

DAFTAR RUJUKAN

- Adam, N. J. (1985). *Drilling engineering: A complete well planning approach*. PennWell Books.
- American Petroleum Institute. (1990). *API specification 10A: Specification for cement and materials for well cementing*. API Publishing.
- Chambers, J. L., et al. (2005). *Geology of the Kutai Basin, East Kalimantan*. Indonesian Petroleum Association.
- Darman, H., & Sidi, F. H. (2000). *An Outline of the Geology of Indonesia*. Jakarta: Publikasi Ikatan Ahli Geologi Indonesia
- Gatlin, C. (1960). *Petroleum engineering: Drilling and well completions*. Prentice-Hall.
- Haswarpin, Y. P. (2015). *Analisa squeeze cementing berdasarkan data log CBL pada Sumur HA-11*. Dalam *Prosiding Seminar Nasional Cendekiawan*.
- Irawati, W., et al. (2022). *Stratigrafi Cekungan Kutai*. (Sumber publikasi geologi Indonesia).
- Koesoemadinata R.P., (1980). *Geologi Minyak dan Gas Bumi: Edisi 1-2*, Jurusan Teknik Geologi ITB, Bandung.
- Magoon, L. B., & Dow, W. G. (1994). *The petroleum system: From source to trap*. American Association of Petroleum Geologists.
- Nelson, E. B. (1990). *Well cementing*. Schlumberger Educational Services.
- Nelson, E. B., & Guillot, D. (Eds.). (2006). *Well Cementing* (2nd ed.). Sugar Land, Texas: Schlumberger. ISBN 978-0-9788530-0-6
- Rubiandini, R. (2012). *Teknologi penyemenan*. Jurusan Teknik Geologi ITB, Bandung.
- Schlumberger. (1989). *Log interpretation charts*. Schlumberger Wireline & Testing.
- Schlumberger. (2009). *Cement evaluation: Principles and applications*. Schlumberger.
- Smith, D. K. (1976). *Cementing*. Society of Petroleum Engineers.
- Smith, D. K. (1990). *Practical cementing operations*. Schlumberger.
- Yazid, A., et al. (2016). *Casing design and cementing*. SPE Publications.

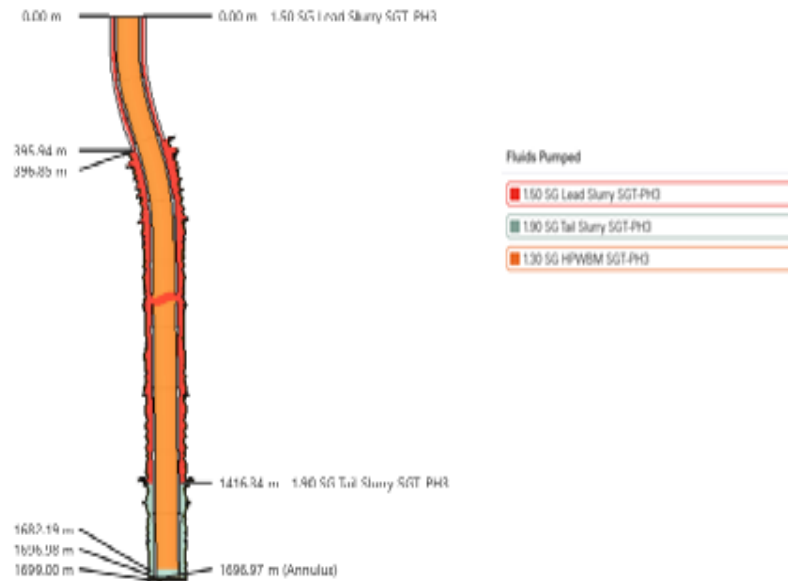
LAMPIRAN

A. ECD Simulation Primary Cementing

Sangatta Field - SGT PH3-134/ST-221 v1.0
7 inch Casing Cement Program

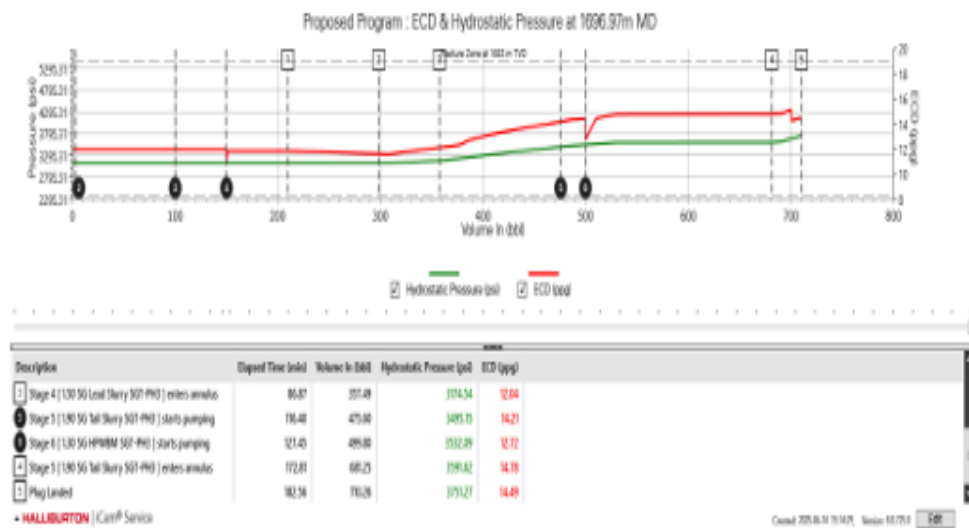
1.7 iCem® 2D Hydraulic Simulation Results

2D Fluid Positions Chart



For 2D Hydraulic simulation above is using caliper OH with no excess to reflect worst case scenario

ECD & Hydrostatic Pressure Plot



B. Job Execution Primary Cementing

Songotta Field - SGT PH3-134/ST-221 v1.0
7 inch Casing Cement Program

2 Job Execution

2.1 Job Procedure

1. Load Bottom plug at cementing head, install cementing head at rig floor
Install Cementing Line and Mud Line to cementing head manifold,
Circulate to cool the well prior to cementing job and ensure no blokage on annulus.
Do mud conditioning until mud properties: PV < 20 and YP < 10.
Circulate minimum two bottoms up prior to pumping cement slurry.
Mud properties going into the well are to be the same as they are coming out. Gas content in the mud is no to be higher than background levels. Well is to be static. Est pressure during pre job circulation is 362 bbls if using 4 bpm pump rate
2. Hold pre job safety meeting for cementing job.
3. Conduct eKO test at low pressure (500 psi) hold for 2 min, then set to 1500 psi over maximum anticipated job pressure. Pressure Test surface line to 3000 psi, and hold pressure for 5 min.
4. Pump low PV/YP mud prior pumping spacer 1.30 SG at 5.0 BPM 100 bbls
(PV< 20 cP, YP < 10 lb/100 ft²) using rig pump
5. Pump Spacer 1.38 SG at 5.0 BPM 50 bbls
6. Drop Bottom Plug
7. Mix and pump LEAD cement slurry 1.50 SG at 4.0 BPM 325.60 bbls using on fly method
Took sample cement at the beginning, middle and end of pumping slurry.
8. Mix and pump TAIL cement slurry 1.90 SG at 4.0 BPM 24.20 bbls using on fly method
Took sample cement at the beginning, middle and end of pumping slurry.
9. Take at least 2 samples of cement for each slurry
10. Drop top plug
11. Pump mud as displacement fluid 1.30 SG at 4.0 BPM 200.47 bbls
Pump mud as displacement fluid 1.30 SG at 2.0 BPM 10 bbls
Bump plug & P/T casing with pressure 2000 psi
12. Stop pumping, bleed off pressure, observe flow back to displacement tank to check the float valve.
If not hold pump back the return volume.
13. WOC to let cement gain compressive strength [based on UCA result at BHST temperature].
Compare with cement sample on surface condition. 9:57

2.2 Job Limitation

1. When packed off reach pumping pressure limit (**3980 psi** as per 80% internal yield pressure casing):
 - a. disconnected the line and flush the cement in pumping unit
 - b. Rig up to Rig pumps and attempt to displace or circulate out cement job with Rig pumps after get approval from customer
2. If losses found during pumping, reduce rate to 3 bpm and monitor the return. Thickening time by design should be enough to cover pumping stage with 3 bpm.

2.3 Pump Schedule

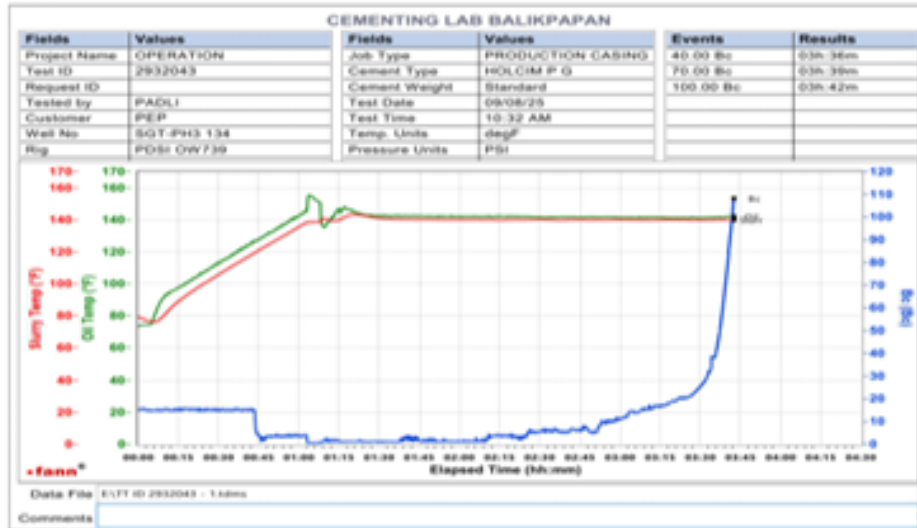
No.	Events	Volume (bbl)	Rate (bpm)	Pressure (psi)	Time (min)	Sacks	Density (SG)	Density (ppg)	Yield (cuft/sk)	Water (gpm)
1.	Start Job									
2.	Test Cementing Line	5	2	3000			1.00	8.3		
3.	Pump Low Viscosity Mud	100	5		20		1.30	10.8		
4.	Pump Spacer	50	5		10		1.38	11.5		
5.	Drop Bottom Plug				5					
6.	Pump Lead Cement	325.60	4		82		1.50	12.5	2.289	11.068
7.	Pump Tail Cement	24.20	4		7		1.90	15.8	1.258	4.966
8.	Drop Top Plug				5					
9.	Displace with mud	200.47	4		51		1.30	10.8		
10.	Displace with mud	10	2		5		1.30	10.8		
11.	Bump Plug			2000						

2.4 Return Scheme

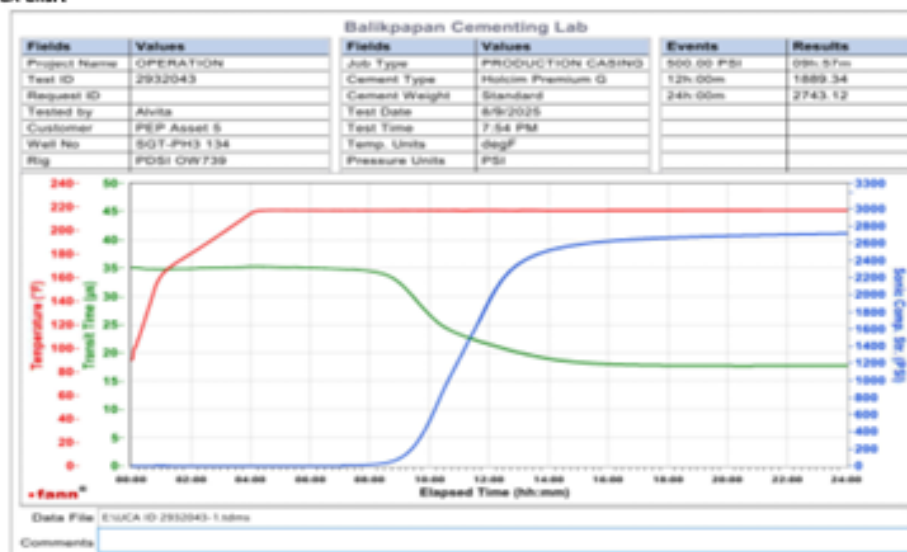
Well Volume	=	379.65	bbl
Total Excess Volume	=	180.16	bbl
Estimate Tuned Spacer will return after	=	4.05	bbl Tail slurry pumped
Estimate Cement will return after	=	29.85	bbl Displacement pumped

C. Thickening Time Primary Cementing

TE Chart



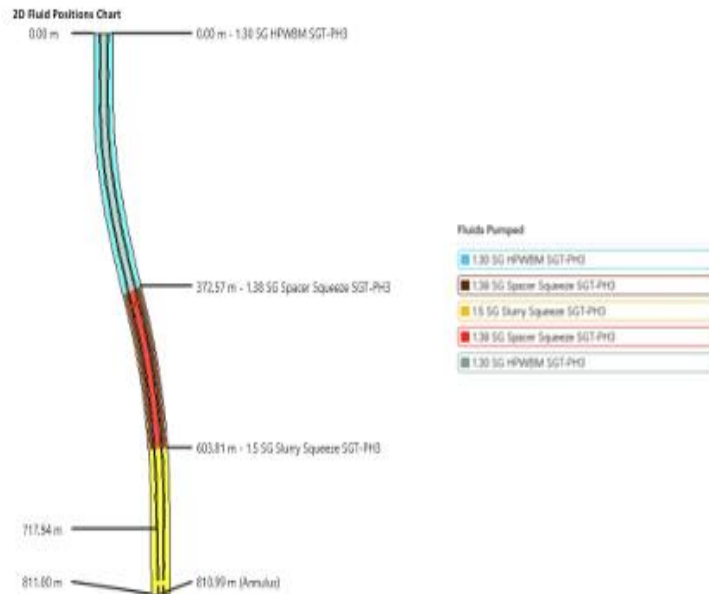
UCA Chart



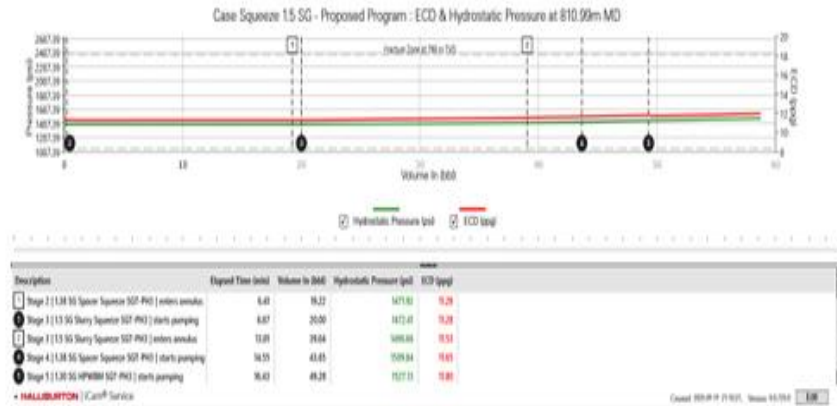
D. ECD Simulation Squeeze Cementing

Sangatta Field - SGT PH3-134/ST-221 v0.0
Squeeze Perforation Cement Program

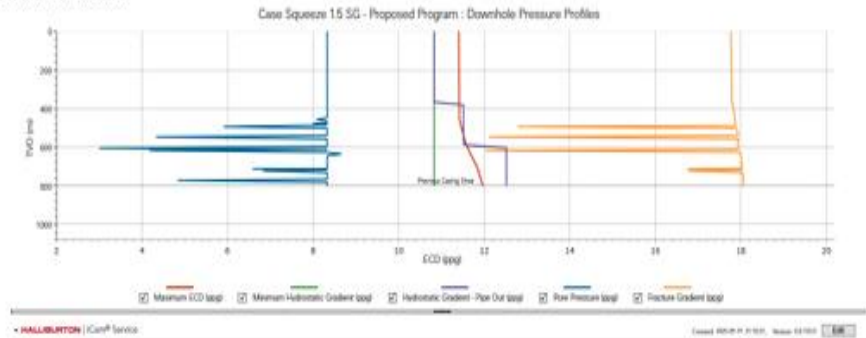
1.6 iCem® 2D Hydraulic Simulation Results



ECD & Hydrostatic Pressure Plot



Downhole Pressure Profiles



E. Job Execution Squeeze Cementing

Sangatta Field - SGT PH3-134/ST-221 v0.0
Squeeze Perforation Cement Program

2 Job Execution

2.1 Job Procedure

1. Set up equipment and Rig Up cementing lines
Install cementing cross over at rig floor
Install Mud Line to cementing unit,
Circulate the well to ensure there is no blockage in line and well prior to cementing job.
Est pressure 237 psi using 3 bpm
Circulate minimum two bottoms up prior to cementing job & try to reciprocate + 2 ft
To ensure the string is free
2. Hold pre job safety meeting for cementing job.
3. Flush & Fill up cementing line with water.
Conduct Electronic transmission pressure kick-outs (eKO) at low pressure (500 psi) and holding for 2 min, then set to 1,000 psi over maximum anticipated job pressure.
Pressure Test surface line to 2000 psi, and hold pressure for 5 min.
4. Record SITP make sure **NO PRESