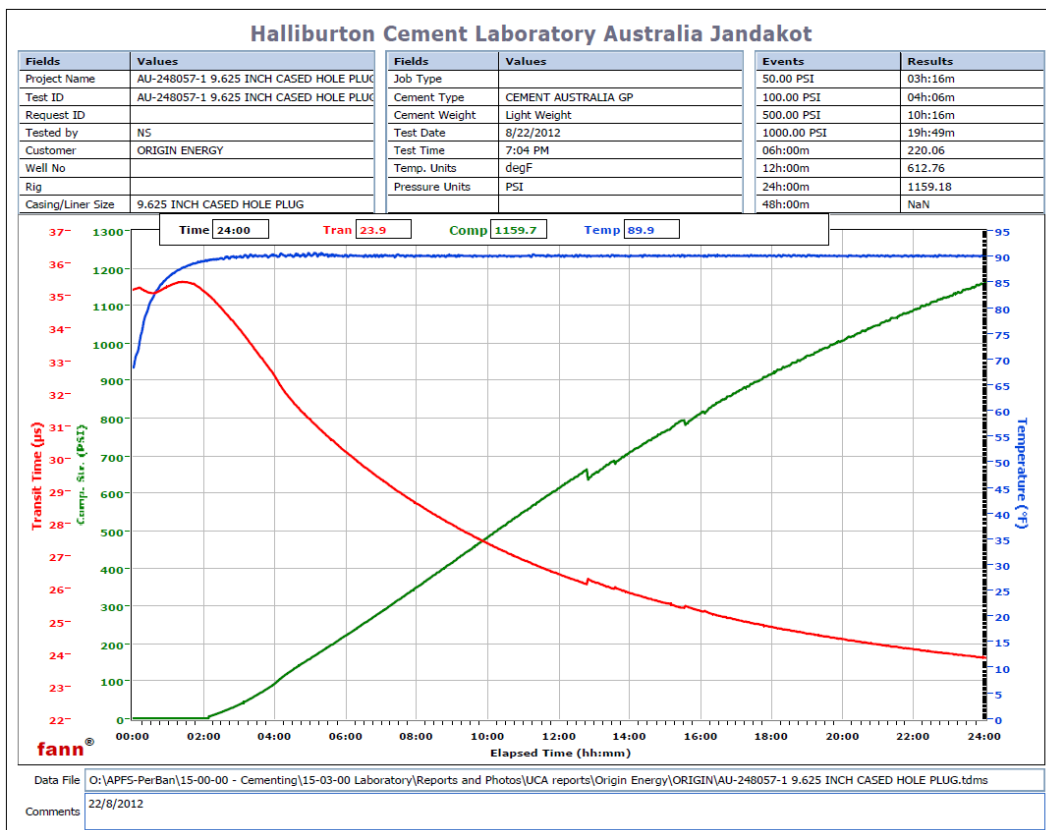


6.0 9 5/8" Surface Cement Lab Charts

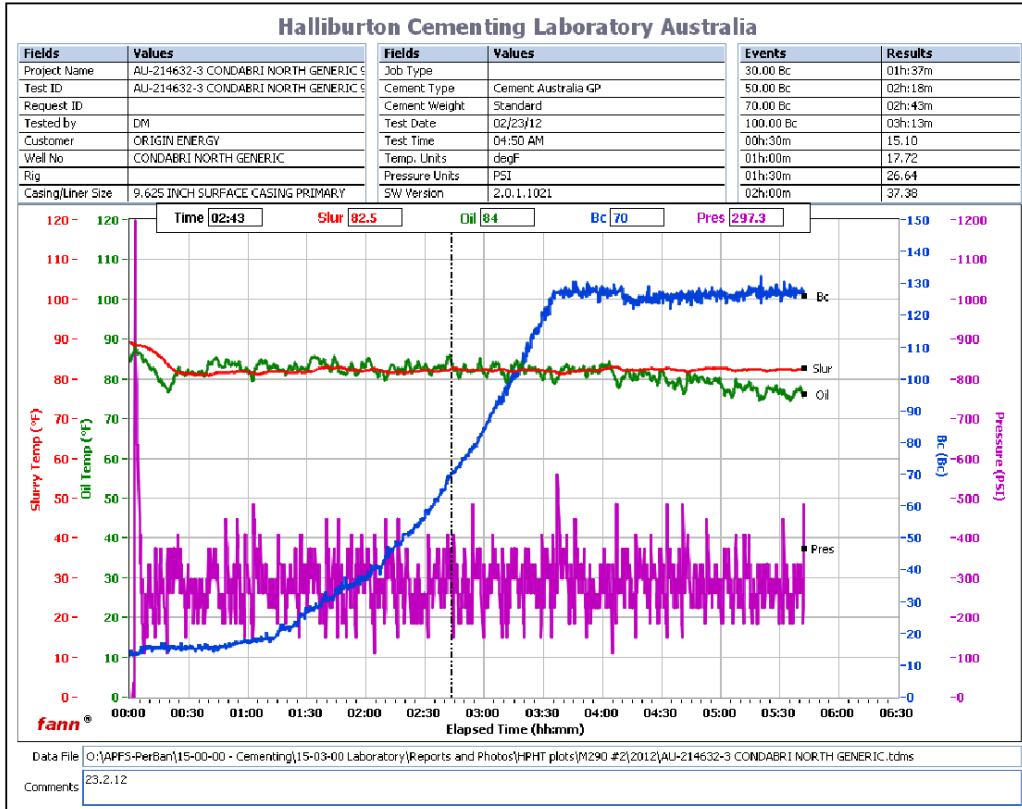
TT Test Results – 13.5 ppg Lead Slurry



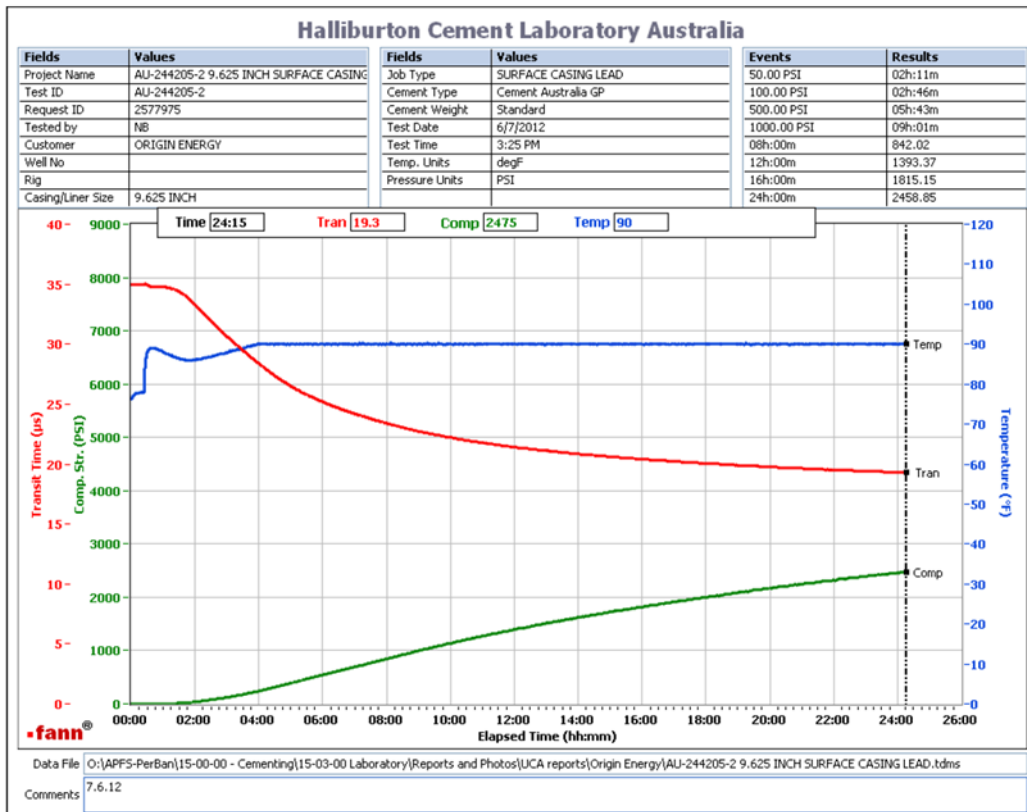
UCA Test Results – 13.5 ppg Lead Slurry



TT Test Results – 15.6 ppg Tail Slurry

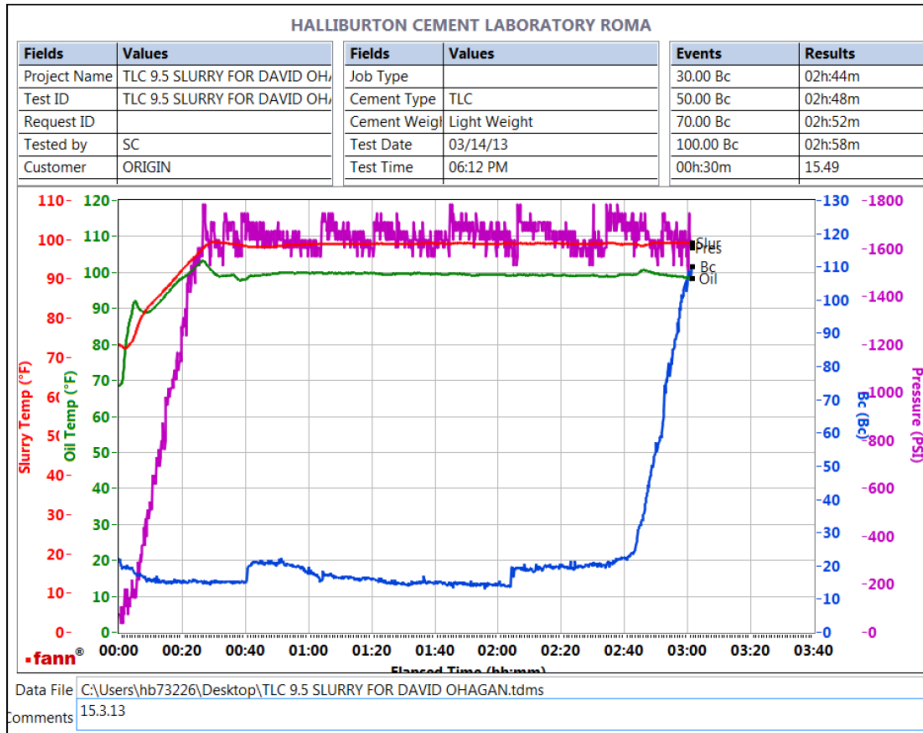


UCA Test Results – 15.6 ppg Tail Slurry

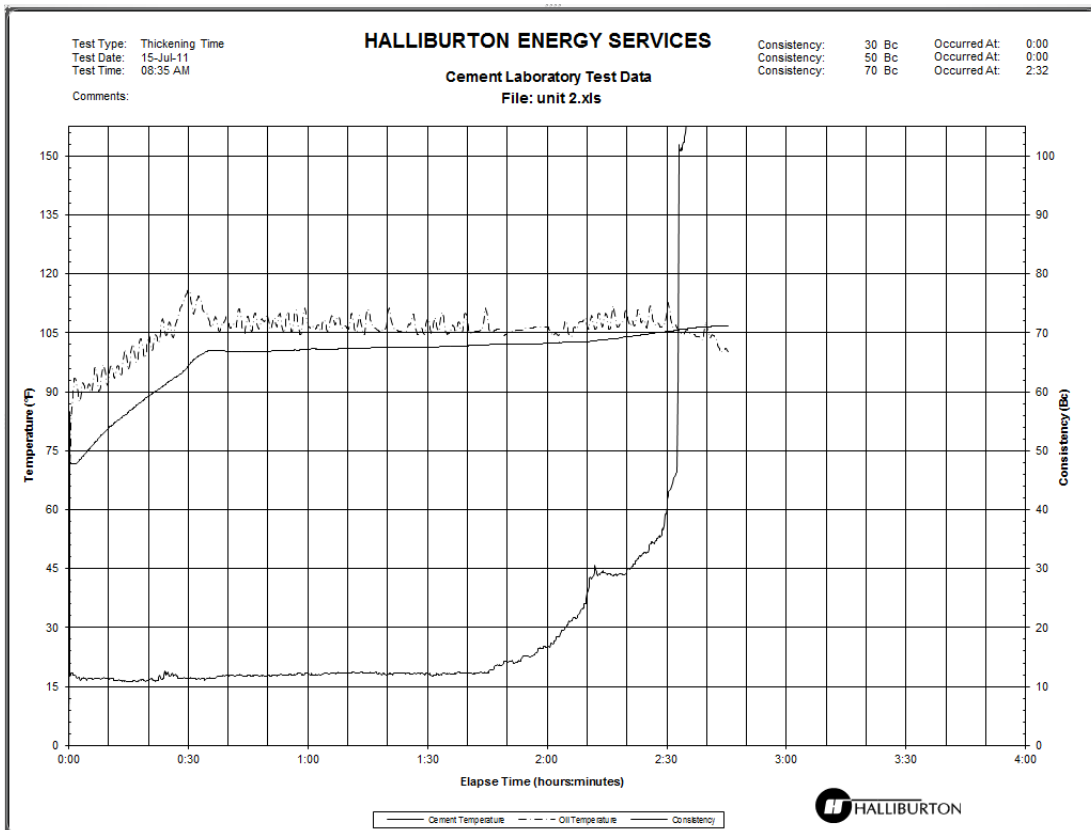


7.0 7" Production Cement Lab Charts

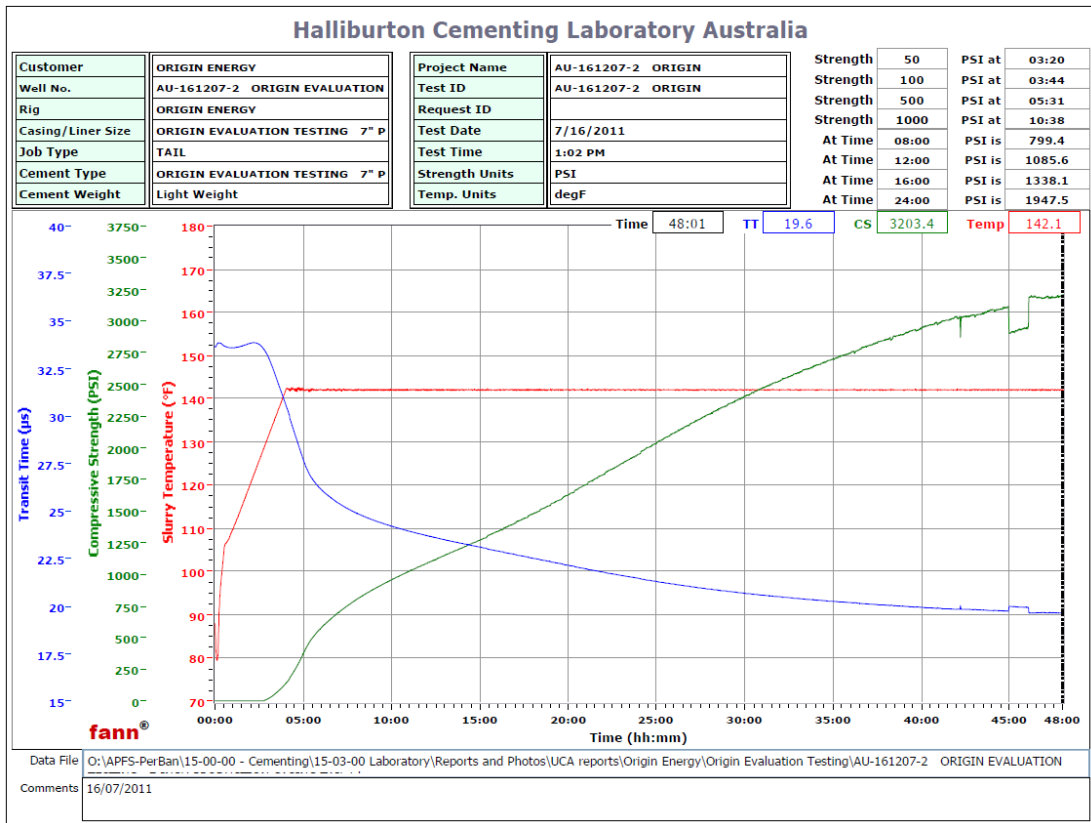
TT Test Results – 9.5 ppg Lead Slurry



TT Test Results – 13.5 ppg Tail Slurry



UCA Test Results – 13.5 ppg Tail Slurry



Origin Energy

POST JOB REPORTS
CEMENTING/PUMPING

Well Name : DURHAM RANCH 175

Rig: ENSIGN 964

CEMENT SURFACE CASING 7521

Prepared for SHANE KUSHNYRICK

6/6/2013

Prepared by RONNIE LABRADA

HALLIBURTON

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HALLIBURTON		CUSTOMER Orig'n Energy	SALES ORDER No. 900493825	DATE 8 June 2013
CEMENT/PUMPING JOB SUMMARY				
WELL DURHAM RANCH 175	LOCATION/FIELD NAME Spring Guzy	COUNTRY Australia	HES REP RONNIE LABRADA	CUSTOMER REP SHANE KUSHNYRICK
JOB TYPE Surface Casing	JOB PURPOSE CODE CEMENT SURFACE CASING 7621		BDA Brisbane	WELL TYPE Coal bed methane RIG ENSIGN 964

PERSONELL 531289			
PERSONNEL / EXPOSURE	hrs	PERSONNEL / EXPOSURE	hrs
#N/A RONNIE LABRADA	9	481601 Peter Price	9
#N/A RODNEY FLETCHER	9		

EQUIPMENT 510002					
SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
#N/A	CEMENT UNIT ELITE # 11381513	9	#N/A	BULK UNIT # 10047249	9
			10048604	BULKER 680 #10048604 (YCA-210)	9
SAP#	VEHICLES / TRAILERS	HOURS	SAP#	OTHER EQUIPMENT	HOURS
11598590	LANDCRUISER UTE #11598590 (248-REZ)	9			

FLOAT EQUIPMENT AND CASING EQUIPMENT					
SAP#	FLOAT EQUIPMENT	QTY	SAP#	PLUGS	QTY
100013953	9 5/8" BTC GUIDE SHOE	1	101214575	9 5/8" TOP PLUG HWE	1
101240620	9 5/8" TROPHY SEAL FLOAT COLLAR	1			
SAP#	CASING ATTACHMENTS	QTY	SAP#	OTHER	QTY
#N/A	9.625 X 12.25 CENTRALIZERS	15			
#N/A	9 5/8" STOP RINGS	1			

WELL PROFILE		
NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
Non Tapered Casing, Conventional, 41.79ft shoe track		
9.625in 36ppf K-55 BTC : 0m to 1667ft MD, ft TVD	12.25in, 70 percent excess, 0ft to 1673.31ft	9.625in, 36ppf, 0ft to ft

CEMENT DESIGN					
Lead			Tail		
DENSITY	13.5ppg	WATER	8.99gal/sk	DENSITY	15.6ppg
YIELD	1.73cuft/ft	MIX FLUID	93.0bbl/s	WATER	5.16gal/sk
				YIELD	1.20cuft/ft
				MIX FLUID	14.0bbl/s
WATER SOURCE	Day Tank		WATER SOURCE	Day Tank	
CEMENT TYPE	Class A Cement at 94lb/sk		CEMENT TYPE	Class A Cement at 94lb/sk	
Total Cement Used	435sks		Total Cement Used	118sks	
Estimated TOC	0ft		Estimated TOC	ft	
Additive	Concentration	Total Used	Additive	Concentration	Total Used
Bentonite	2 %BWOC	818bs	Calcium Chloride	1 %BWOC	109bs
Calcium Chloride	2 %BWOC	818bs	Pheno Seal	2 %BWOC	218bs
Versaset	0.2 %BWOC	82bs	Flocele	0.25 %BWOC	27bs
Pheno Seal	2 %BWOC	818bs			
Flocele	0.25 %BWOC	102bs			

JAB
 24/6/13
 519332945

JOB LOGS					
DATE	TIME	VOLUME	PRESSURE (psi)	RATE	JOB DESCRIPTION
JUNE 8 - 2013	11:30				LEAVE ROMA YARD
	13:00				ARRIVE ON LOCATION - ENSIGN 962
	13:20				SPOT EQUIPMENT
	13:45				SAFETY HUDDLE - RIG UP CEMENTING EQUIPMENT
	15:30				PRE JOB SAFETY MEETING
	15:51	10	82	4	PUMP 10 BBLs GELLED SPACER
	15:56	0.2	3200	0.2	PRESSURE TEST LINES 3000 PSI
	16:02	10	102	4.7	PUMP 10 BBLs GELLED SPACER
	16:18	134	153	4.8	MIX & PUMP 435 SACKS LEAD CEMENT @ 13.5 PPG
					YIELD = 1.73 FT ³ /SK - MIX WATER 8.99 GPS
	16:49	25	99	4.2	MIX & PUMP 116 SACKS TAIL CEMENT @ 15.6 PPG
					YIELD = 1.20 FT ³ /SK - MIX WATER 5.16 GPS
	16:59				DROP TOP PLUG
	17:00	125.6	685	20	DISPLACE 125.6 BBLs
	17:50	125.6	1471		BUMP PLUG - HOLD PRESSURE FOR 5 MINS.
	17:56				BLEED OFF PRESSURE - 1 BBL BACK
	18:05				SAFETY HUDDLE

HALLIBURTON				CUSTOMER	SALES ORDER No.	DATE
				Origin Energy	900493825	6 June 2013
CEMENT/PUMPING JOB SUMMARY						
WELL	LOCATION/FIELD NAME	COUNTRY	HES REP	CUSTOMER REP	WELL TYPE	
DURHAM RANCH 175	Spring Gully	Australia	RONNIE LABRADA	SHANE KUSHNYRICK	Coal bed methane	
JOB TYPE	JOB PURPOSE CODE			BDA	RIG	
Surface Casing	CEMENT SURFACE CASING 7521			Brisbane	ENSIGN 964	
	18:20				WASH UP CEMENT UNIT	
	19:30				RIG DOWN IRON	
	20:00				FINISH JOB TICKET	
JUNE 6 - 2013	21:30				LEAVE LOCATION - GO TO RIG CAMP	
END OF JOB LOGS						

HALLIBURTON		CUSTOMER Origin Energy	SALES ORDER No. 900493825	DATE 6 June 2013
CEMENT/PUMPING JOB SUMMARY				
WELL DURHAM RANCH 175	LOCATION/FIELD NAME Spring Gulby	COUNTRY Australia	HES REP RONNIE LABRADA	CUSTOMER REP SHANE KUSHNYRICK
JOB TYPE Surface Casing	JOB PURPOSE CODE CEMENT SURFACE CASING 7521		BDA Brisbane	WELL TYPE Coal bed methane
RIG ENSIGN 984				

KEY PERFORMANCE INDICATORS

TYPE OF JOB (Cementing or Non-Cementing): <i>Select the job type (Cementing or Non-Cementing)</i>	<input type="text" value="Cementing"/>	WAS THIS A PRIMARY CEMENT JOB (YES / NO) <i>Primary cement job = Casing job, Liner Job, tie back</i>	<input type="text" value="YES"/>
TOTAL OPERATING TIME (hrs) <i>Rig up/ Pumping/ Rig Down</i>	<input type="text" value="6.0 hrs"/>	DID WE RUN WIPER PLUGS?	<input type="text" value="None"/>
HSE INCIDENT, ACCIDENT, INJURY: <i>This should be recordable incidents only</i>	<input type="text" value="NO"/>	WAS THIS A PLUG OR SQUEEZE JOB? WAS THIS A PRIMARY OR REMEDIAL JOB? <i>Remedial = Repeated attempts or corrections of initial cement job</i>	<input type="text" value="Neither"/>
WAS THE JOB DELIVERED CORRECTLY AS PERJOB DESIGN? <i>This will be dictated by the customer</i>	<input type="text" value="YES"/>	MIXING DENSITY OF JOB STAYED IN DESIGNED RANGE <i>Density defined as +/- 0.2ppg. Calculation: Total bbls cement mixed at designed density divided by total bbls of cement multiplied by 100</i>	<input type="text" value="98%"/>
TOTAL TIME PUMPING (hrs) <i>Total number of hours pumping fluid on this job</i>	<input type="text" value="2.0 hrs"/>	WAS AUTOMATED DENSITY CONTROL USED JOB WAS PUMPED AT DESIGNED PUMP RATE <i>Pump rate ranged defined as +/- bpm. Calculation: total bbls of fluid pumped at the designed rate divided by total bbls of fluid pumped multiplied by 100</i>	<input type="text" value="YES"/>
NON-PRODUCTIVE RIG TIME: <i>As a result of Halliburton cementing PSL</i>	<input type="text" value="0.0 hrs"/>	NUMBER OF REMEDIAL SQUEEZE JOBS REQUIRED - HES <i>Number of remedial squeeze jobs required after primary job performed by HES</i>	<input type="text" value="98%"/>
NUMBER OF JSA'S PERFORMED:	<input type="text" value="1"/>	NUMBER OF REMEDIAL SQUEEZE JOBS REQUIRED - COMPETITION <i>Number of remedial squeeze jobs required after primary job performed by competition</i>	<input type="text" value="0"/>
NUMBER OF UNPLANNED SHUTDOWNS (After starting to pump)	<input type="text" value="0"/>	NUMBER OF REMEDIAL PLUG JOBS REQUIRED - HES <i>Number of remedial plug jobs required after primary plug pumped by HES</i>	<input type="text" value="0"/>
TYPE OF RIG(CLASSIFICATION) JOB WAS PERFORMED ON:	<input type="text" value="LAND"/>	DID CEMENT RETURN TO SURFACE? <input type="text" value="YES"/> <input type="text" value="63"/> bbls into displacement	
REASON FOR UNPLANNED SHUTDOWNS (After starting to pump) <i>Add details in job logs</i>			
REASON FOR NON-PRODUCTIVE RIG TIME (Cementing PSL responsibility): <i>Add details in job logs</i>			
DENSITY RECORDED WITH PRESSURISED MUD BALANCE? <input type="text" value="YES"/> <input type="text" value="13.5 / 15.6"/> ppg			

CUSTOMER SATISFACTION SURVEY

Dear Customer,

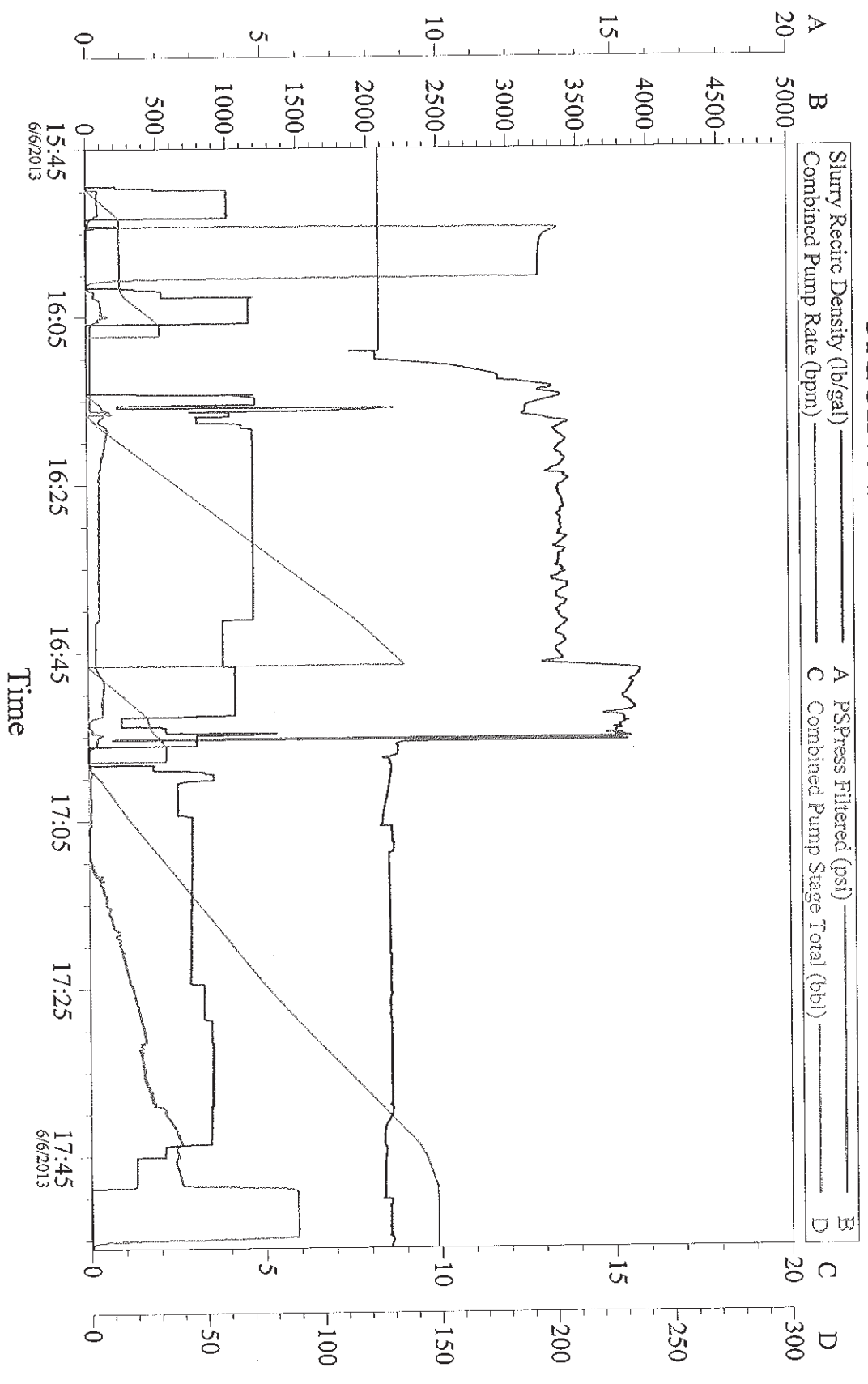
We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)
Survey Conducted Date	The date the survey was conducted 6.6.2013
Survey Interviewer	The survey interviewer is the person who initiated the survey. NO
Customer Participation	Did the customer participate in this survey? (Y/N) Y
Customer Representative	Enter the Customer representative name S. KUSHNYRICK
HSE	Was our HSE performance satisfactory? Circle Y or N Y
Equipment	Were you satisfied with our Equipment? Circle Y or N Y
Personnel	Were you satisfied with our people? Circle Y or N Y
Customer Comment	BBL COUNTER NOT CORRECT CREW WERE LATE FROM ROMA.
Job DVA	Did we provide job DVA above our normal service today? Circle Y or N
Time	Please enter hours in decimal format to nearest quarter hour.
Other	Enter short text for other efficiencies gained.
Customer Initials	Customer's Initials S
Please provide details	

CUSTOMER SIGNATURE 

ORIGIN ENERGY 9 5/8" SURFACE CASING



Customer: ORIGIN ENERGY	Job Date: 06/06/13	Ticket #: 900493825
Well Desc: DURHAM RANCH 175	SERVICE SUPERVISOR RONNIE LABRADA	ORIGIN REP. SHANE KUSHNYRICK

Origin Energy

POST JOB REPORTS
CEMENTING/PUMPING

Well Name : Durham Ranch 175

Rig: Ensign 964

CEMENT PRODUCTION CASING 1600M 7523

Prepared for Shane Kushnyrick

9/06/2013

Prepared by Ronald Labrada

HALLIBURTON

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HALLIBURTON

CUSTOMER	SALES ORDER No.	DATE
Origin Energy	900503521	9 June 2013

CEMENT/PUMPING JOB SUMMARY

WELL	LOCATION/FIELD NAME	COUNTRY	HES REP	CUSTOMER REP	WELL TYPE
Durham Ranch 175	Spring Gully	Australia	Ronald Labrada	Shane Kushnyrick	Coal Bed Methane
JOB TYPE	BOD NUMBER	JOB PURPOSE CODE		BDA	RIG
Production Casing	0	CEMENT PRODUCTION CASING 1600M 7523		Brisbane	Ensign 964

KEY PERFORMANCE INDICATORS

TYPE OF JOB (Cementing or Non-Cementing): <i>Select the job type (Cementing or Non-Cementing)</i>	<input type="text" value="Cementing"/>	WAS THIS A PRIMARY CEMENT JOB (YES / NO)	<input type="text" value="YES"/>
TOTAL OPERATING TIME (hrs) <i>Rig up/ Pumping/ Rig Down</i>	<input type="text" value="8.0 hrs"/>	DID WE RUN WIPER PLUGS?	<input type="text" value="Top Plug"/>
HSE INCIDENT, ACCIDENT, INJURY: <i>This should be recordable incidents only</i>	<input type="text" value="NO"/>	WAS THIS A PLUG OR SQUEEZE JOB?	<input type="text" value="Neither"/>
WAS THE JOB DELIVERED CORRECTLY AS PERJOB DESIGN: <i>This will be dictated by the customer</i>	<input type="text" value="YES"/>	WAS THIS A PRIMARY OR REMEDIAL JOB?	<input type="text" value="Primary"/>
TOTAL TIME PUMPING (hrs) <i>Total number of hours pumping fluid on this job</i>	<input type="text" value="2.0 hrs"/>	MIXING DENSITY OF JOB STAYED IN DESIGNED RANGE	<input type="text" value="98%"/>
NON -PRODUCTIVE RIG TIME: <i>As a result of Halliburton cementing PSL</i>	<input type="text" value="0.0 hrs"/>	WAS AUTOMATED DENSITY CONTROL USED	<input type="text" value="YES"/>
NUMBER OF JSA'S PERFORMED:	<input type="text" value="3"/>	JOB WAS PUMPED AT DESIGNED PUMP RATE	<input type="text" value="98%"/>
NUMBER OF UNPLANNED SHUTDOWNS (After starting to pump)	<input type="text" value="0"/>	NUMBER OF REMEDIAL SQUEEZE JOBS REQUIRED - HES	<input type="text" value="0"/>
TYPE OF RIG(CLASSIFICATION) JOB WAS PERFORMED ON:	<input type="text" value="LAND"/>	NUMBER OF REMEDIAL AQUEEZE JOBS REQUIRED - COMPETITION	<input type="text" value="0"/>
REASON FOR UNPLANNED SHUTDOWNS (After starting to pump) <i>Add details in job logs</i>		NUMBER OF REMEDIAL PLUG JOBS REQUIRED - HES	<input type="text" value="0"/>
REASON FOR NON-PRODUCTIVE RIG TIME (Cementing PSL responsibility): <i>Add details in job logs</i>		DID CEMENT RETURN TO SURFACE?	
DENSITY RECORDED WITH PRESSURISED MUD BALANCE?	<input type="text" value="YES"/> <input type="text" value="9.5"/> ppg	<input type="text" value="0"/> <input type="text" value="0"/> bbls into displacement	<input type="text" value="0"/> bbls returned to surface

CUSTOMER SATISFACTION SURVEY

Dear Customer,

We hope that you were satisfied with the service delivery of this job performed by Halliburton. It is the aim of our management and service personnel to deliver equipment and service of a standard unmatched in the service sector of the energy industry.

Please take the time to let us know if our performance met with your satisfaction. Please be as critical as possible to ensure we constantly improve our service. Your comments are of great value to us and are intended for the exclusive use of Halliburton.

CATEGORY	CUSTOMER SATISFACTION RATING (Please circle yes or no)
Survey Conducted Date	The date the survey was conducted 9/6/2013
Survey Interviewer	The survey interviewer is the person who initiated the survey. No
Customer Participation	Did the customer participate in this survey? (Y/N) Y
Customer Representative	Enter the Customer representative name S. Kushnyrick
HSE	Was our HSE performance satisfactory? Circle Y or (N) (N)
Equipment	Were you satisfied with our Equipment? Circle Y or N Y
Personnel	Were you satisfied with our people? Circle Y or (N) (N)
Customer Comment	INTAKE ON BATCH MIXER NOT INSTALLED BLOWING CEMENT ON LOCATION. 5-10 LBS CEMENT ON GROUND. BATCH MIXER OPERATOR NOT WEARING HAT HAT OR SAFETY GLASSES. LACK OF TRIMM MOVERS TO PUSH TRUCKS TIMELY PROPER CHEMICALS NOT SENT W/ JOB.

Customer and Halliburton Representative agree on the data input into the cementing report

CUSTOMER SIGNATURE 

HALLIBURTON SIGNATURE

HALLIBURTON		CUSTOMER	SALES ORDER No.	DATE	
		Origin Energy	900503521	9 June 2013	
CEMENT/PUMPING JOB SUMMARY					
WELL	LOCATION/FIELD NAME	COUNTRY	HES REP	CUSTOMER REP	WELL TYPE
Durham Ranch 175	Spring Gully	Australia	Ronald Labrada	Shane Kushnyrick	Coal Bed Methane
JOB TYPE	BOD NUMBER	JOB PURPOSE CODE		BDA	RIG
Production Casing	0	CEMENT PRODUCTION CASING 1600M 7523		Brisbane	Ensign 964

PERSONELL					
PERSONNEL / EXPOSURE	hrs	PERSONNEL / EXPOSURE	hrs	PERSONNEL / EXPOSURE	hrs
477048	Anandam Sami	24	531289	Ronald Labrada	24
				510002	Rodney Fletcher
				24	532554
					Stuart Campbell (Bris. Offic
					24

EQUIPMENT					
SAP#	PUMPING / MIXING	HOURS	SAP#	BULK SUPPLY / TANKS	HOURS
12070982	BATCH MIXER #12070982 (344QVU)	48	12068254	BULKER #12068254 (SY-12-DM)	48
11318153	CEMENT UNIT ELITE #113181513 (895-QSU)	48	10048604	BULKER 660 #10048604 (YCA-210)	48
SAP#	VEHICLES / TRAILERS	HOURS	SAP#	OTHER EQUIPMENT	HOURS
12056324	KENWORTH T659 TRUCK #12056324 (SB85FW)	48			
#N/A	DOLLY #12203822	48			
#N/A	DOLLY #12203823	48			
11598590	LANDCRUISER UTE #11598590 (246-REZ)	48			
#N/A	LANDCRUISER UTE #12202066 (S813-AWF)	48			

WELL PROFILE		
NEW CASING	OPEN HOLE + EXCESS OR CALIPER DATA	PREVIOUS CASINGS
7in 23ppf : m to m MD, m TVD	8.75in, 446 percent excess, 0m to 976m	9.625in, 36ppf, 0m to 501m

CEMENT DESIGN										
Spacer	SLURRY ID	0	Lead	SLURRY ID	0	Tail	SLURRY ID	0		
DENSITY	ppg	WATER	gal/sk	DENSITY	9.5 ppg	WATER	11.85 gal/sk	DENSITY	13.5 ppg	
YIELD	cuft/sk	MIX FLUID	bbbl	YIELD	3.15 cuft/sk	MIX FLUID	56.4 bbl	YIELD	1.51 cuft/sk	
WATER SOURCE	Day Tank			WATER SOURCE	Day Tank			WATER SOURCE	Day Tank	
CEMENT TYPE	at lb/sk			CEMENT TYPE	Tuned Light Cement at 94lb/sk			CEMENT TYPE	POZMIX 65:35 at 94lb/sk	
Total Cement Used	sks			Total Cement Used	200 sks			Total Cement Used	167 sks	
Estimated TOC	m			Estimated TOC	0 m			Estimated TOC	629 m	
Additive	Concentration	Total Used	Additive	Concentration	Total Used	Additive	Concentration	Total Used		
NaCl	72.19 lb/bbl	1444lbs	HR-5	0.2 %BWOC	40lbs	Bentonite	3 %BWOC	436lbs		
WG-19	2.5 lb/bbl	50lbs	Halad 344	0.6 %BWOC	120lbs	Halad 344	0.5 %BWOC	73lbs		
			Phenoseal	2 %BWOC	400lbs	HR-5	0.3 %BWOC	44lbs		
			CFR-3	1 %BWOC	200lbs	Cal Seal 60	1 %BWOC	145lbs		
			Pol-E-Flake	0.25 %BWOC	50lbs	CFR-3	0.4 %BWOC	58lbs		
						Phenoseal	2 %BWOC	291lbs		
						Pol-E-Flake	0.25 %BWOC	36lbs		

JOB LOGS						
DATE	TIME	VOLUME	PRESSURE (psi)		RATE	JOB DESCRIPTION
DAY-MTH-YR	HRS:MIN	(BBLs)	HIGH	LOW	BPM	
08-Jun-13	14:00					Batch mix operator requested by rig
	15:00					Batch mix operator and assistant pre tripe safety meeting
	15:05					Batch mix operator and assistant leave Roma for site
09-Jun-13	5:45					Requested on site by company rep
	6:30					Halliburton crew leave camp
	7:00					Halliburton crew arrive location
	7:15					Two halliburton employees leave to get bulker train
	8:50					Pre spot safety meeting
	9:00					Halliburton spots all units and bulker onto lease
	10:30					Pre rig up safety meeting
	10:35					Partially rig up iron and bulk hoses and water lines
	12:00					Prime elite cement unit and batch mixer
	12:30					Pre job safety meeting
	12:45					Rig up cement head and rest of iron
	13:48	10	67		3.9	Pump gelled spacer
	13:55	3000				Pressure test surface lines
	14:01	10	92		3.9	Pump gelled spacer
	14:14	112.8	44		2	mix and pump lead cement
	14:47	45	95		3.5	mix and pump tail cement

HALLIBURTON

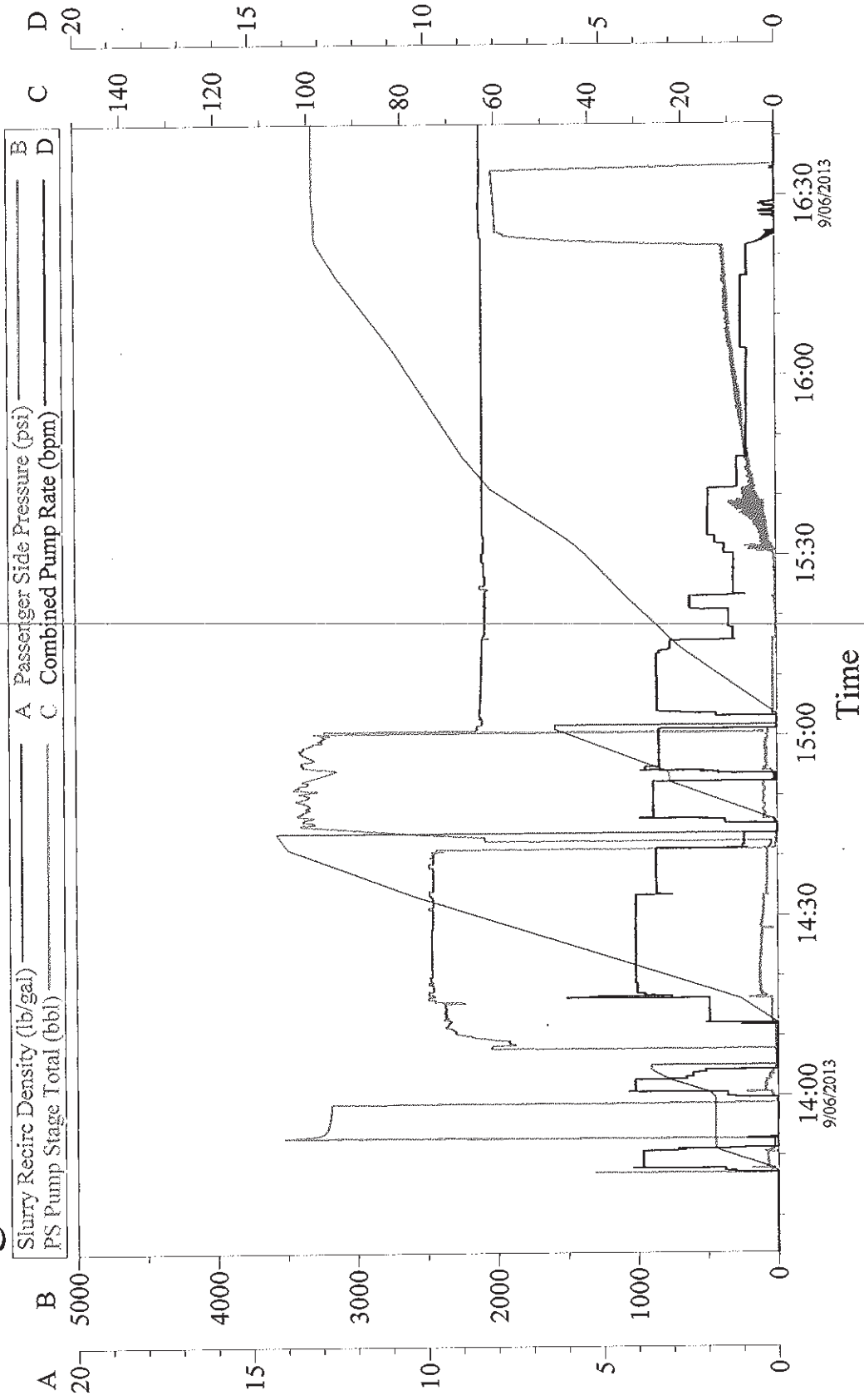
CUSTOMER	SALES ORDER No.	DATE
Origin Energy	900503521	9 June 2013

CEMENT/PUMPING JOB SUMMARY

WELL	LOCATION/FIELD NAME	COUNTRY	HES REP	CUSTOMER REP	WELL TYPE
Durham Ranch 175	Spring Gully	Australia	Ronald Labrada	Shane Kushnyrick	Coal Bed Methane
JOB TYPE	BOD NUMBER	JOB PURPOSE CODE		BDA	RIG
Production Casing	0	CEMENT PRODUCTION CASING 1600M 7523		Brisbane	Ensign 964

	15:04					drop top plug
	15:05	123	31		3.4	displace top plug <i>Slowed Displacement DUE TO LOSSES</i>
	16:26					bump plug
	16:27	2000				pressure test casing
	16:36	1				Bleed black and watch for returns
	16:40					rig down and wash up

Origin - ENSIGN 964 - DR175 - 7 INCH PRODUCTION



Customer: Origin Energy	Job Date: 06/09/13	Ticket #: 900503521	TG Version G3.4.1
Well Desc: Durham Ranch 175	Customer Rep: Shane Kushnyrick	HES Rep: Ronnie Labrada	09-Jun-13 17:28

APPENDIX 7 – DIRECTIONAL SURVEY



Directional Survey DURHAM RANCH 175

Wellbore Name Original Hole	Parent Wellbore Original Hole	Kick Off Depth (mKB)	Vertical Section Direction (°) 0.00
Date 8/06/2013	As Ran Yes	Description Pathfinder XEM MWD	Proposed? No
MD Tie In (mKB) 0.00	TVDTie In (mKB) 0.00	Inclination Tie In (°) 0.00	Azimuth Tie In (°) 0.00
		NSTie In (m) 0.00	EWTie In (m) 0.00

Survey Data										
Date	MD (mKB)	Incl (°)	Azm (°)	TVD (mKB)	VS (m)	NS (m)	EW (m)	DLS (°/100ft)	Method	Survey Company
5/06/2013	47.00	0.22	32.21	47.00	0.08	0.08	0.05	0.14	MWD	Pathfinder
5/06/2013	100.00	0.22	32.31	100.00	0.25	0.25	0.16	0.00	MWD	Pathfinder
5/06/2013	250.00	1.41	66.18	249.98	1.24	1.24	2.00	0.25	MWD	Pathfinder
5/06/2013	300.00	1.41	61.68	299.97	1.78	1.78	3.10	0.07	MWD	Pathfinder
5/06/2013	451.00	1.49	42.32	450.92	4.11	4.11	6.06	0.10	MWD	Pathfinder
5/06/2013	496.00	2.02	30.98	495.90	5.22	5.22	6.86	0.43	MWD	Pathfinder
7/06/2013	610.00	1.19	37.71	609.85	7.88	7.88	8.62	0.23	MWD	Pathfinder
7/06/2013	700.00	1.01	302.70	699.84	9.05	9.05	8.53	0.55	MWD	Pathfinder
7/06/2013	800.00	0.62	93.30	799.84	9.50	9.50	8.32	0.48	MWD	Pathfinder
7/06/2013	900.00	0.70	214.72	899.83	8.96	8.96	8.52	0.35	MWD	Pathfinder
7/06/2013	980.00	0.79	241.48	979.83	8.30	8.30	7.75	0.14	MWD	Pathfinder

APPENDIX 8 – WIRELINE LOGS

Density, Sonic, Neutron and GR Log

PEX-CBL-GR

1:200 Scale

Schlumberger

Company: Origin Energy Ltd

Well: Durham Ranch 175

Field: Spring Gully

Rig: Rigless

State: Queensland

Country: Australia

Latitude: 26° 4' 54.095" S

Longitude: 149° 8' 52.703" E

Custom:

Rig Name:

Rig Type:

Project Code: 156589.CN.01.0056D

Rigless

Crane

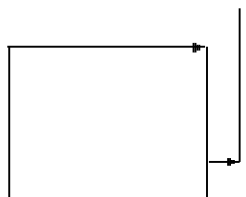
FL: GDA94 Zone 55

FL1: Easting: 714 846

FL2: Northing: 7 113 498

Log Measured From: - Casing Flange: 0.80 m
Permanent Datum: - Ground Level: 309.00 m

Reference Datum - Mean Sea Level



Acquisition Dates: 27-Jun-2013

Log Interval: 15.94(m) -- 955.52(m)

Index Types: Measured Depth

Index Scales: 1:240

Depth Source: Wireline Depth

Depth Sensor: IDW

Print Type: Field

Other Services:

None



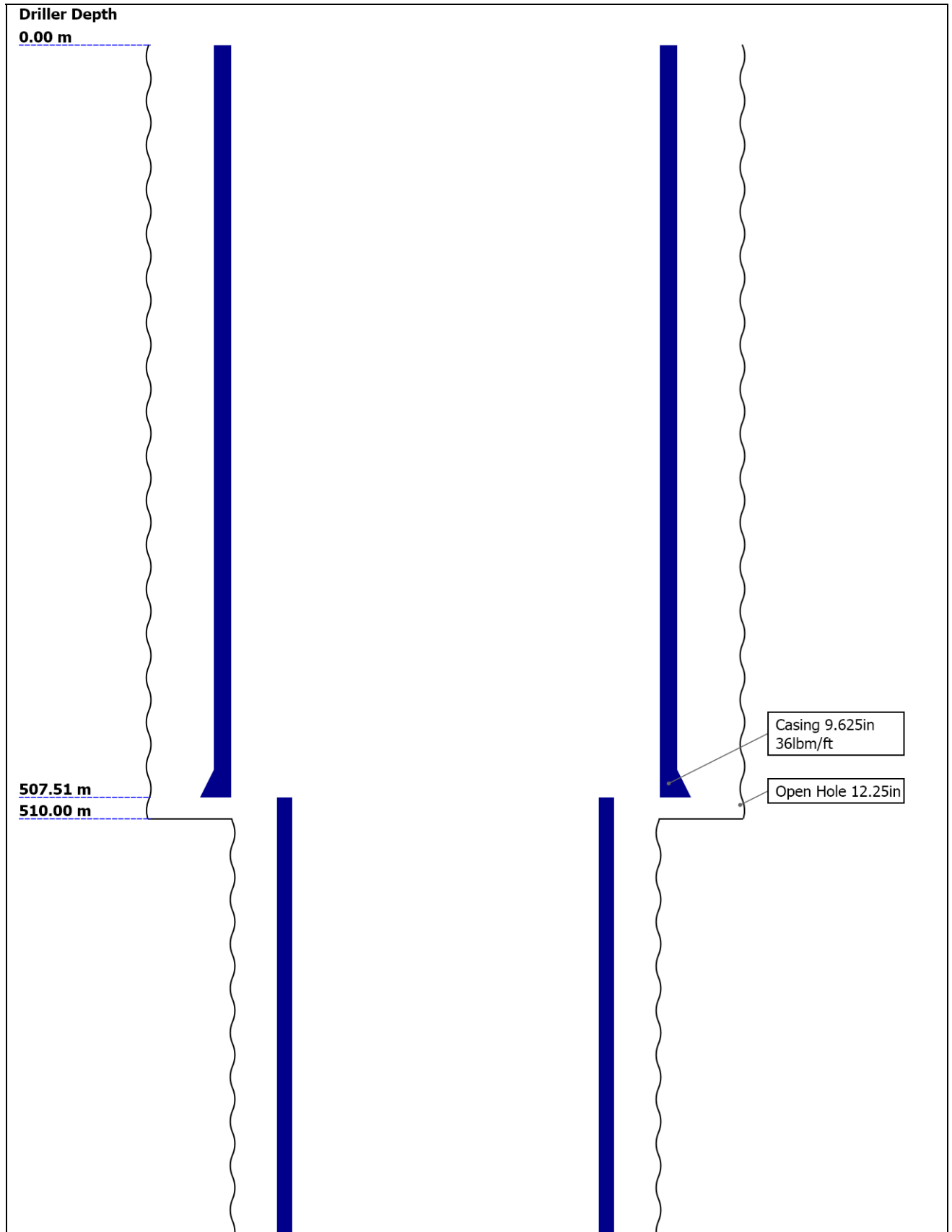
Disclaimer

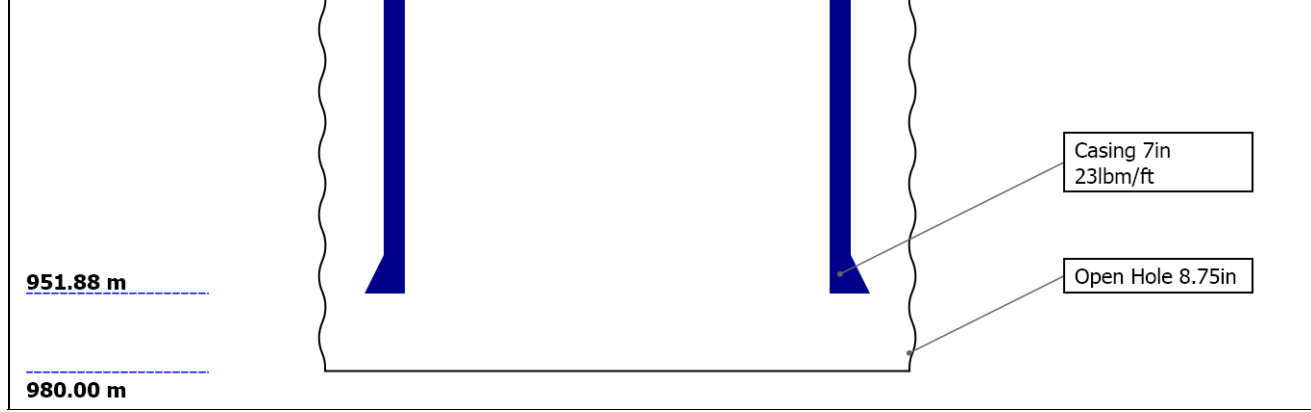
THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

Contents

1. Header
2. Disclaimer
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8. Depth Summary
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 - 9.3 Log (Sonic CBL with VDL)
 - 9.4 Parameter Listing
10. Calibration Report
11. Tail

Well Sketch





Borehole Size/Casing/Tubing Record

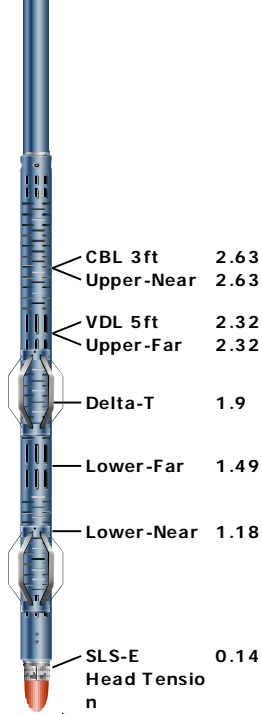
Bit					
Bit Size (in)	12.25	8.75			
Top Driller (m)	0	510			
Top Logger (m)	0	510			
Bottom Driller (m)	510	980			
Bottom Logger (m)	510	980			
Casing					
Size (in)	9.625	7			
Weight (lbm/ft)	36	23			
Inner Diameter (in)	8.914	6.37			
Grade	K55	N80			
Top Driller (m)	0	507.51			
Top Logger (m)	0	507.51			
Bottom Driller (m)	507.51	951.88			
Bottom Logger (m)	507.51	937.62			

Operational Run Summary

Parameter (unit)	1				
Date Log Started	27-Jun-2013				
Time Log Started	17:57:54				
Date Log Finished	27-Jun-2013				
Time Log Finished	20:14:57				
Top Log Interval (m)	10.00				
Bottom Log Interval (m)	937.62				
Total Depth (m)	937.62				
Max Hole Deviation (deg)	NaN				
Azimuth of Max Deviation (deg)	NaN				
Bit Size (in)	8.750				
Logging Unit Number	3170				
Logging Unit Location	AURM				
Recorded By	Marta Sibarani				
Witnessed By	Michael Seitz				
Casing Code Number					

Remarks and Equipment Summary

1: Toolstring				1: Remarks
Equip name LEH-QT:2090 LEH-QT:2090	Length 17.44	MP name	Offset	Log Objective: Evaluate Cement in the 7" cased hole section
				PEX log ran in the cased hole section to get density/neutron data.
				Main pass logged at three different speeds, as per logging program
CA L-YA:576 CA L-YA:576	16.55	CCL	16.31	Toolstring ran as per tool sketch
DTC-H:9133 ECH-KC:10210 DTC-H:9133	15.49	CTEM HV	15.21 0.00	
HGNS-H:3875 HGNH NPV-N NSR-F:1100 HMCA-H HGNS-H:3875 HACCZ-H:4627	14.57	TelStatus ToolStatus Temperature GR	14.57 14.57 14.56 14.35	
HDRS-B:748 ECH-MEB:722 HRCC-B:1801 HRMS-B:748 Backscatter:4894 4 Long Spacing:28 074 GSR-J:3739 Short Spacing:50 796 HRGD-B:754 GPV-Q	11.7	CNL Porosity HGNS HMCA Accelerometer	12.42 11.7 11.7 0.00	
		HRCC	10.49	
		MCFL Caliper TLD Density	8.83 8.68 8.56	
AH-107	7.97			
AH-120	7.36			
DSLT-H:8222 ECH-KH DSLC-H:8222 SLS-E:1093	6.75			



BNS-STD 0.14

Lengths are in m
 Maximum Outer Diameter = 6.250 in
 Line: Sensor Location, V value: Gating Offset
 All measurements are relative to TOOL_ZERO

Depth Summary

Depth Control Parameters	1		
Conveyance Type	Wireline		
Log Sequence	First Run in Hole		
Rig Type	Crane		
Depth Remark Parameters	1		
Depth Remark 1	All Schlumberger Depth Control procedures followed.		
Depth Remark 2	IDW used as primary depth device.		
Depth Remark 3	Z-Chart used as secondary depth device.		
Depth Measuring Device	1		
Type	IDW-JB		
Serial Number	6375		
Calibration Date	09-Nov-2012		
Calibrator Serial Number	30		
Calibration Cable Type	7-46 ZV XS		
Wheel Correction 1	-6.05		
Wheel Correction 2	-5.26		
Tension Device	1		
Type	CMTD-B/A		
Serial Number	1679		
Calibration Date	08-jun-2013		
Calibrator Serial Number	1322		
Calibration Points	10		
Calibration RMS	88		
Calibration Peak Error	218		
Logging Cable	1		
Type	7-46ZV-XS		
Serial Number	F70739		
Logging Cable Length (m)	3200.00		

Integration Summary

Output Channel(s)	Output Description	Input Parameter	Output Value	Unit
-------------------	--------------------	-----------------	--------------	------

Pass Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Depth Shift	Include Parallel Data
1	Main[2]:Up	Up	15.94 m	955.52 m	27-Jun-2013 6:20:18 PM	27-Jun-2013 8:00:13 PM	0.63 m	

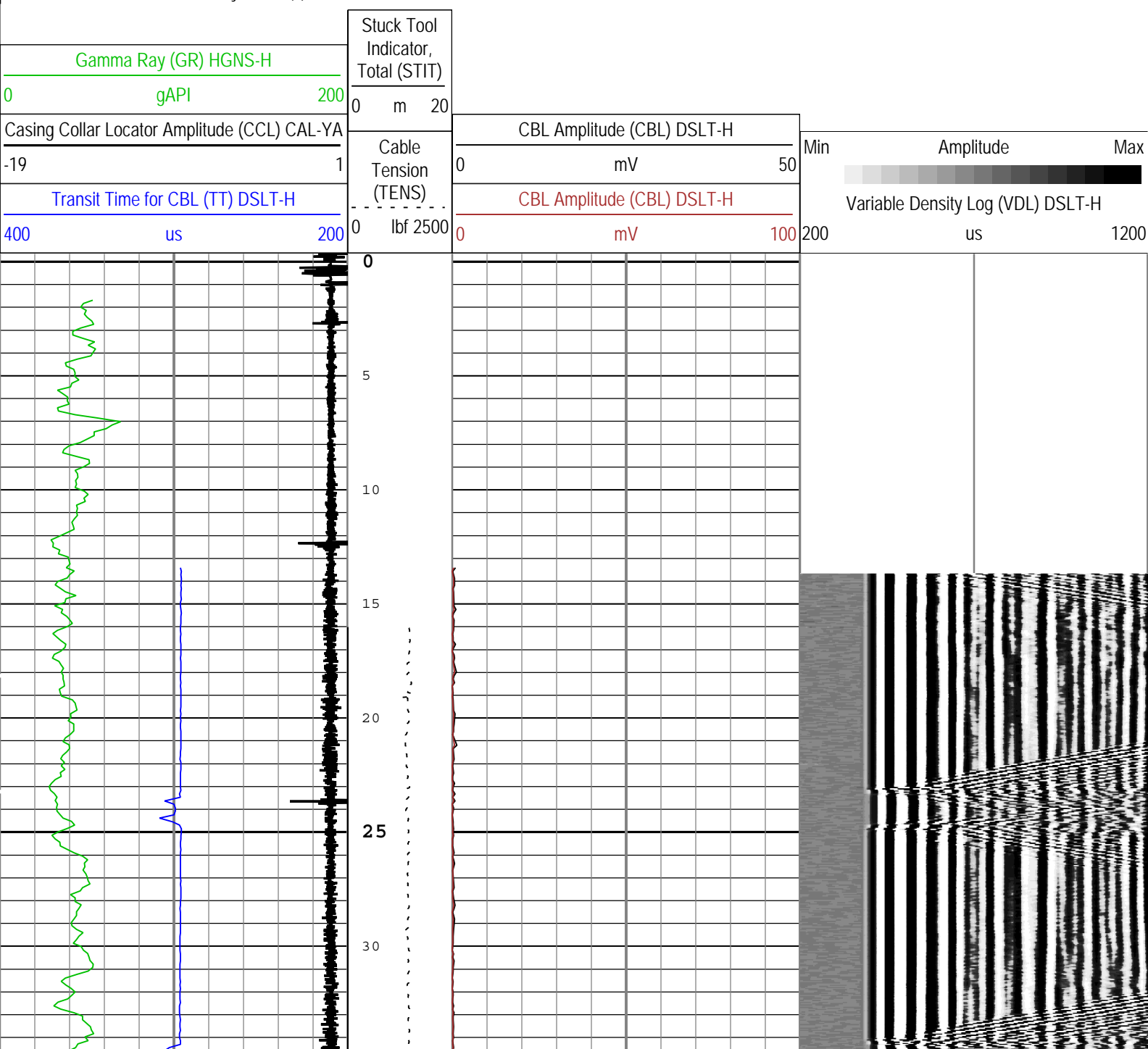
All depths are referenced to toolstring zero

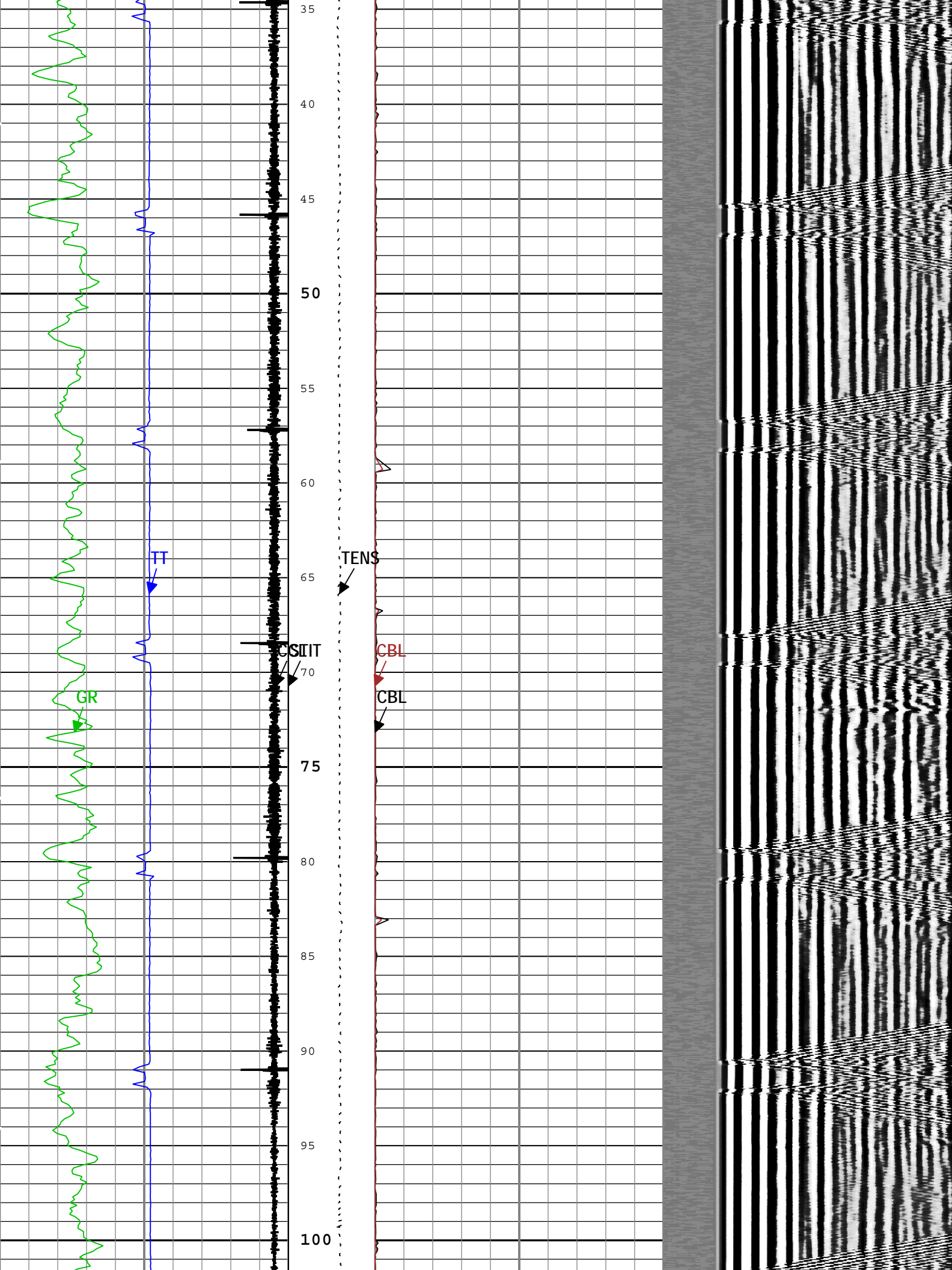
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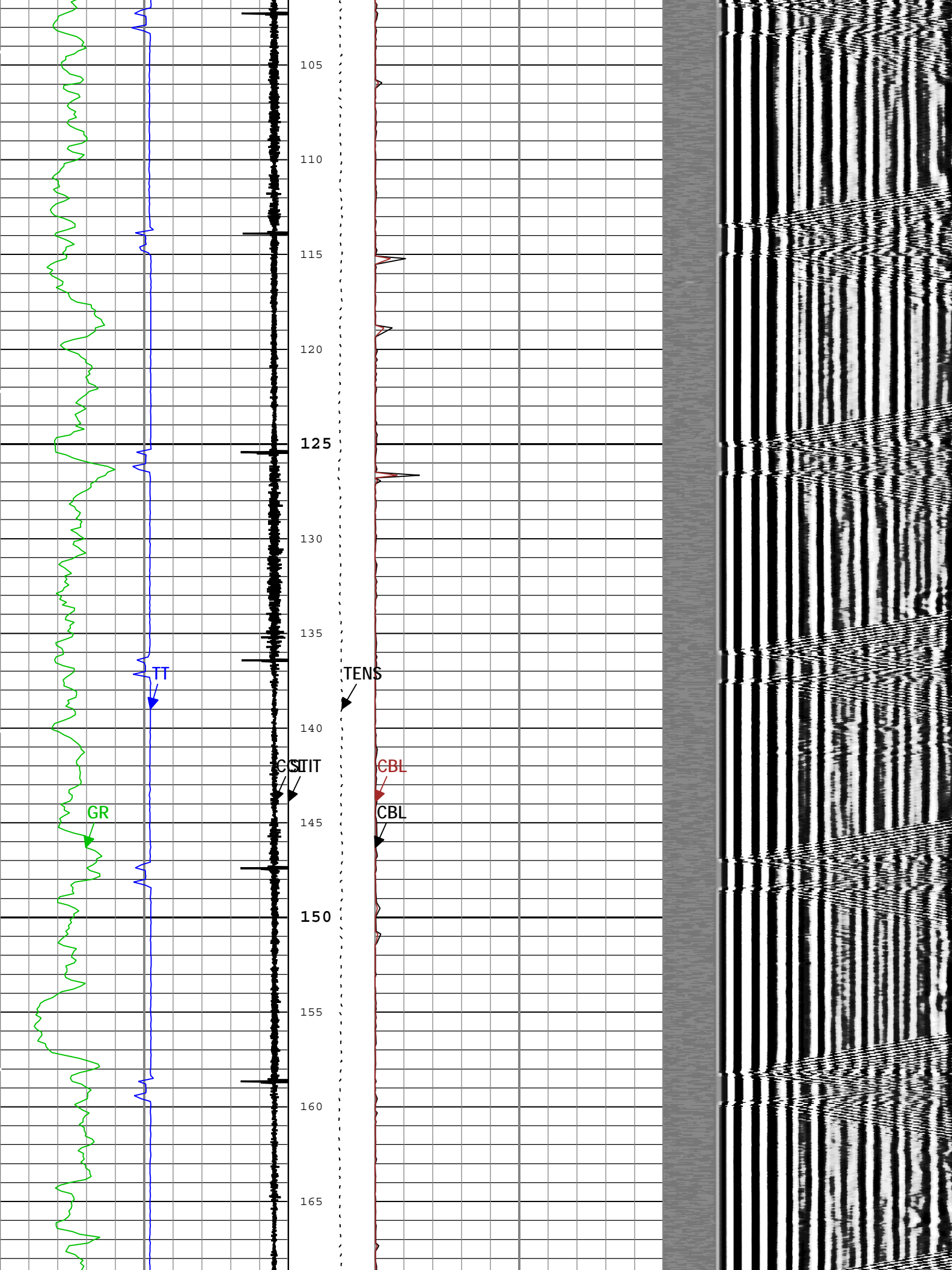
1: Main[2]:Up

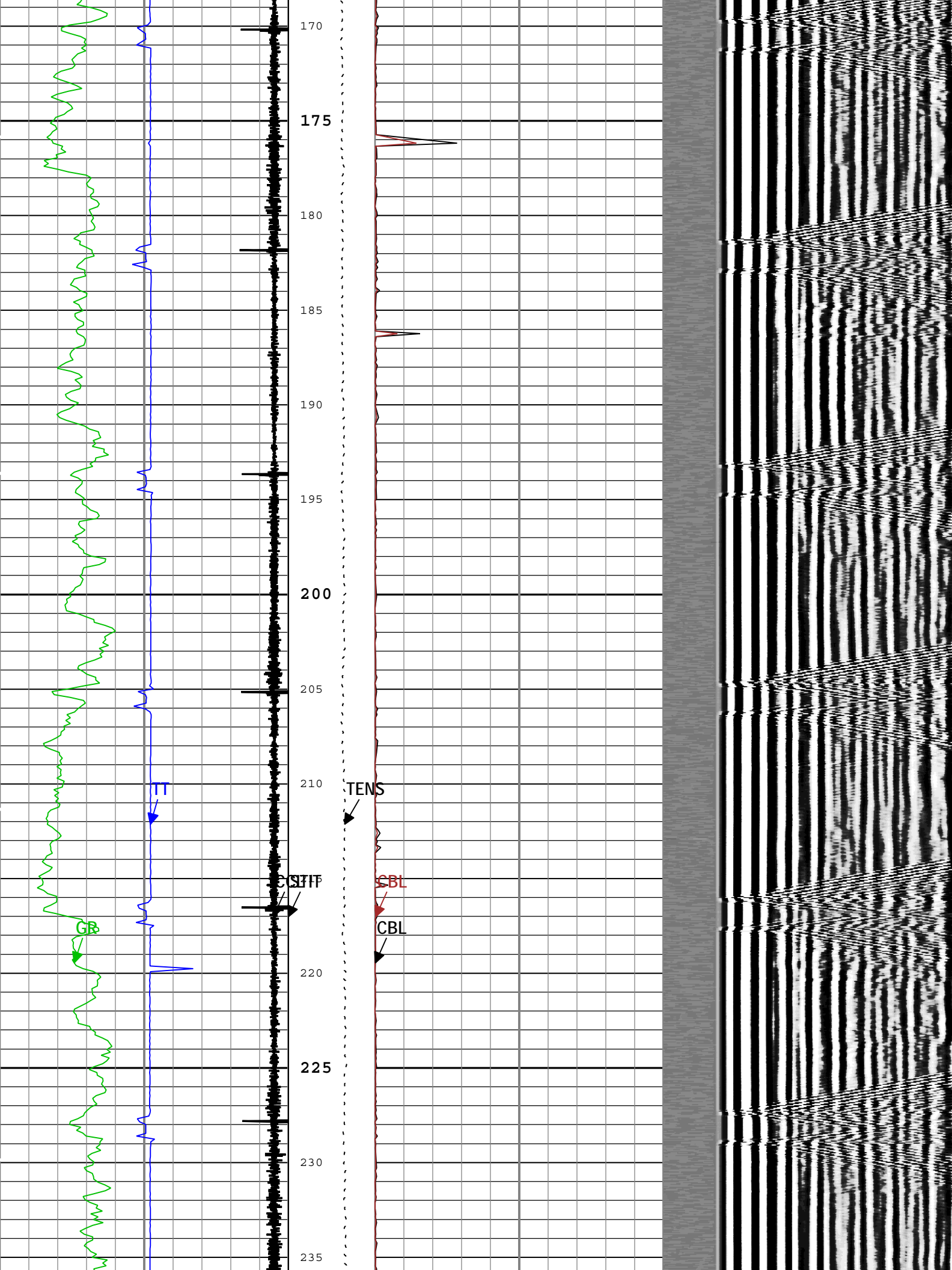
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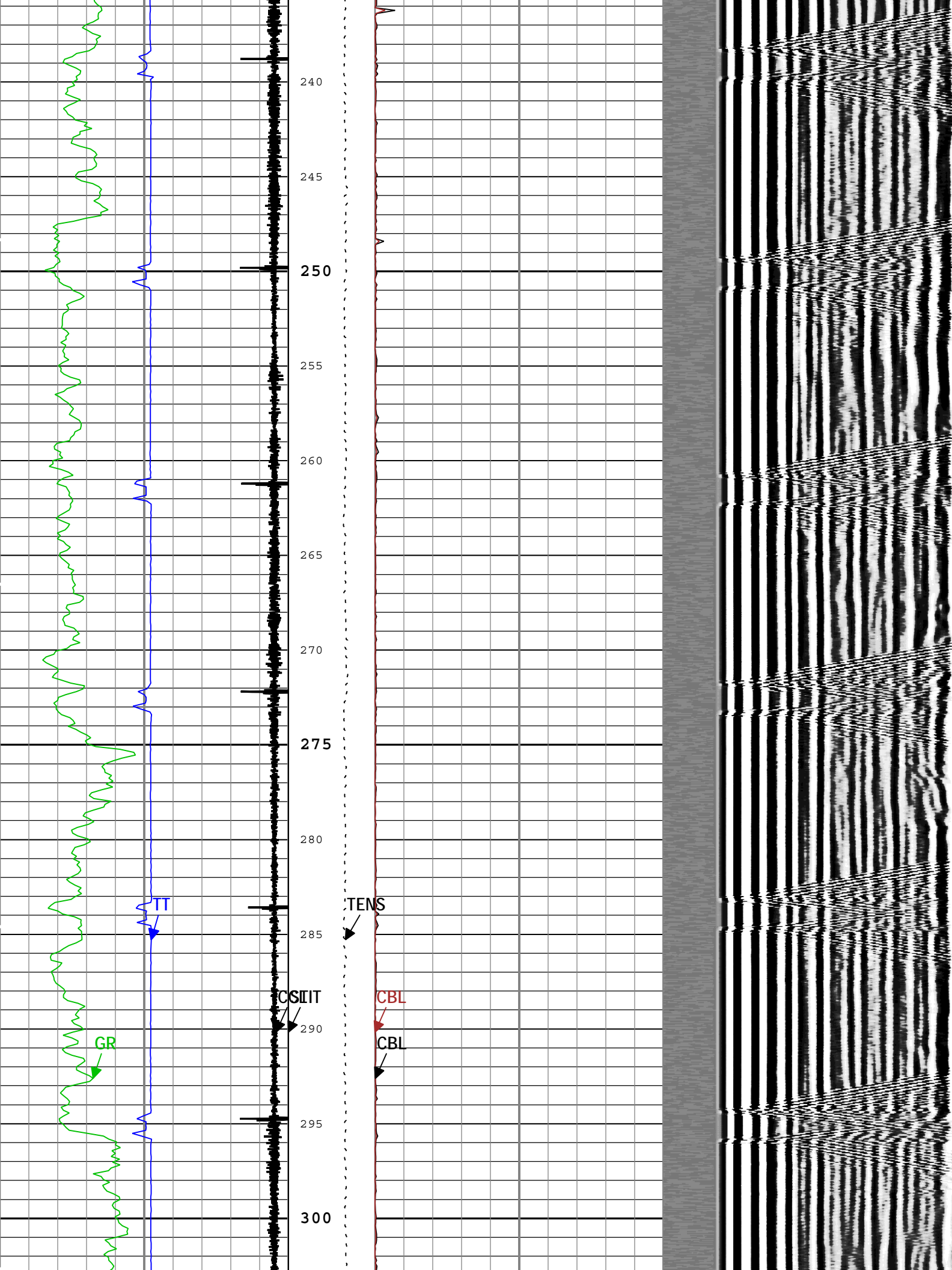
TIME_1900 - Time Marked every 60.00 (s)

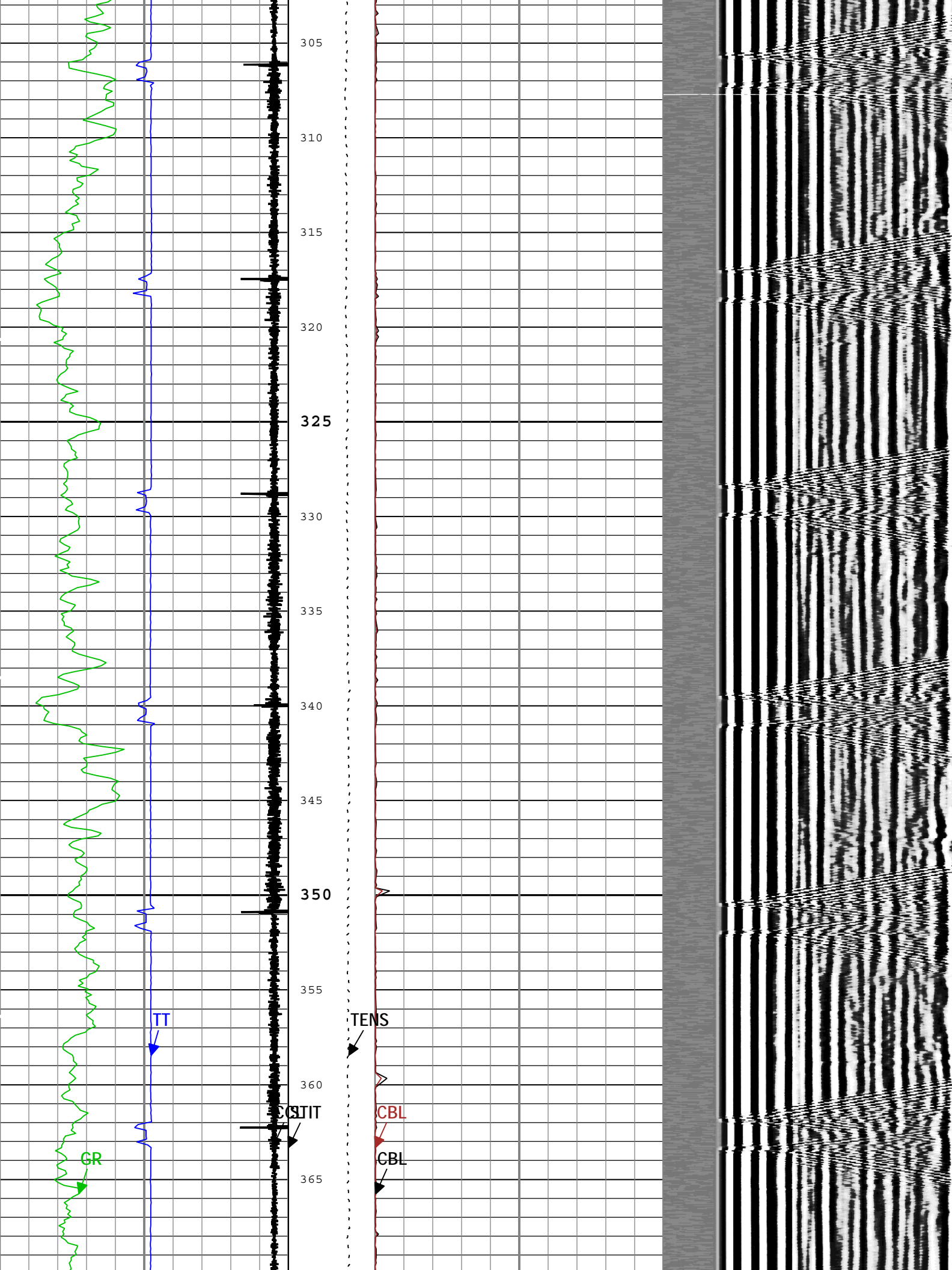


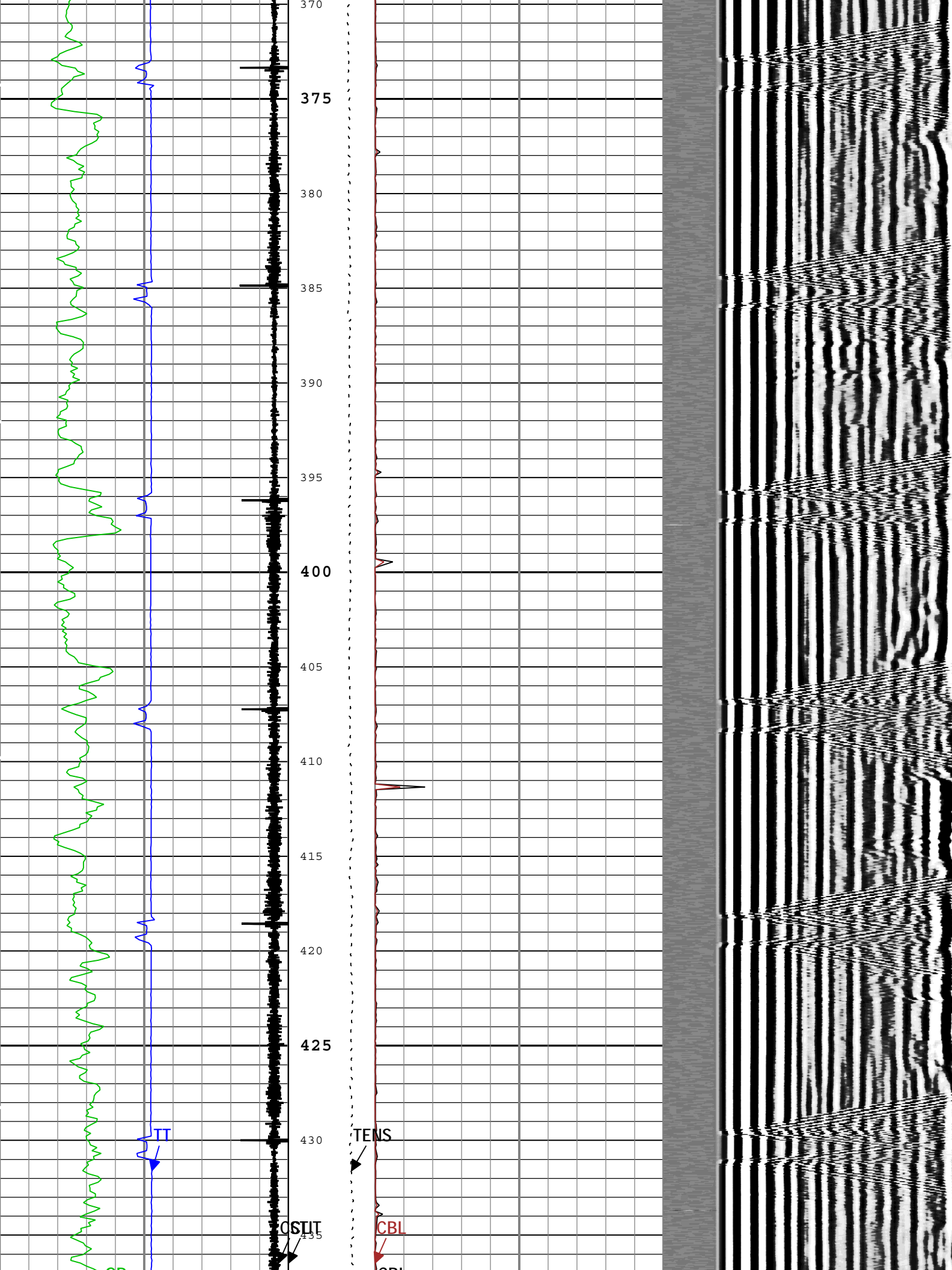


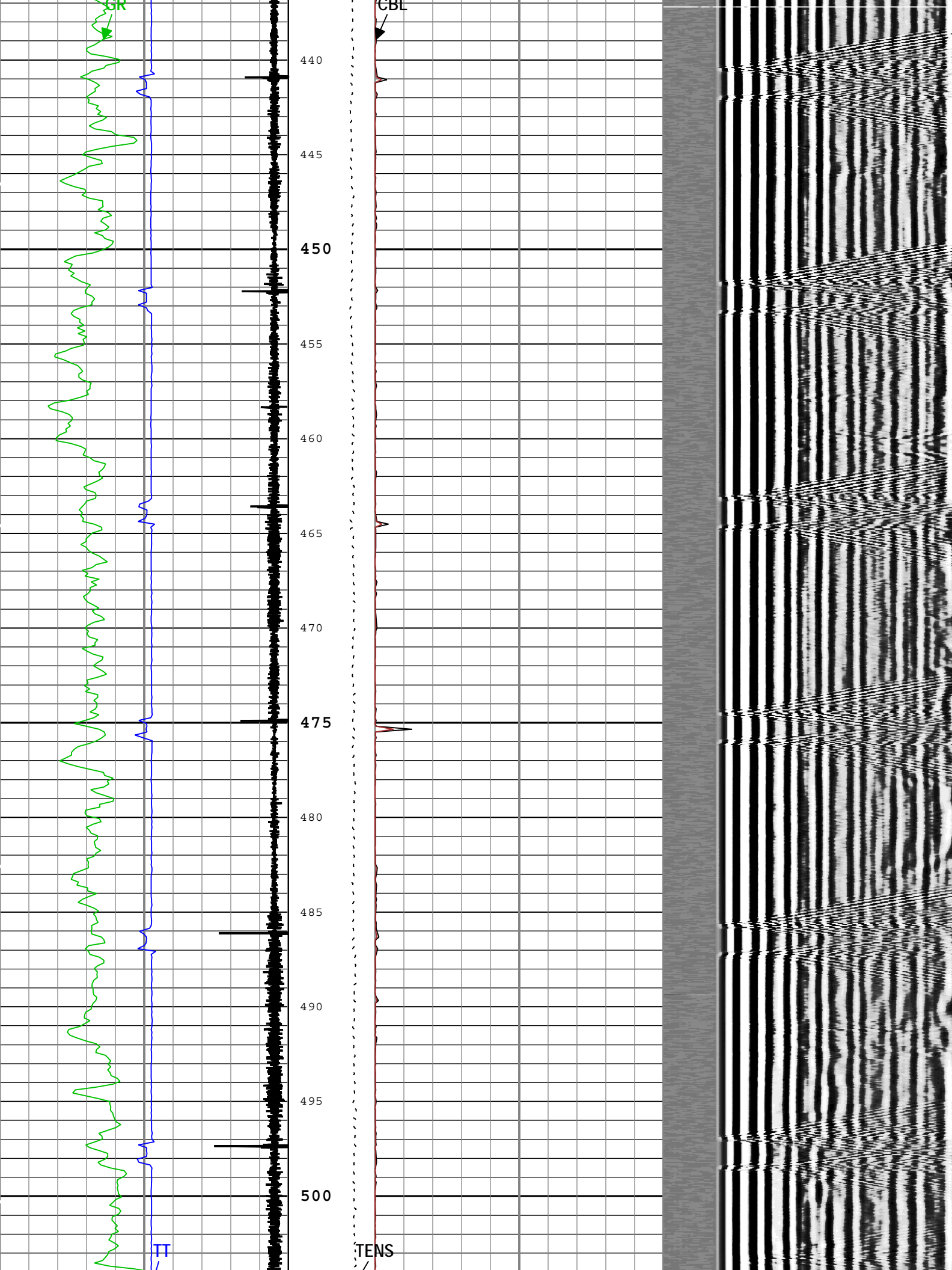


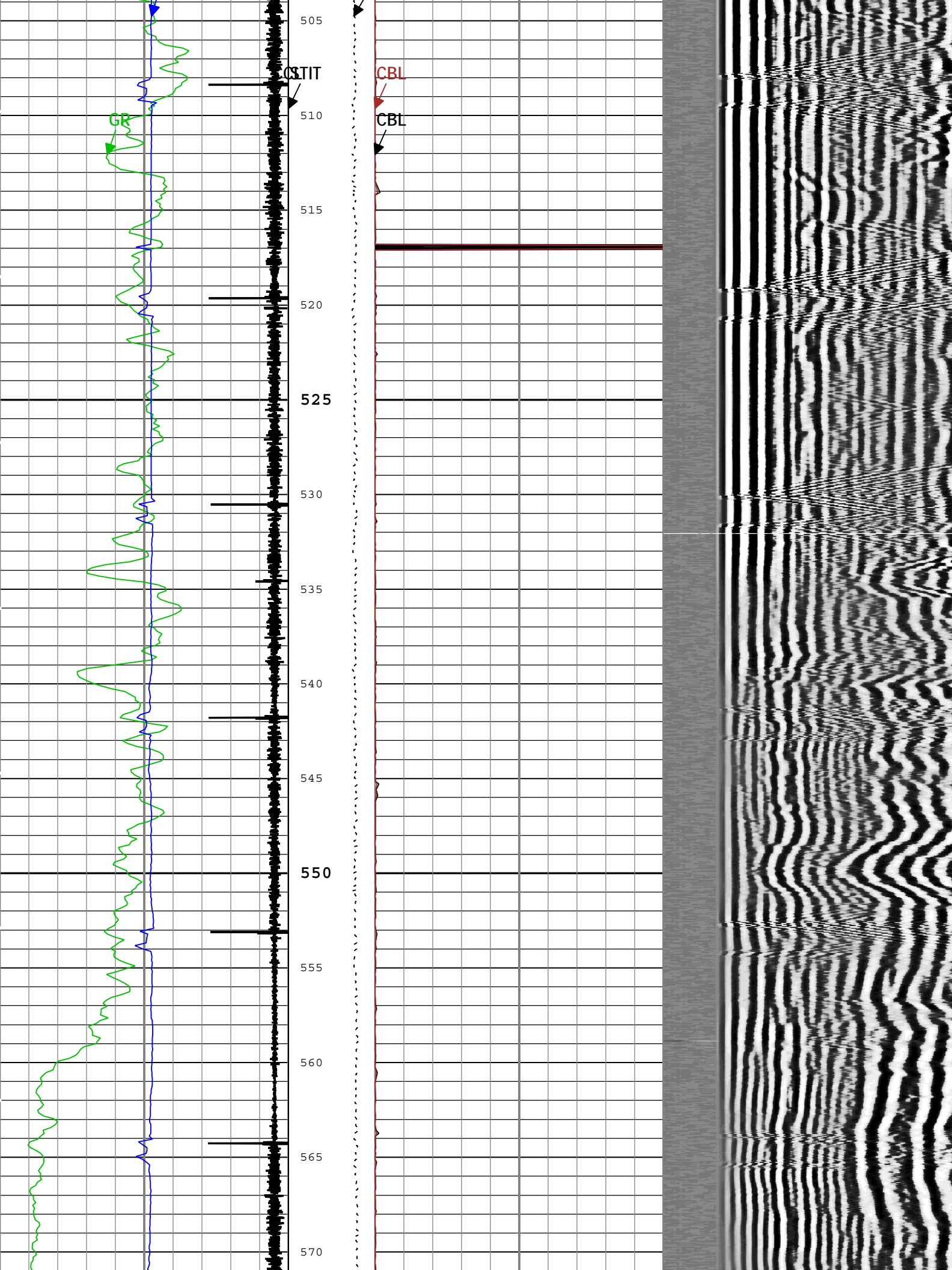


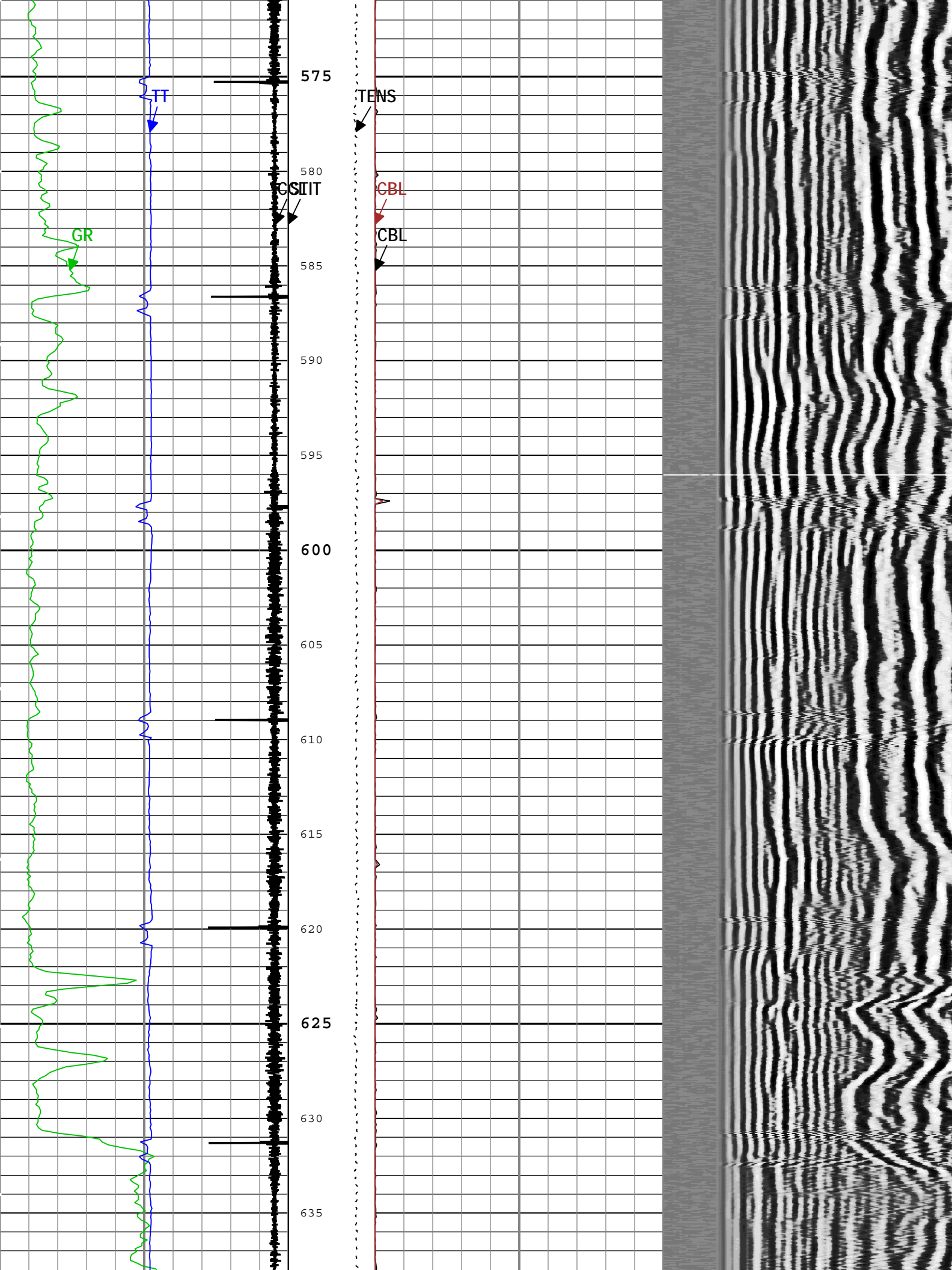


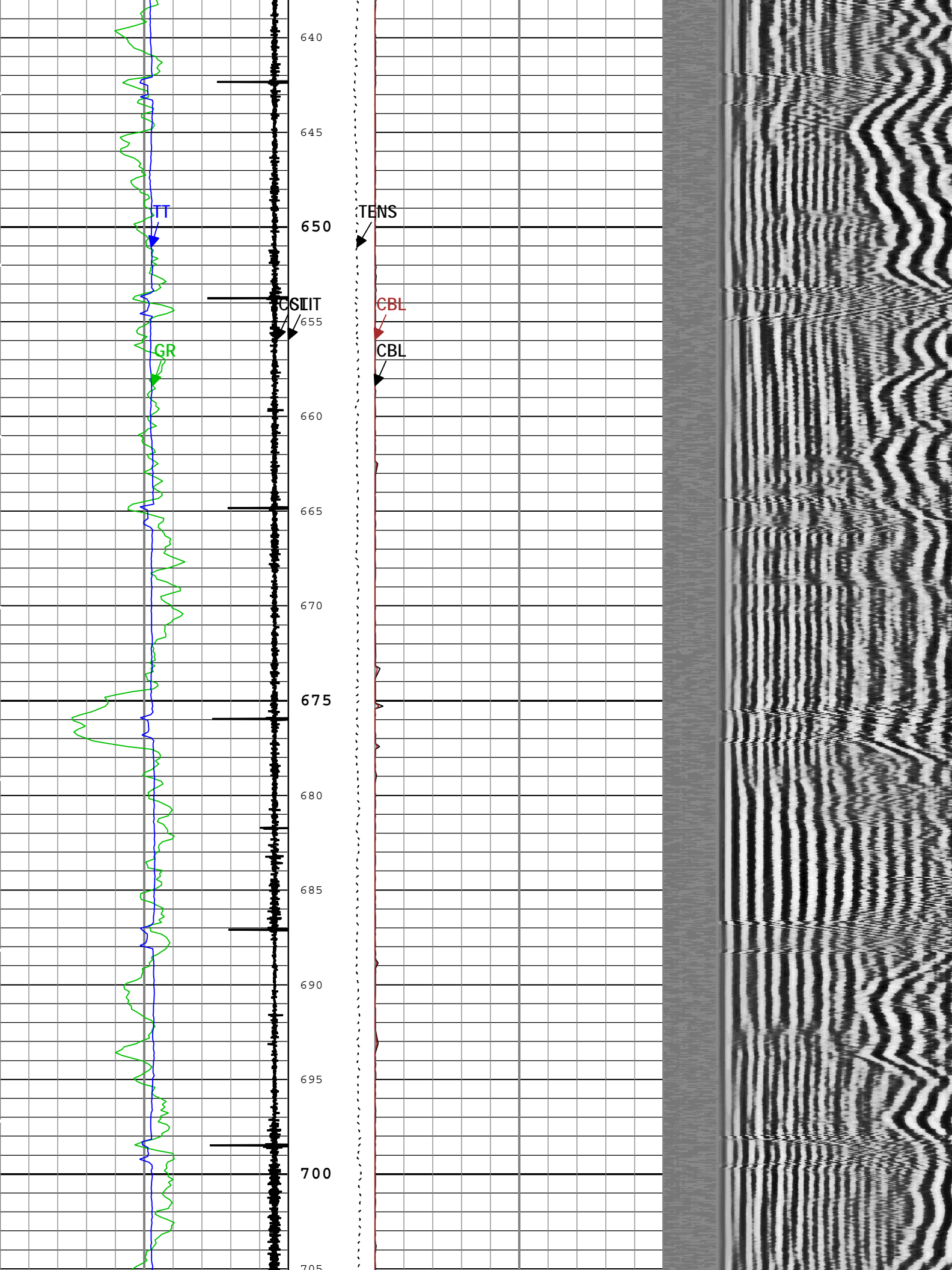


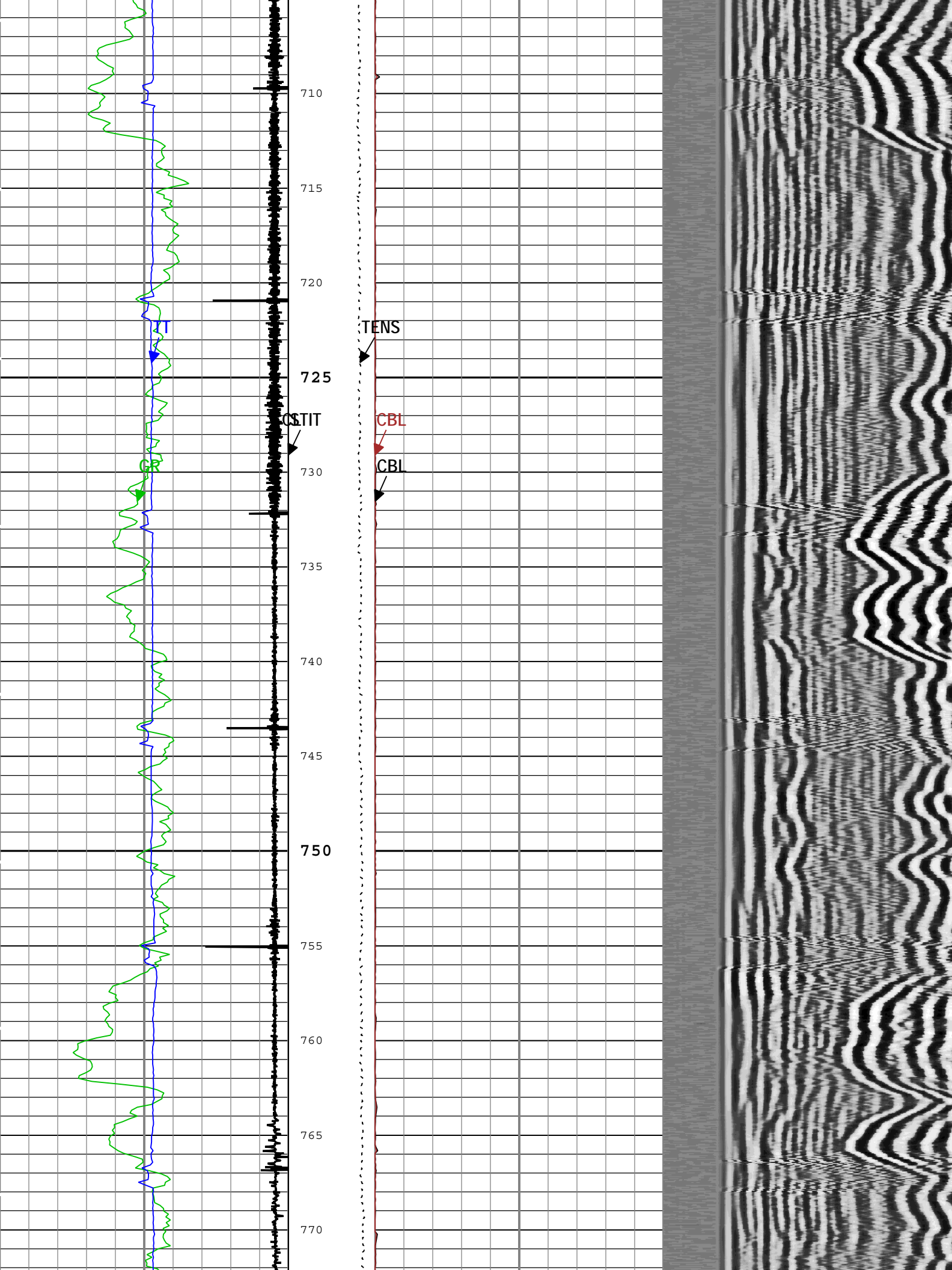


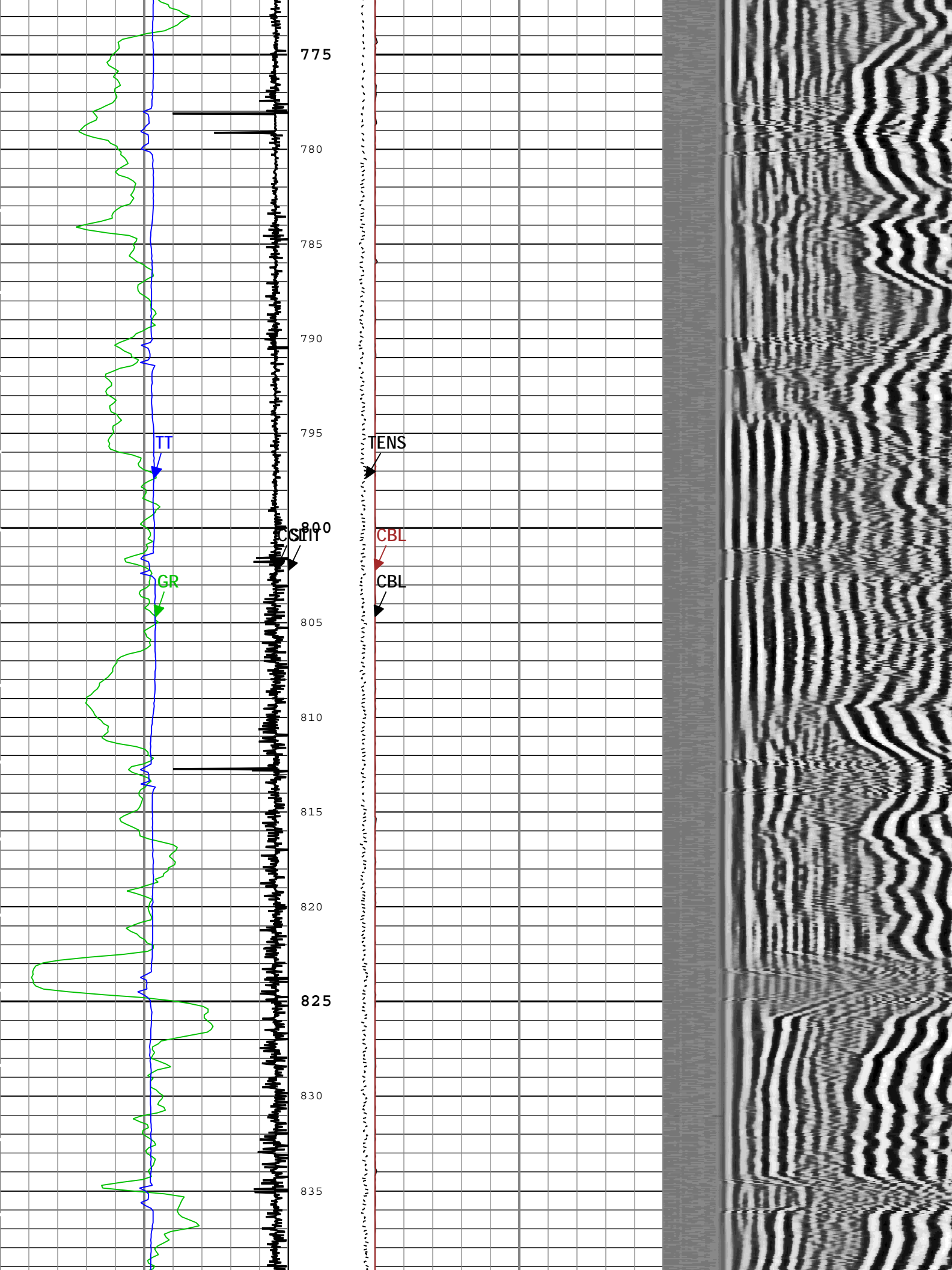












775

780

785

790

795

800

805

810

815

820

825

830

835

TT

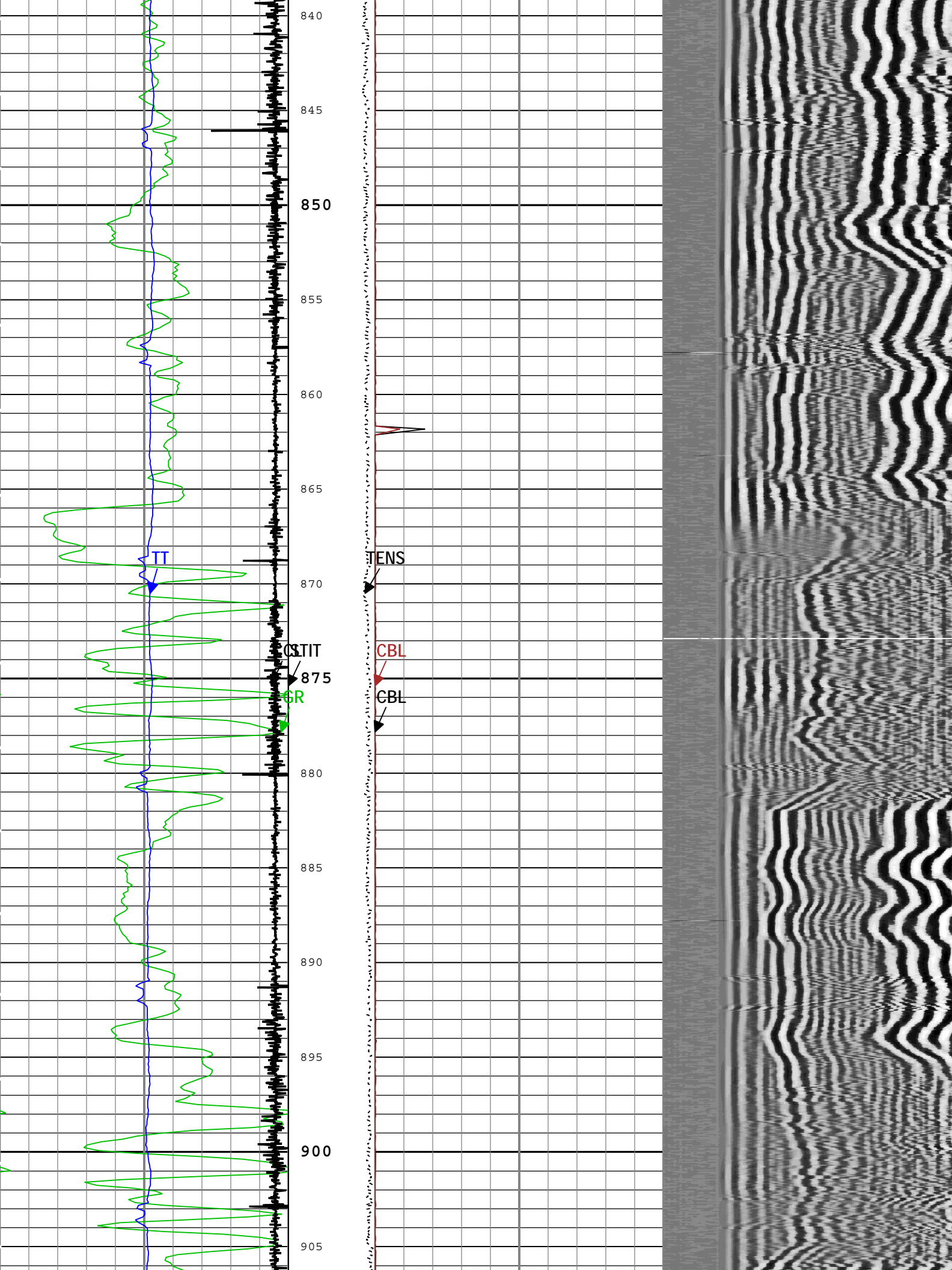
GR

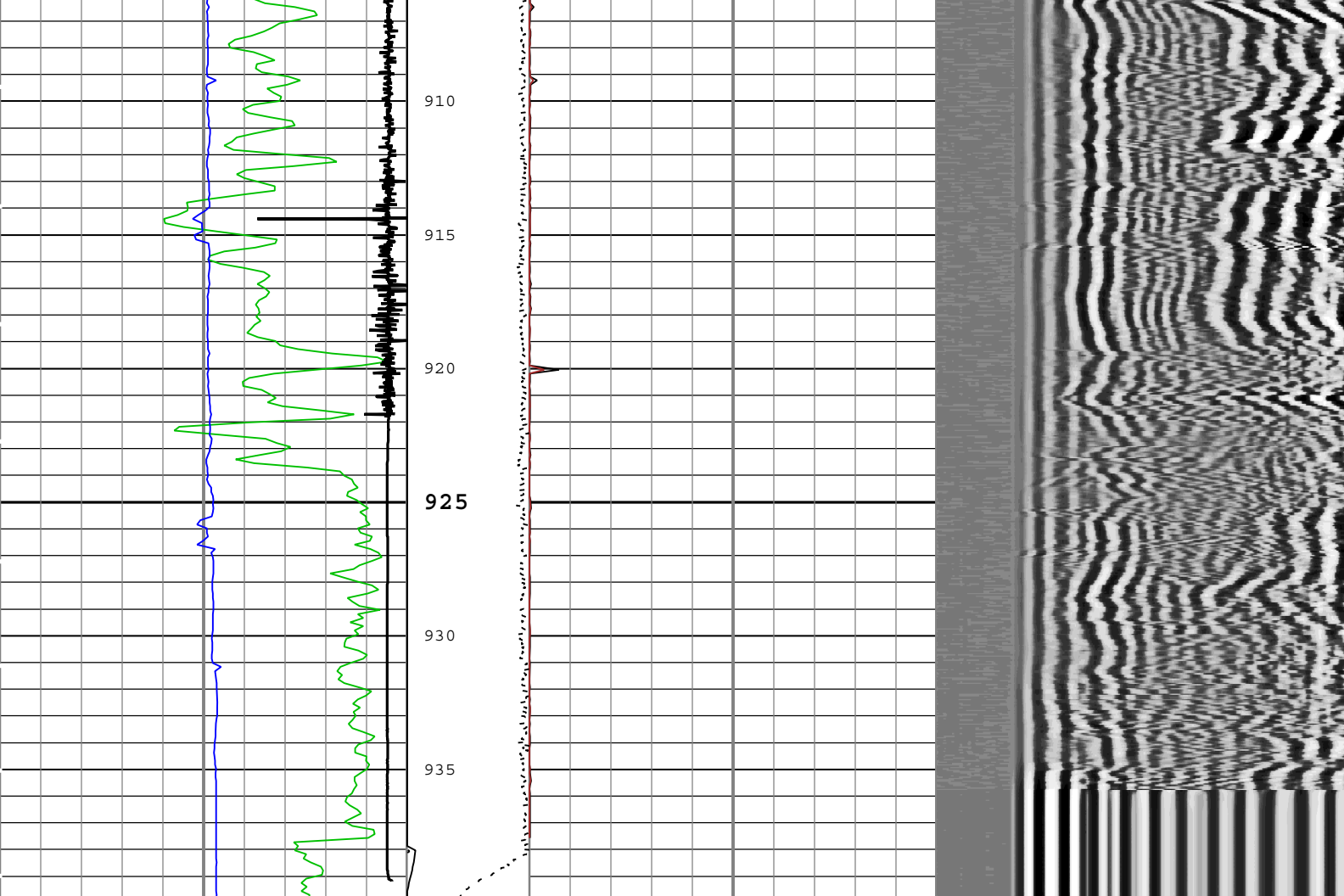
TENS

CBL

CBL

CSIP





Gamma Ray (GR) HGNS-H	Stuck Tool Indicator, Total (STIT)	CBL Amplitude (CBL) DSLT-H	Min	Amplitude	Max
0 gAPI 200	0 m 20	0 mV 50			
Casing Collar Locator Amplitude (CCL) CAL-YA	Cable Tension (TENS)	CBL Amplitude (CBL) DSLT-H	200	us	1200
-19 1	0 lbf 2500	0 mV 100			
Transit Time for CBL (TT) DSLT-H					
400 us 200					

TIME_1900 - Time Marked every 60.00 (s)

Description: CBL_VDL Format: Log (Sonic CBL with VDL) Index Scale: 1:240 Index Unit: m Index Type: Measured Depth Creation Date: 27-Jun-2013 20:17:24

Channel Processing Parameters

Parameter	Description	Tool	Value	Unit
AMSG	Auxiliary Minimum Sliding Gate	DSL-T-H	158	us
BARI	Barite Mud Presence Flag	Borehole	No	
BHS	Borehole Status (Open or Cased Hole)	Borehole	Cased	
BS	Bit Size	WLSESSION	Depth Zoned	in
CALI_SHIFT	CALI Supplementary Offset	HDRS-B	0	in
CBLO	Casing Bottom (Logger)	WLSESSION	937.62	m
CBRA	CBL LQC Reference Amplitude in Free Pipe	DSL-T-H	Depth Zoned	mV
CCL_MULTIPLIER	Casing Collar Locator Multiplier	CAL-YA	0.01	
CDEN	Cement Density	HGNS-H	2	g/cm3
DC_MODE	Depth Correction Mode	DepthCorrection	Real-time	
DETE	Delta-T Detection	DSL-T-H	E1	
DFD	Drilling Fluid Density	Borehole	10	lbm/gal

GCSE_DOWN_PASS	Generalized Caliper Selection for WL Log Down Passes	Borehole	BS	
GCSE_UP_PASS	Generalized Caliper Selection for WL Log Up Passes	Borehole	CALI	
MAHTR	Manual High Threshold Reference for first arrival detection	DSLTH	120	
MCI	Minimum Cemented Interval for Isolation	DSLTH	Depth Zoned	m
MNHTR	Minimum High Threshold Reference for first arrival detection	DSLTH	100	
MSA	Minimum Sonic Amplitude	DSLTH	Depth Zoned	mV
NMSG	Near Minimum Sliding Gate	DSLTH	258	us
SGAD	Sliding Gate Status	DSLTH	Off	
SGDT	Sliding Gate Delta-T	DSLTH	57	us/ft
SOCN	Standoff Distance	HGNS-H	0	in
TD	Total Measured Depth	Borehole	937.62	m

Depth Zone Parameters

Parameter	Value	Start (m)	Stop (m)
BS	12.25	-0.36	510
BS	8.75	510	940
CBRA	51	-0.36	507.51
CBRA	0	507.51	507.51
CBRA	62	507.51	937.62
CBRA	0	937.62	940
MCI	4.52	-0.36	507.51
MCI	0	507.51	507.51
MCI	3.05	507.51	937.62
MCI	0	937.62	940
MSA	1.03	-0.36	507.51
MSA	0	507.51	507.51
MSA	0.76	507.51	937.62
MSA	0	937.62	940

All depth are actual.

Tool Control Parameters

Parameter	Description	Tool	Value	Unit
DSLTH_MODE	DSLTH Acquisition Mode	DSLTH	CBL	
DSLTH_RATE	DSLTH Firing Rate	DSLTH	15 Hz	
DTFS	DSLTH Telemetry Frame Size	DSLTH	536	
MAX_LOG_SPEED	Toolstring Maximum Logging Speed	WLSESSION	1800	ft/h
SGAI	Selectable Acquisition Gain	DSLTH	x1	

Calibration Report

DSLTH-H (Digitizing Sonic Logging Tool - H) Calibration - Run 1

Primary Equipment : Sonic Logging Sonde E supports 3'-5'BHC DT and CBL/VDL SLS-E 1093

CBL Normalization - CBL Accumulations

Master (Measured): 08:31:30 20-Jun-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Upper Far Amplitude		Master	4200.0	3200.0	3681.4		
Upper Near Raw Amplitude	mV	Master	33.000	27.000	27.833	43.000	
Lower Far Amplitude		Master	4200.0	3200.0	3017.4		
Lower Near Raw Amplitude	mV	Master	46.000	27.000	36.088	68.000	

CBL Normalization - CBL/VDL Coefficients

Master (Measured): 08:31:30 20-Jun-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Correction Factor for UT		Master	3.500	2.700	4.168	4.300	

CBL Correction Factor for LT		Master	2.500	1.700	3.214	4.300	
VDL Ratio between UT and LT for CBLB Mode		Master			0.820		

CBL Free Pipe Adjustment - Free Pipe Measurement

Before:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Amplitude - 0	mV	Before	----	----	----	----	
CBL Reference Amplitude (CBRA) - 0	mV	Before	----	----	----	----	
Measurement Depth - 0	m	Before	----	----	----	----	

CBL Free Pipe Adjustment - CBL Amplitude Coefficient

Before:

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
CBL Adjustment Factor		Before	1.000	0.200	NOT DONE	5.000	
Depth of Before Calibration	m	Before			NOT DONE		

HDRS-B (HILT Density and Rxo Sonde, 125 degC) Calibration - Run 1

Primary Equipment :

HILT High-Resolution Control Cartridge, 125 degC	HRCC-B	1801
HILT Resistivity Gamma-Ray Density Device, 125 degC	HRGD-B	754

Auxiliary Equipment :

HRDD Backscatter Detector	Backscatter	48944
HRDD Long Spacing Detector	Long Spacing	28074
HRDD Short Spacing Detector	Short Spacing	50796
Cesium 137 Gamma-Ray Logging Source	GSR-J	3739
HILT High-Resolution Control Cartridge, 125 degC	HRCC-B	1801
HILT High-Resolution Mechanical Sonde, 125 degC	HRMS-B	748

Calibration Parameter :

Small Ring Size (Caliper Calibration Small Ring)	8.00
Large Ring Size (Caliper Calibration Large Ring)	12.00

HDRS Caliper Calibration - Caliper Accumulations

Before (Measured): 15:31:35 26-Jun-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Small Ring	in	Before	8.00	6.00	8.13	10.00	
Large Ring	in	Before	12.00	9.00	12.30	15.00	

HDRS Density Calibration - Inversion Results

Master (EEPROM): 14:59:32 21-Jun-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Rho Aluminum	g/cm3	Master	2.596	2.586	2.594	2.606	
Rho Magnesium	g/cm3	Master	1.686	1.676	1.691	1.696	
Pe Aluminum		Master	2.570	2.470	2.564	2.670	
Pe Magnesium		Master	2.650	2.550	2.601	2.750	

HDRS Density Calibration - Deviation Summary

Master (EEPROM): 14:59:32 21-Jun-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Average Deviation	%	Master	0	-0.6000	0.2134	0.6000	
BS Max Deviation	%	Master	0	-1.6000	0.6007	1.6000	
SS Average Deviation	%	Master	0	-1.0000	0.5006	1.0000	
SS Max Deviation	%	Master	0	-2.5000	1.3679	2.5000	
LS Average Deviation	%	Master	0	-1.5000	0.9104	1.5000	
LS Max Deviation	%	Master	0	-3.5000	2.5205	3.5000	

HDRS Density Calibration - Background Summary

Master (EEPROM): 14:59:32 21-Jun-2013 Before (Measured): 15:31:42 26-Jun-2013

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Window Ratio		Master	1.0000		0.7270		
		Before	0.7270	0.6906	0.7285	0.7633	
		Before-Master	----	----	0.0015	----	
BS Window Sum	1/s	Master	1		13987		
		Before	13987	13288	13993	14687	

		Before-Master	-----	-----	6	-----	
SS Window Ratio		Master	1.0000		0.5101		
		Before	0.5101	0.4846	0.5129	0.5356	
		Before-Master	-----	-----	0.0028	-----	
SS Window Sum	1/s	Master	1		9400		
		Before	9400	8930	9397	9870	
		Before-Master	-----	-----	-3	-----	
LS Window Ratio		Master	1.0000		0.2944		
		Before	0.2944	0.2797	0.2935	0.3091	
		Before-Master	-----	-----	-0.0009	-----	
LS Window Sum	1/s	Master	1		1464		
		Before	1464	1391	1461	1537	
		Before-Master	-----	-----	-3	-----	

HDRS Density Calibration - Photo-multiplier High Voltages

Master (EEPROM):		14:59:32 21-Jun-2013		Before (Measured):		15:31:42 26-Jun-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS PM High Voltage	V	Master		1000	1491	2400	
		Before		1000	1503	2400	
		Before-Master	-----	-100	12	100	
SS PM High Voltage	V	Master		1000	1484	2400	
		Before		1000	1523	2400	
		Before-Master	-----	-100	39	100	
LS PM High Voltage	V	Master		1000	1716	2400	
		Before		1000	1708	2400	
		Before-Master	-----	-100	-8	100	

HDRS Density Calibration - Crystal Quality Resolutions

Master (EEPROM):		14:59:32 21-Jun-2013		Before (Measured):		15:31:42 26-Jun-2013	
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
BS Crystal Resolution	%	Master		5.00	11.18	25.00	
		Before		5.00	11.27	25.00	
		Before-Master	-----	-1.00	0.09	1.00	
SS Crystal Resolution	%	Master		5.00	9.64	20.00	
		Before		5.00	9.91	20.00	
		Before-Master	-----	-1.00	0.27	1.00	
LS Crystal Resolution	%	Master		5.00	9.91	20.00	
		Before		5.00	9.84	20.00	
		Before-Master	-----	-1.00	-0.07	1.00	

HDRS MCFL Calibration - MCFL Accumulations

Before (Measured):		18:04:05 27-Jun-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Main Resistivity	ohm.m	Before	3875	3565	3862	4185	
Deep Resistivity	ohm.m	Before	3830	3524	3816	4136	
Shallow Resistivity	ohm.m	Before	3830	3524	3810	4136	

HGNS-H (HILT Gamma-Ray and Neutron Sonde, 150 degC) Calibration - Run 1

Primary Equipment :			
HILT Gamma-Ray and Neutron Sonde, 150 degC		HGNS-H	3875
Auxiliary Equipment :			
HGNS Accelerometer, 150 degC		HACCZ-H	4627
AmBe Neutron Logging Source		NSR-F	1100
Calibration Parameter :			
Water Temperature			
Housing Size			
JIG-BKG (Jig minus background reference)		165	

HGNS Accelerometer Calibration - Accelerometer Accumulations

Before (Measured):		18:04:23 27-Jun-2013					
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
AZ Vertical Measurement	m/s2	Before	9.81	9.61	9.77	10.01	

HGNS Accelerometer EEPROM - Accelerometer EEPROM Read

Master (EEPROM): 00:00:00 15-Dec-2008							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Accelerometer Manufacturer		Master			QAT_160		
Accelerometer Reference Temperature	degC	Master		-1.0	25.0	50.0	
Accelerometer Coefficients - 0		Master	----	----	3853.000	----	
Accelerometer Coefficients - 1		Master	----	----	-1.152	----	
Accelerometer Coefficients - 2		Master	----	----	0.103	----	
Accelerometer Coefficients - 3		Master	----	----	-0.001	----	
Accelerometer Coefficients - 4		Master	----	----	2.738	----	
Accelerometer Coefficients - 5		Master	----	----	0.000	----	
Accelerometer Coefficients - 6		Master	----	----	0.000	----	
Accelerometer Coefficients - 7		Master	----	----	0.000	----	
Accelerometer Coefficients - 8		Master	----	----	300.000	----	
Accelerometer Coefficients - 9		Master	----	----	1.002	----	

HGNS Neutron Calibration - HGNS Neutron Accumulations

Master (EEPROM): 16:29:48 10-Jun-2013 Before (Measured): 15:28:37 26-Jun-2013 After:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Near Zero Measurement	1/s	Master	0	5.0	26.9	40.0	
		Before	0	5.0	26.7	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.0	-0.2	4.0	
		After-Before	----	----	----	----	
Far Zero Measurement	1/s	Master	0	5.0	28.6	40.0	
		Before	0	5.0	28.3	40.0	
		After	----	----	----	----	
		Before-Master	----	-4.3	-0.3	4.3	
		After-Before	----	----	----	----	
Near Plus Measurement - 0	1/s	Master	6031.0	4700.0	5229.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Plus Measurement - 0	1/s	Master	2793.0	1900.0	2269.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Near Corrected Plus Measurement - 0	1/s	Master		4700.0	5335.0	6900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	
Far Corrected Plus Measurement - 0	1/s	Master		1900.0	2333.0	2900.0	
		Before	----	----	----	----	
		After	----	----	----	----	
		Before-Master	----	----	----	----	
		After-Before	----	----	----	----	

HGNS Gamma-Ray Calibration - Gamma-Ray Accumulations

Before (Measured): 15:36:24 26-Jun-2013 After:							
Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
RGR Zero Measurement	gAPI	Before	30.0	0	33.0	120.0	
		After	----	----	----	----	
		After-Before	----	----	----	----	
RGR Plus Measurement	gAPI	Before	185.4	157.1	188.1	206.3	
		After	----	----	NOT DONE	----	
		After-Before	----	----	----	----	
GR Calibration Gain		Before	0.89	0.80	0.88	1.05	
		After	----	----	----	----	
		After-Before	----	----	----	----	

Company: Origin Energy Ltd

Well: Durham Ranch 1/5
Field: Spring Gully
Rig: Rigless
State: Queensland
Country: Australia



Density, Sonic, Neutron and GR Log
PEX-CBL-GR
1:200 Scale



**GEOFRAME
PROCESSED
INTERPRETATION**

Durham Ranch 175 CHFD

* A Mark of Schlumberger

Using the following logs:

COMPANY:	Origin Energy Ltd		
WELL:	Durham Ranch 175		
FIELD:	Spring Gully		
Rig:	Rigless		
State:	Queensland		
COUNTRY:	Australia		
Date Logged:	27-Jun-2013	Date Processed:	28-Nov-2013
Well Location:	GDAG94 Zone 55	Easting:	714 846
Elevations:	KB: 309m	DF:	GL: 309m
API Number:		Job Number:	

FOLD HERE The well name, location and borehole reference data were furnished by the customer.

Any interpretation, research, analysis, data, results, estimates, or recommendation furnished with the services or otherwise communicated by Schlumberger to the customer at any time in connection with the services are opinions based on inferences from measurements, empirical relationships, and/or assumptions; which, inferences, empirical relationships and/or assumptions are not infallible and with respect to which professionals in the industry may differ. Accordingly, Schlumberger cannot and does not warrant the accuracy, correctness, or completeness of any such interpretation, research, analysis, data, results, estimates, or recommendation. The customer acknowledges that it is accepting the services "as is," that Schlumberger makes no representation or warranty, express or implied, of any kind or description in respect thereto, and that such services are delivered with the explicit understanding and agreement that any action taken based on the services received shall be at its own risk and responsibility, and no claim shall be made against Schlumberger as a consequence thereof.

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Field Recording:	Location: AURM	Software Version: 20C0-999	Engineer: Marta Sibarani
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Office Recording:	ICS Center:	Baseline:	Log Analyst: Ping Yan
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Mud and Borehole Measurements:

Rm @ Measured Temperature:	0.2ohm.m @ 20degC	BHT:	52.74degC	Bitsize:	8.75in
Rmf @ Measured Temperature:	0.15ohm.m @ 20degC	Type Fluid in Hole:	WATER		
Rmc @ Measured Temperature:	@ 20degC	Mud Density:	1.19826g/cm3		

Remarks:

LQC Flag Descriptions

S: cable Speed flag

- Green: 0 – 900 ft/hr
- Yellow: 901 – 1200 ft/hr
- Orange: 1201 – 1800 ft/hr
- Red: 1801 – 3600 ft/hr
- Black: 3601 – 40000 ft/hr

M: ceMent thickness flag

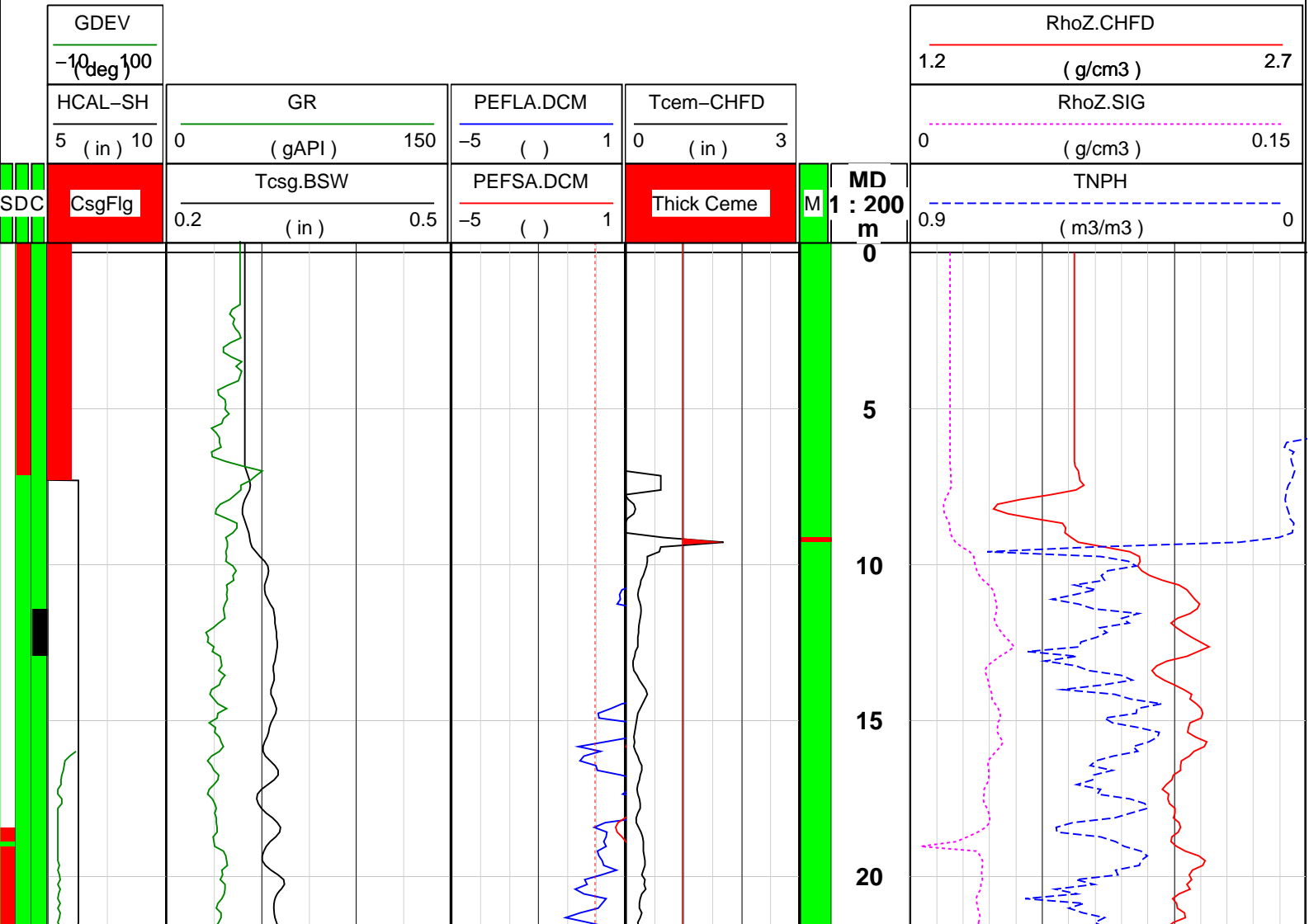
- Green: 0 – .9 in.
- Yellow: .9 – 1 in.
- Red: > 1 in.

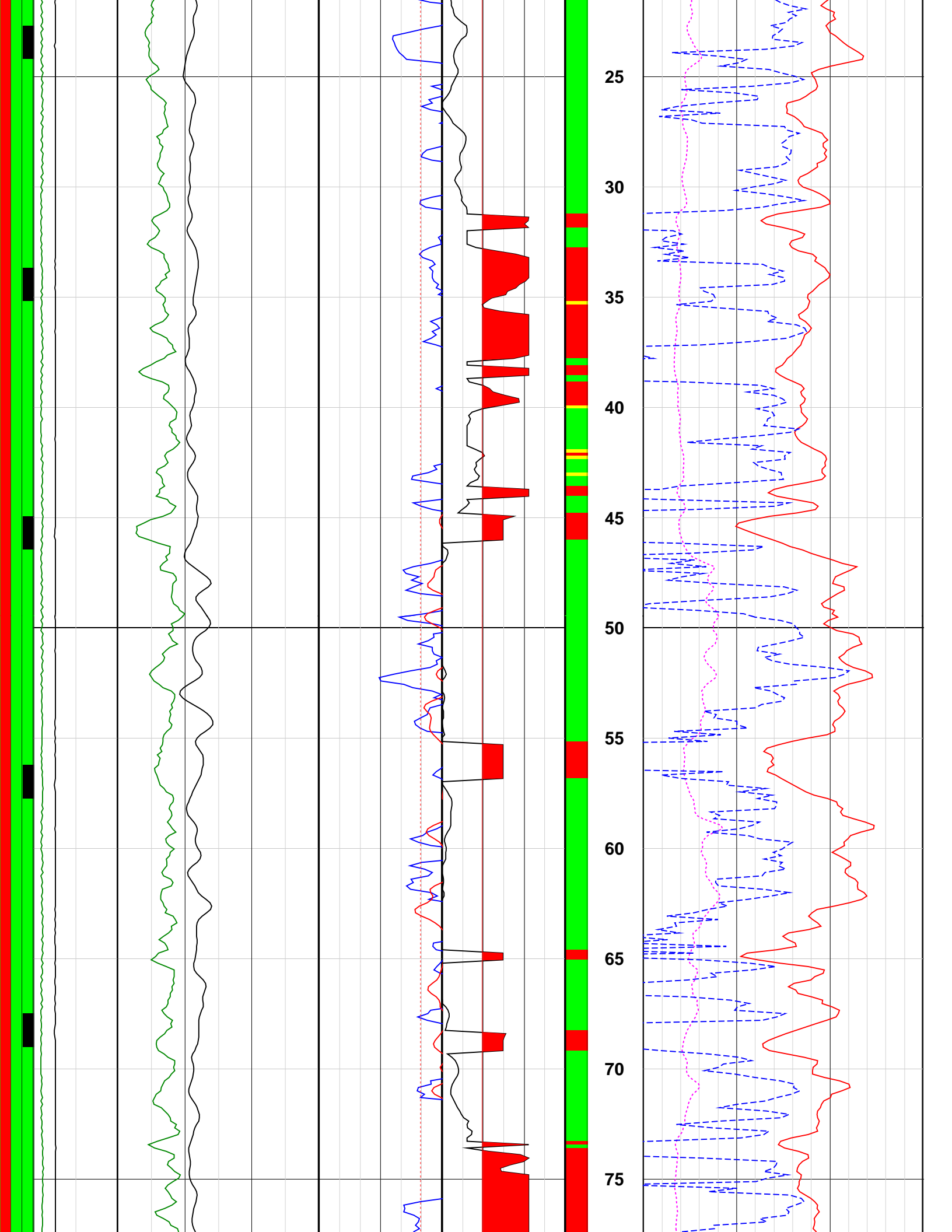
D: casing inner Diameter flag

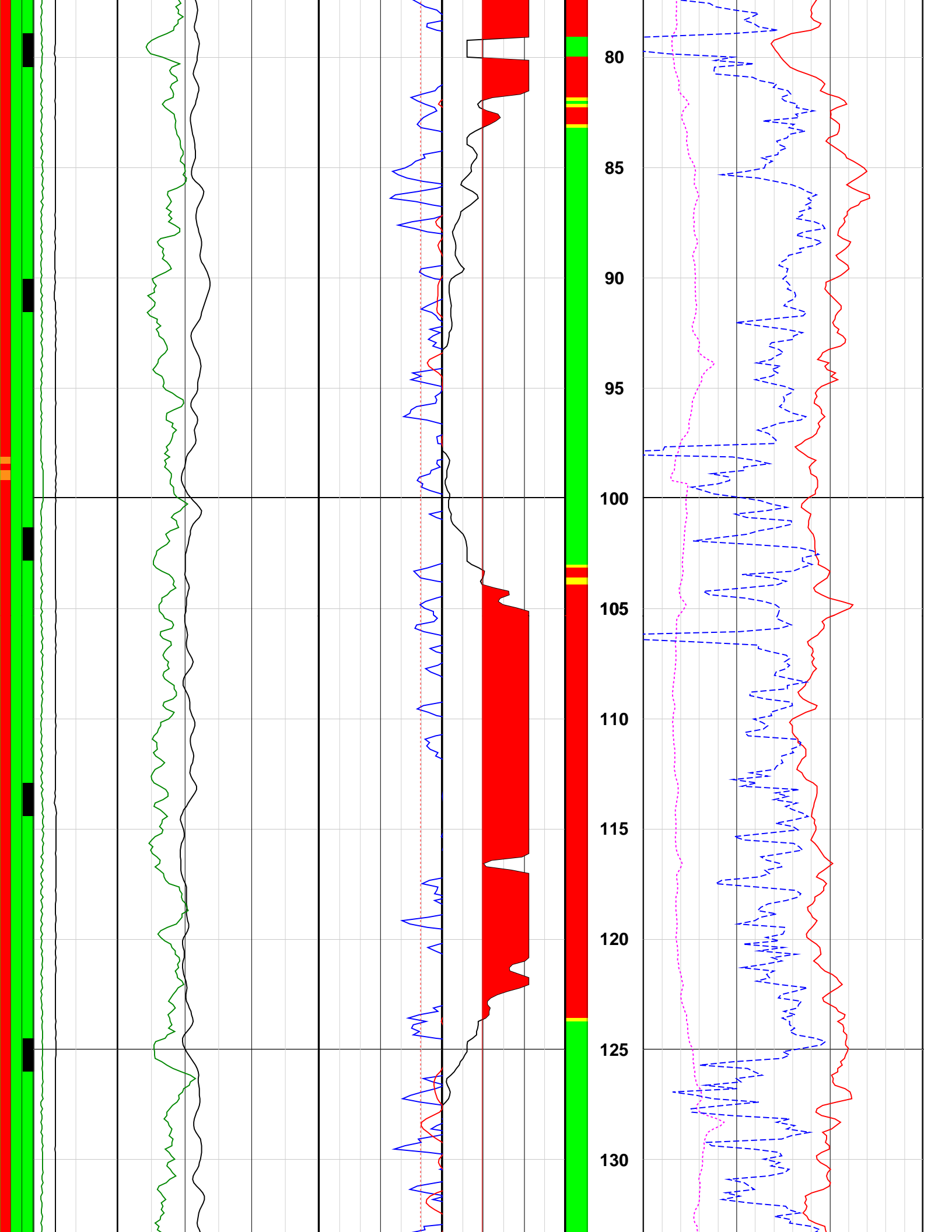
- Green: Csg ID > 6 in. (PEX pad curvature).
- Red: Csg ID < 6 in. (PEX pad curvature). Warning: Possible pad standoff!

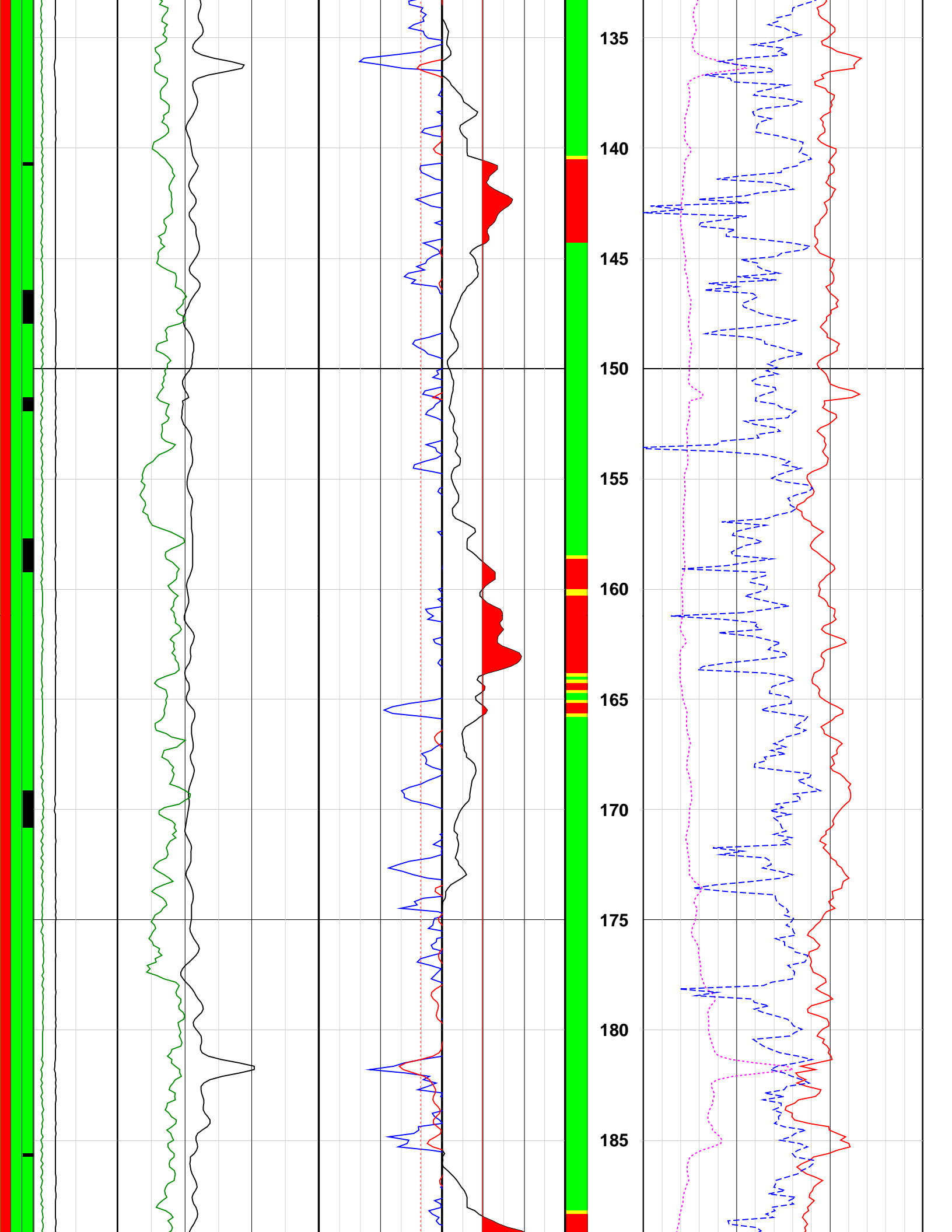
C: Collar flag

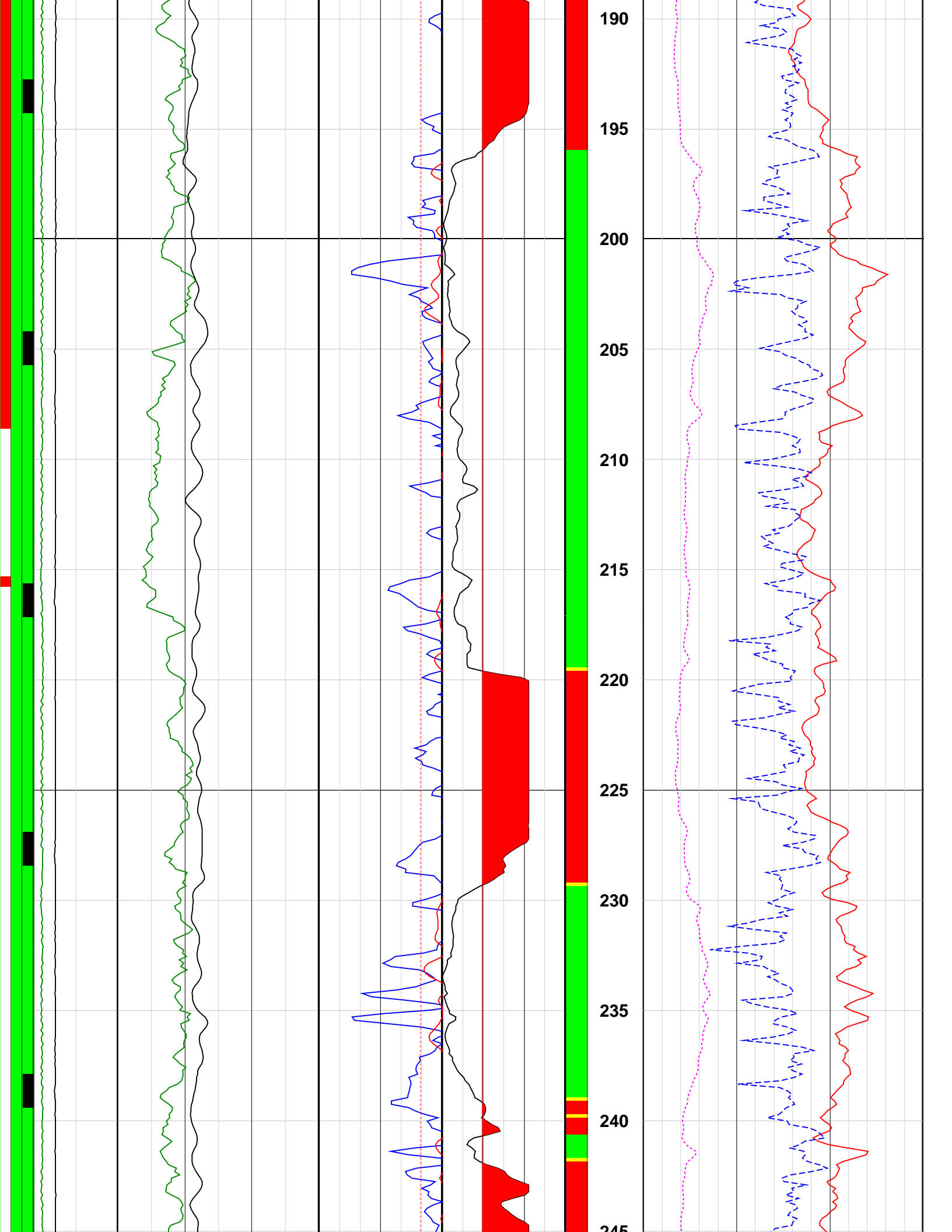
- Black: Data modified (linear interpolation), potential collar detected

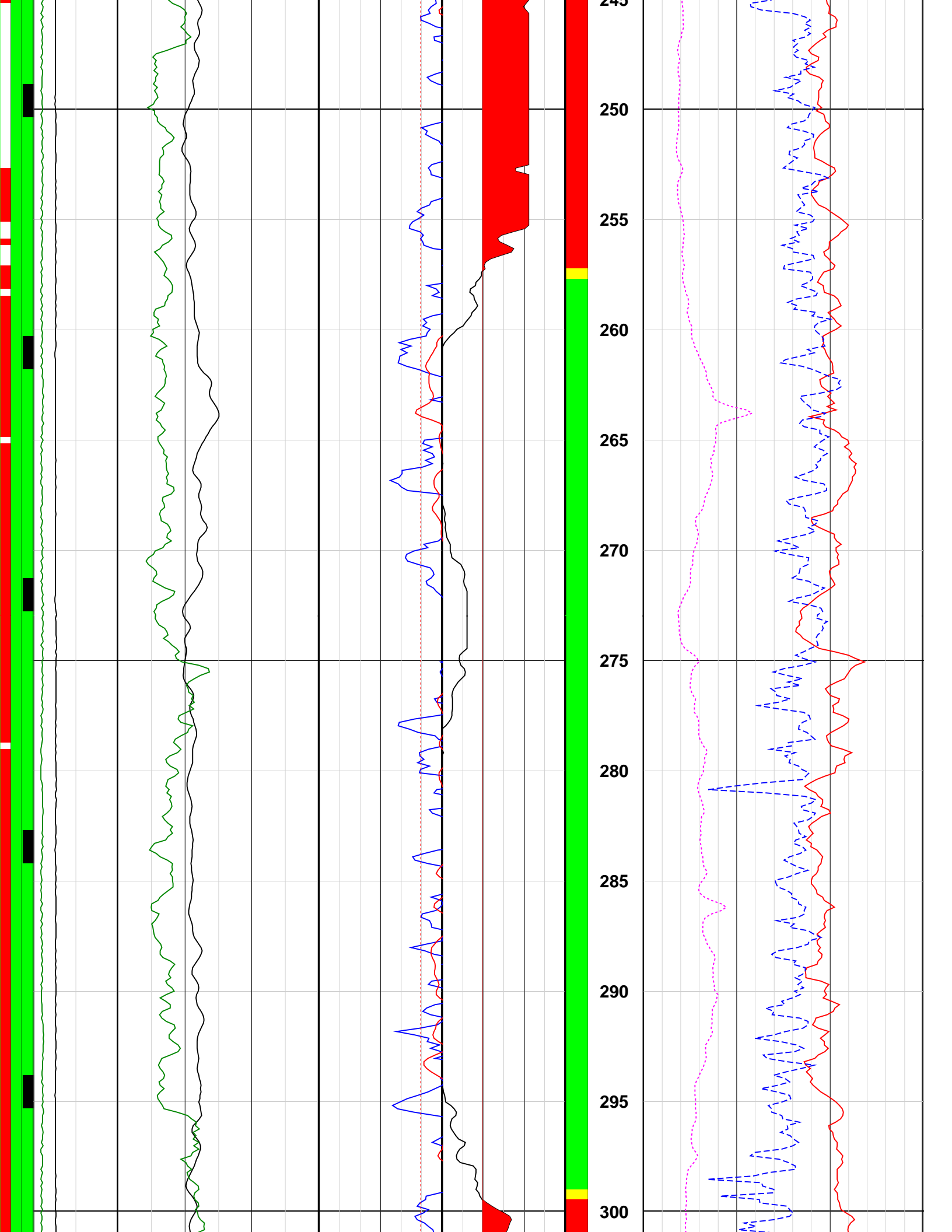


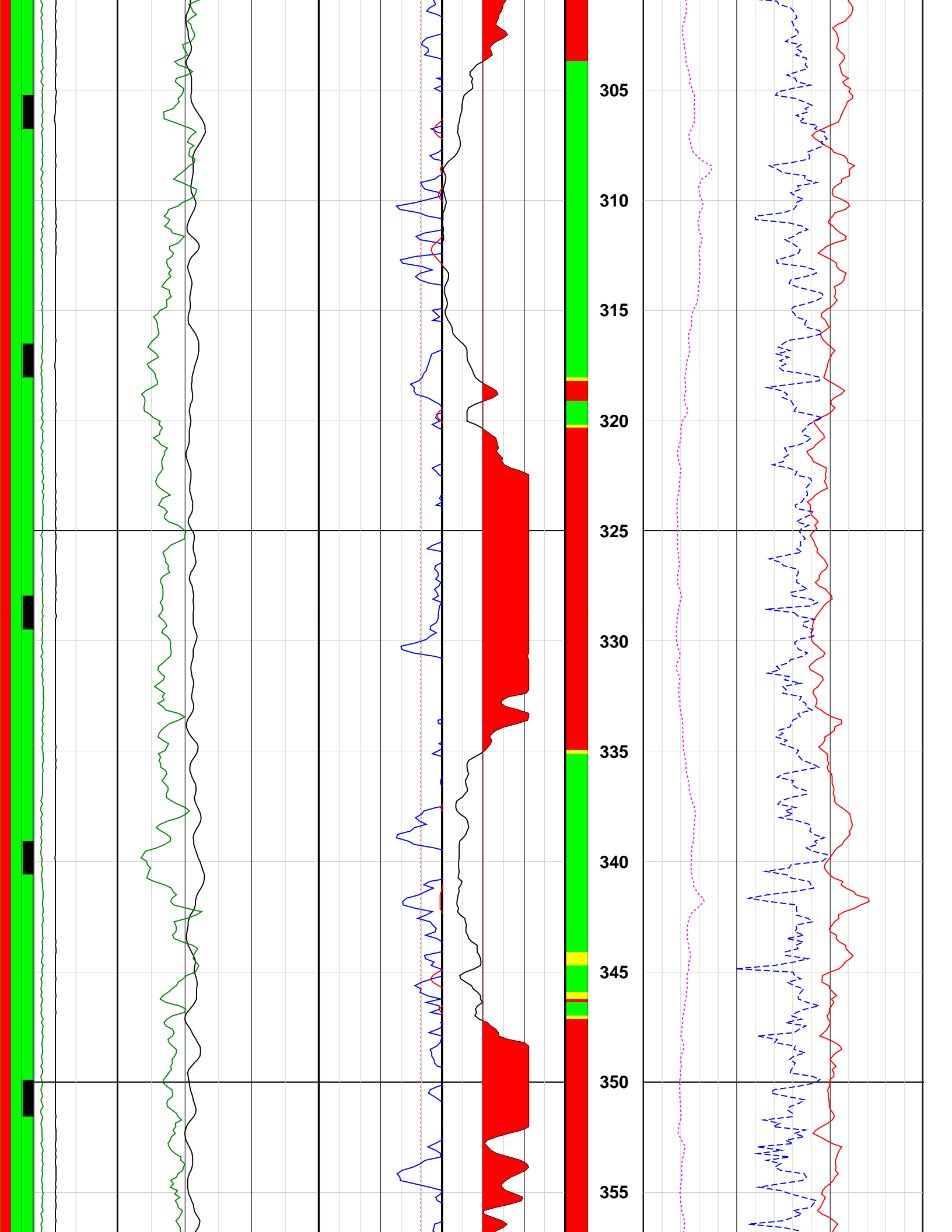


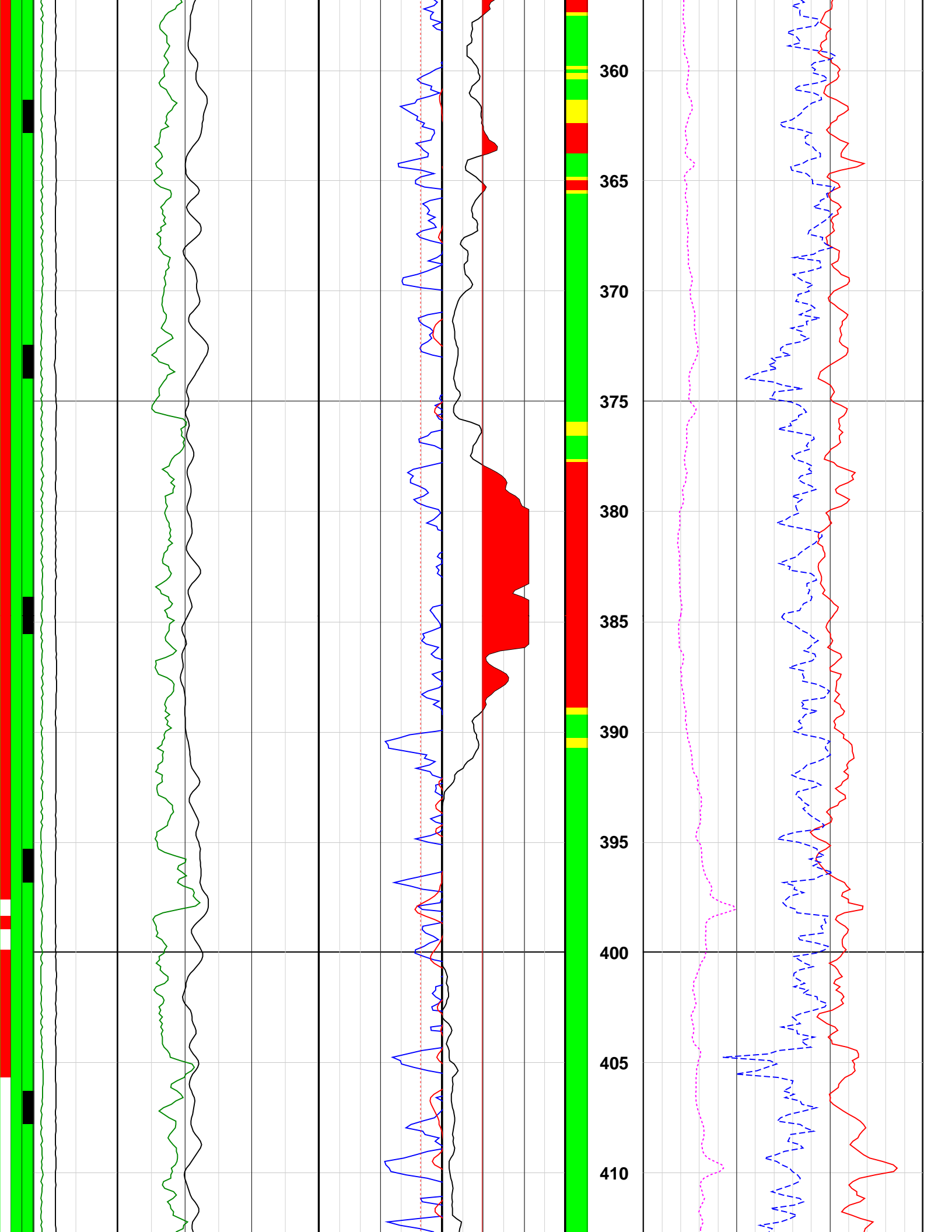


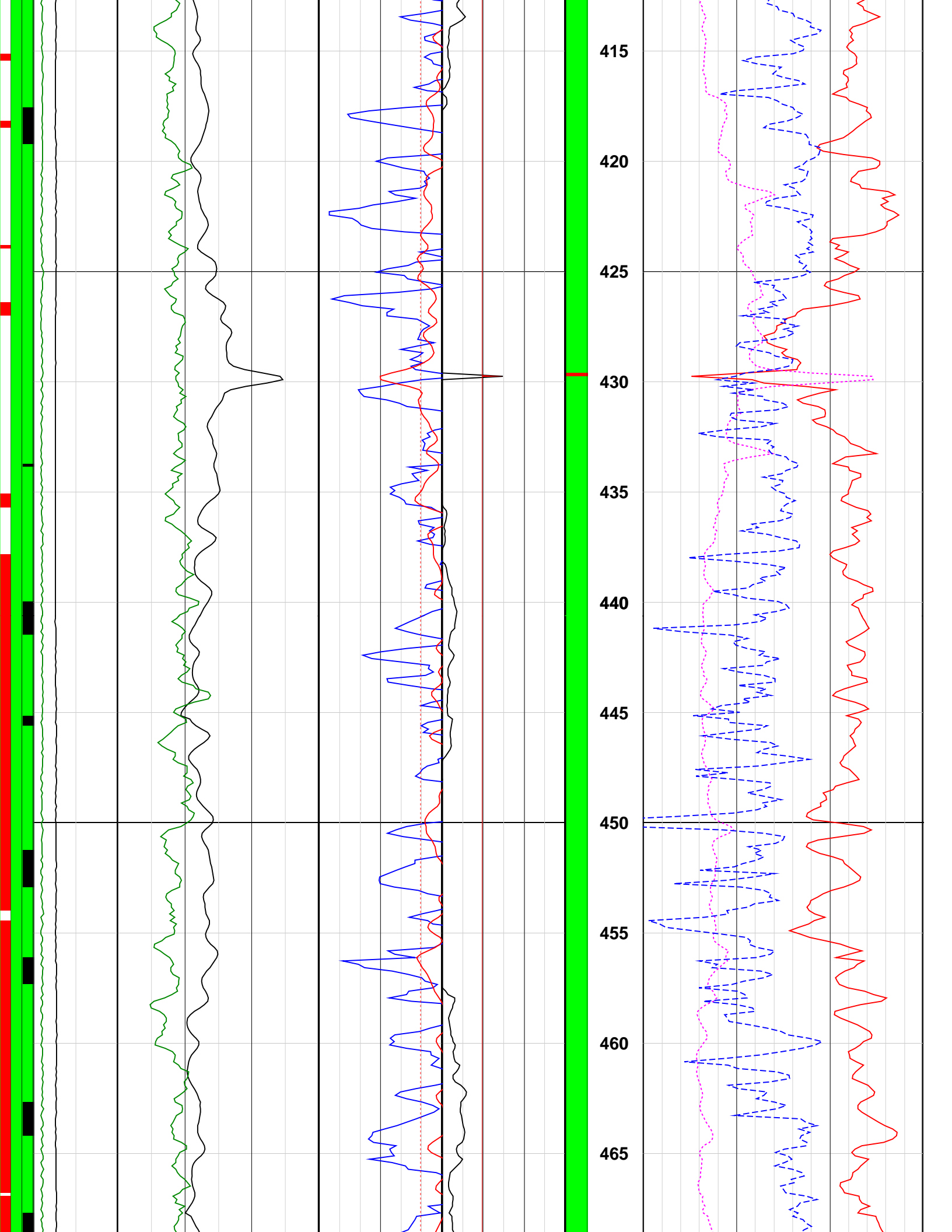


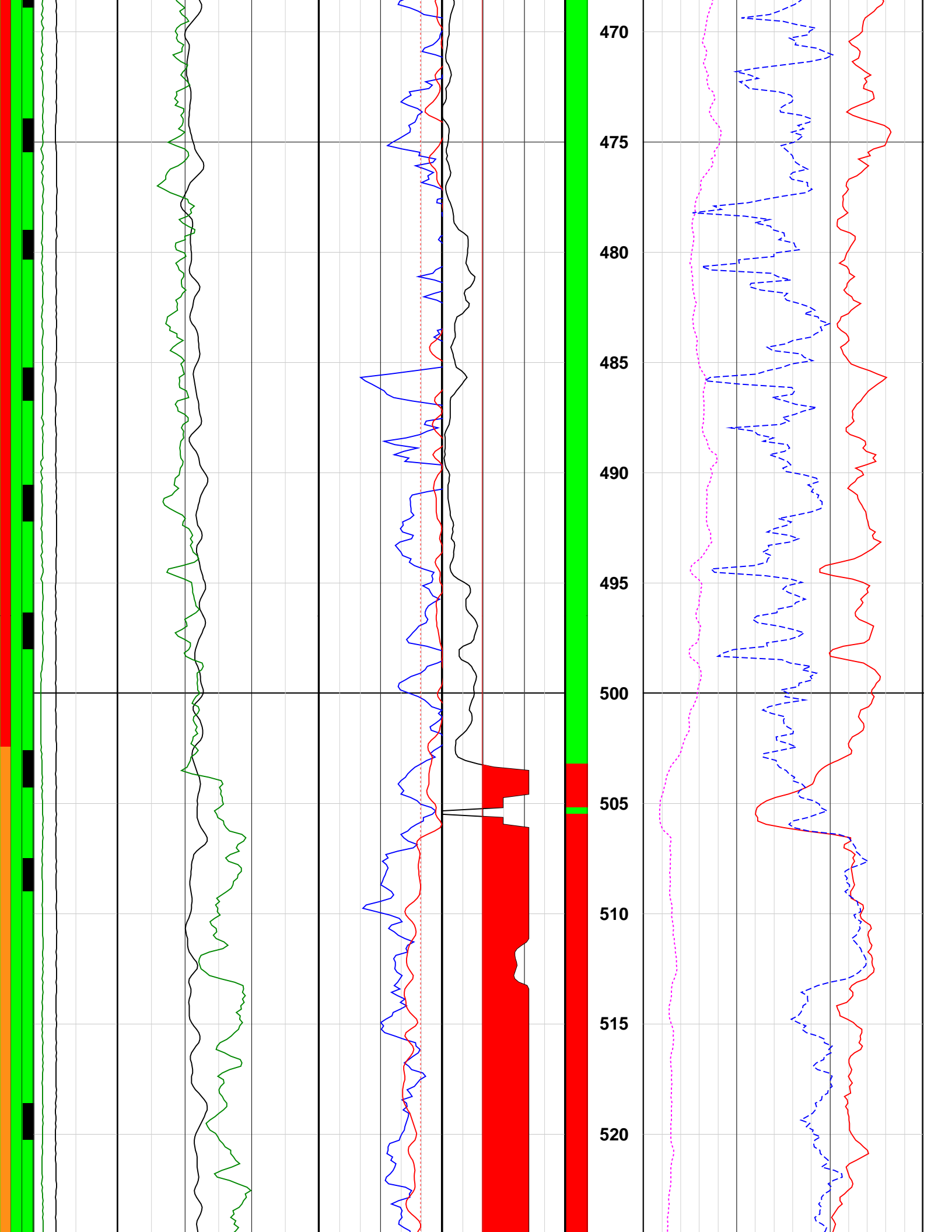


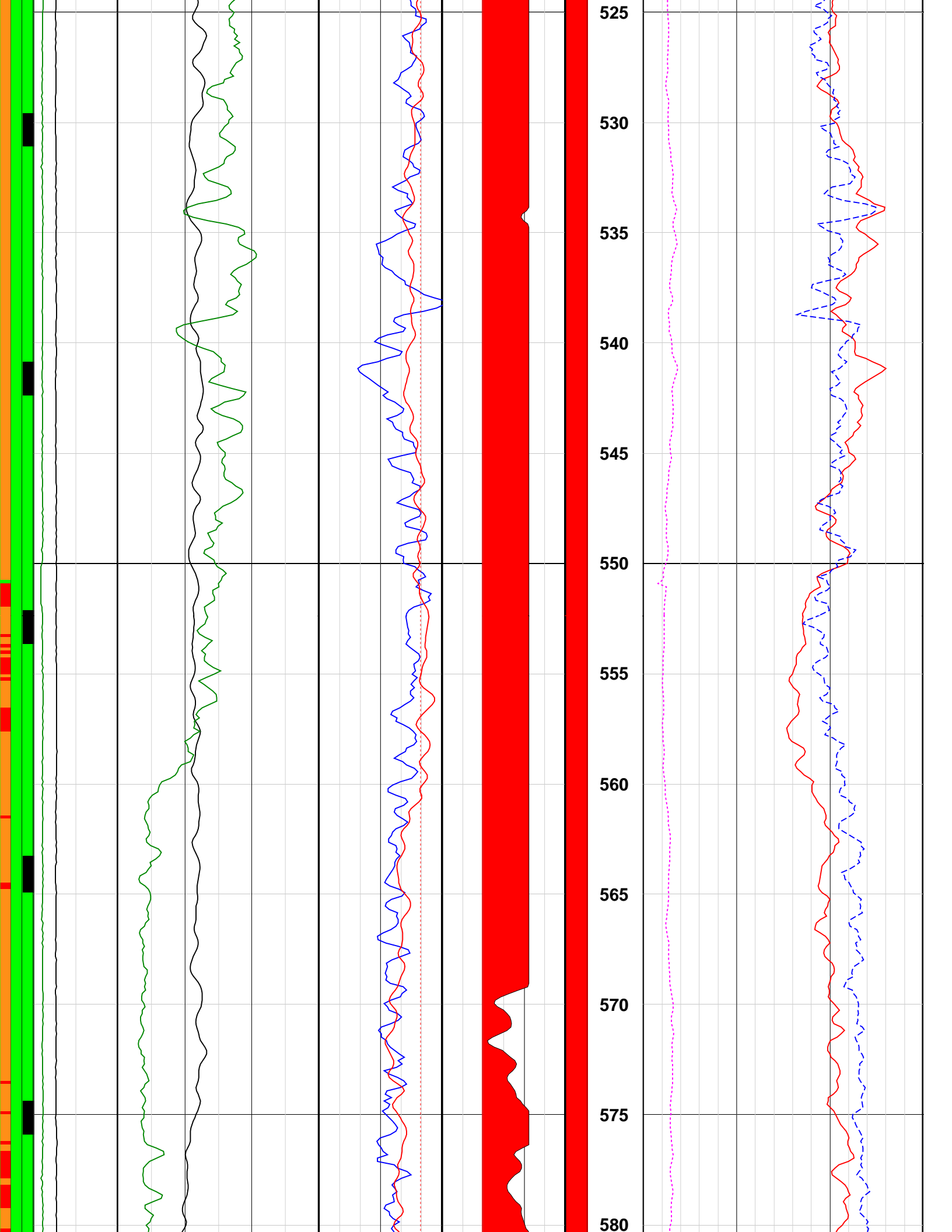


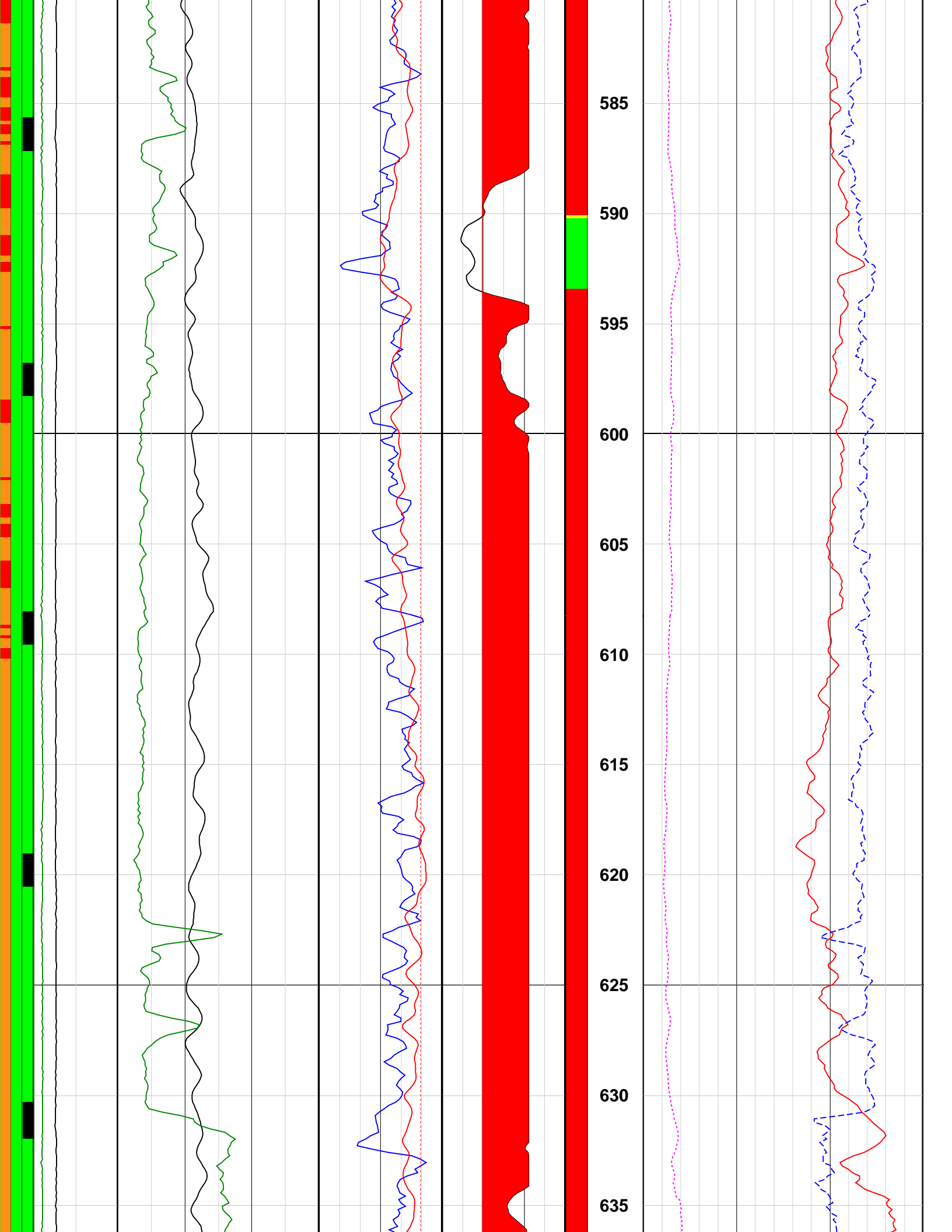


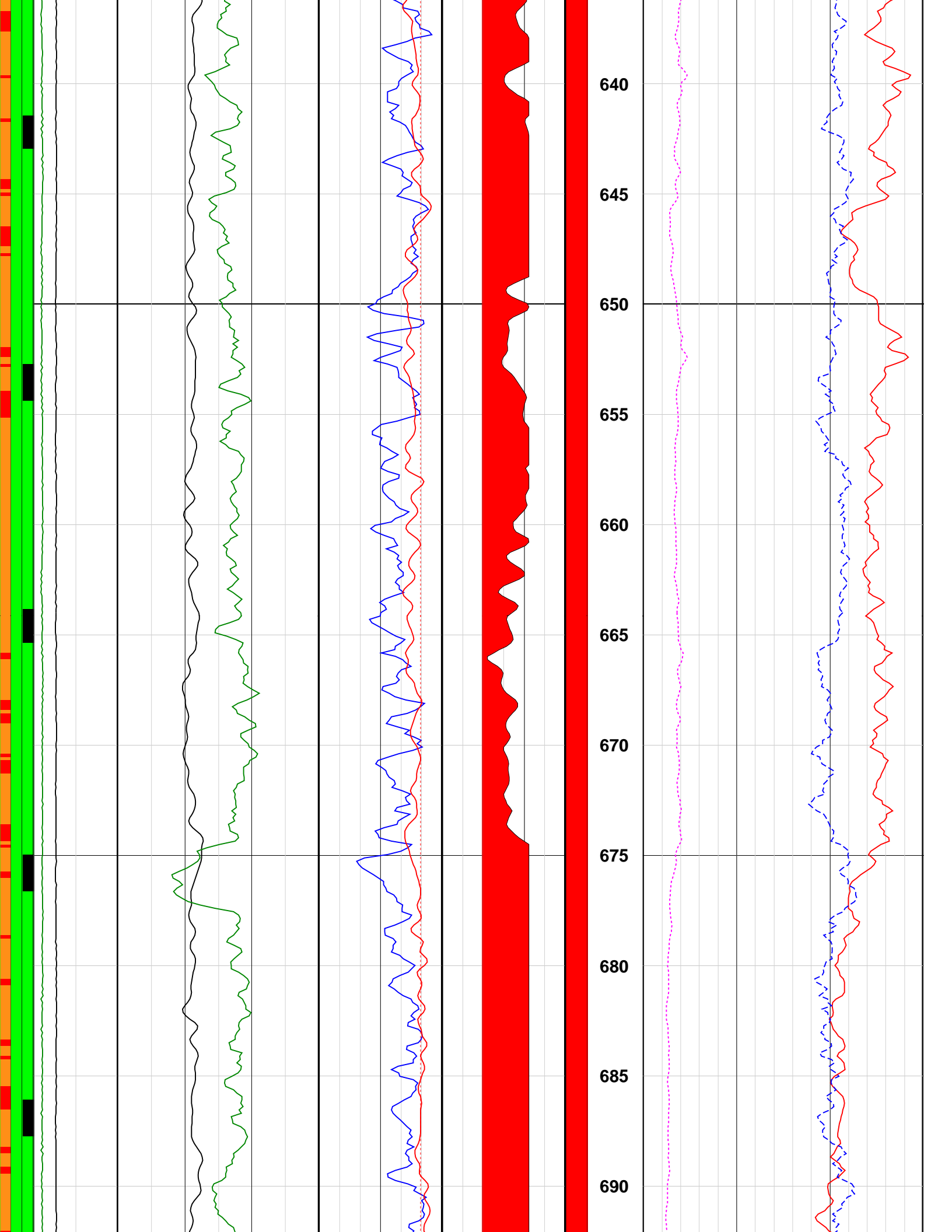


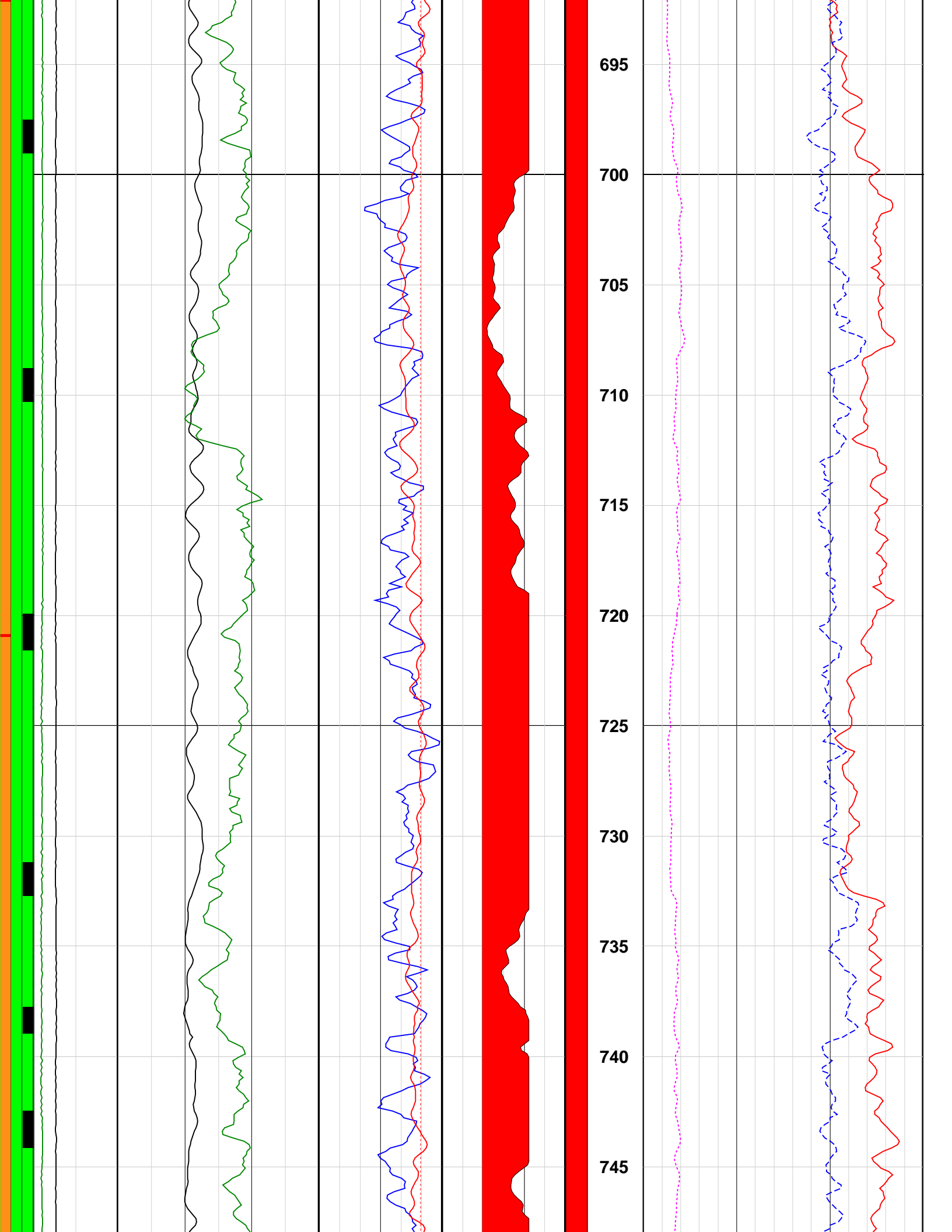


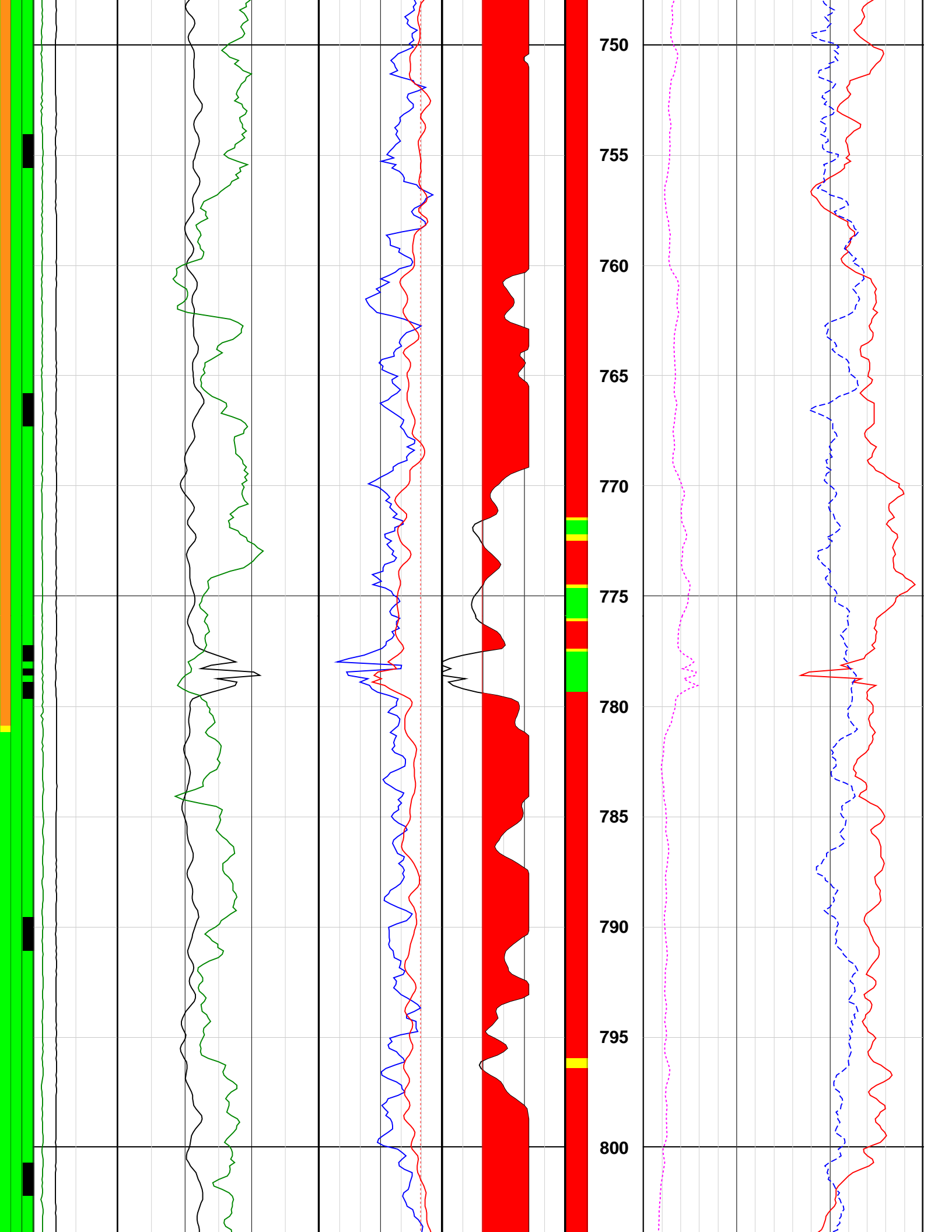


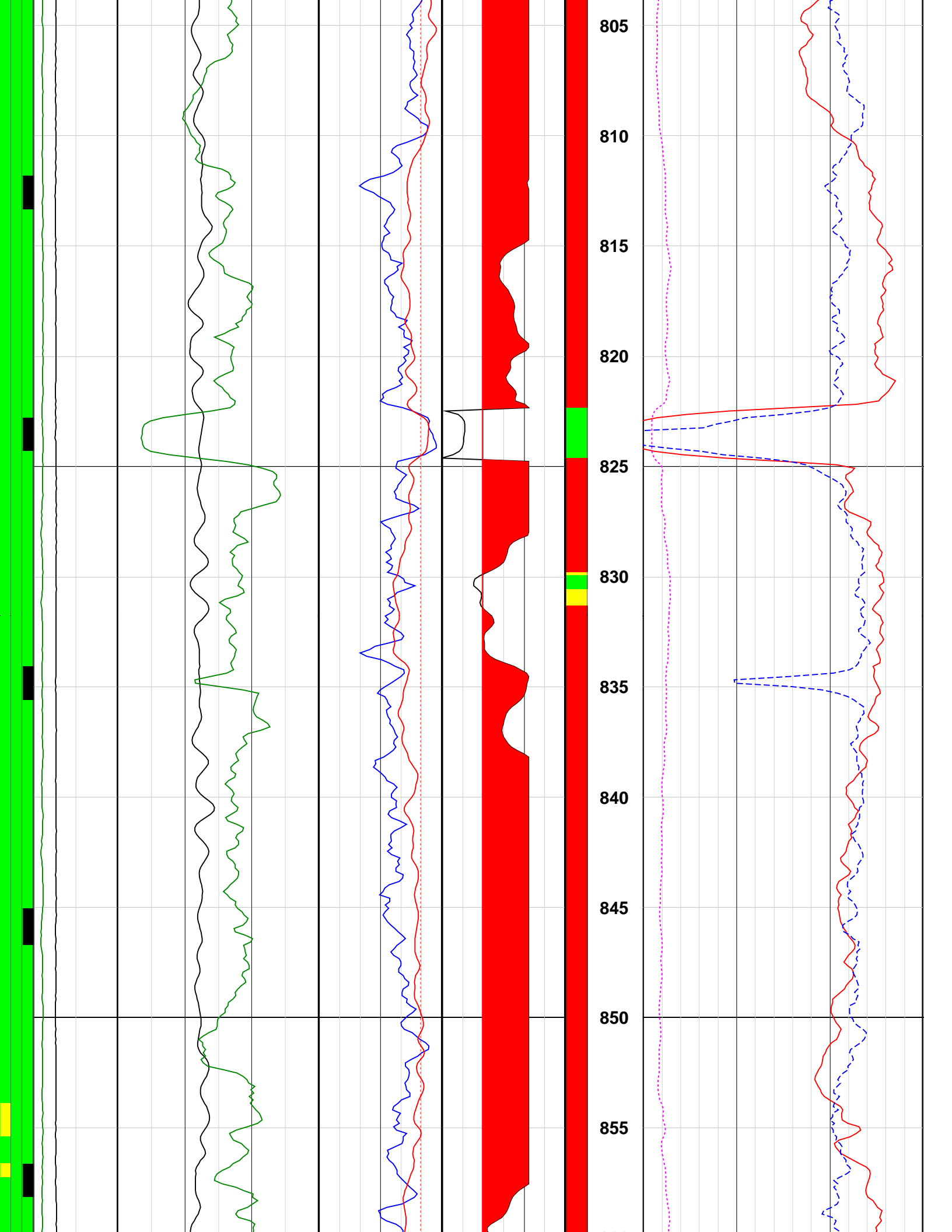


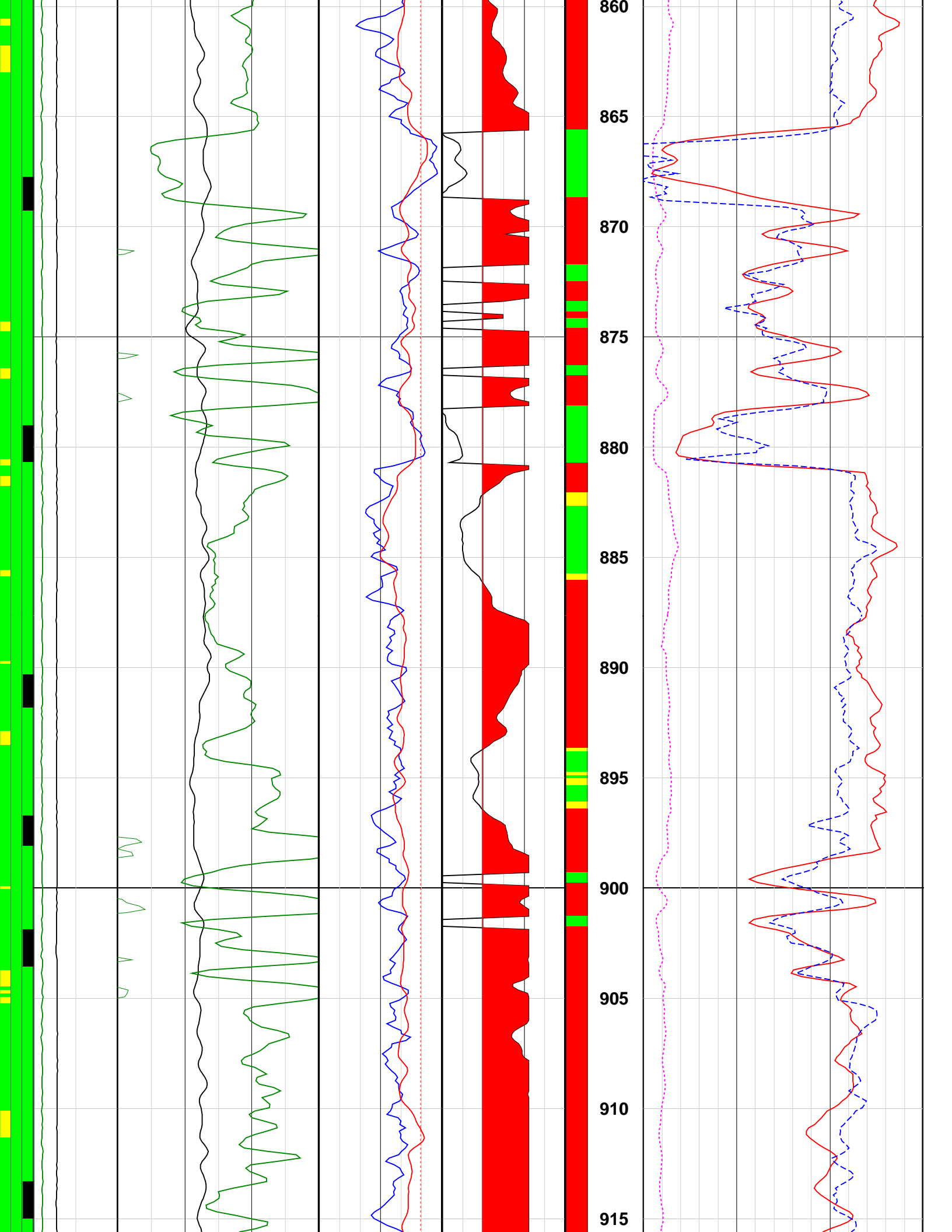


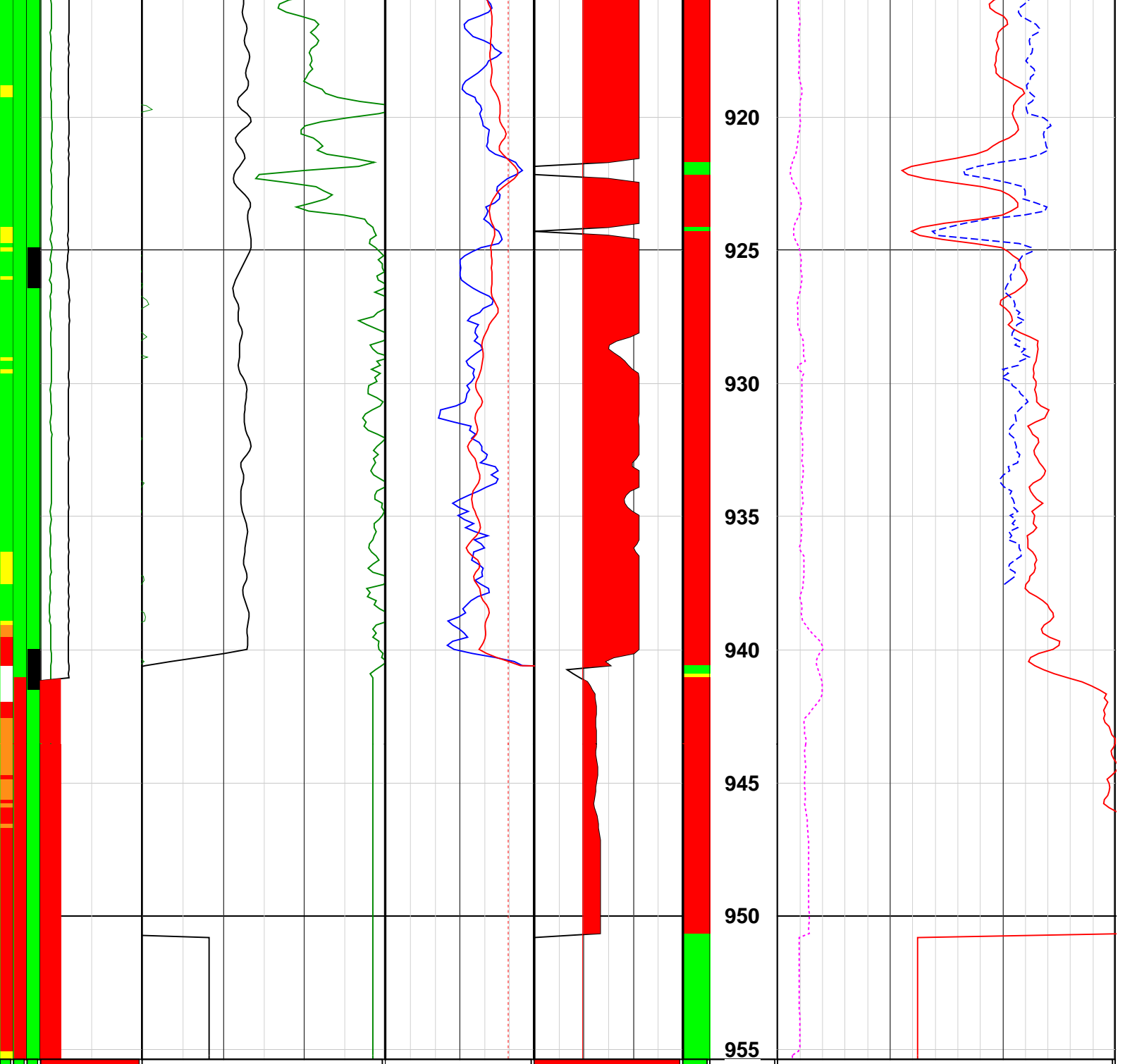












SDC	CsgFlg	Tcsg.BSW 0.2 (in) 0.5	PEFLA.DCM -5 () 1	Thick Ceme	M 1 : 200 m	TNPH 0.9 (m3/m3) 0
	HCAL-SH 5 (in) 10	GR 0 (gAPI) 150	PEFLA.DCM -5 () 1	Tcem-CHFD 0 (in) 3		RhoZ.SIG 0 (g/cm3) 0.15
	GDEV -10 (deg) 100					RhoZ.CHFD 1.2 (g/cm3) 2.7

LQC Flag Descriptions

S: cable Speed flag

- Green: 0 – 900 ft/hr
- Yellow: 901 – 1200 ft/hr
- Orange: 1201 – 1800 ft/hr
- Red: 1801 – 3600 ft/hr

Black: 3601 – 40000 ft/hr

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Green: Csg ID > 6 in. (PEX pad curvature).

Red: Csg ID < 6 in. (PEX pad curvature). Warning: Possible pad standoff!

C: Collar flag

Black: Data modified (linear interpolation), potential collar detected

Company: Origin Energy Ltd
Well: Durham Ranch 175
FIELD: Spring Gully
Rig: Rigless
State: Queensland



Date Logged: 27–Jun–2013 Date Processed: 28–Nov–2013
Well Location: GDA94 Zone 55
Easting: 714 846

Elevations: KB: DF: GL: 309m
API Number: Job Number: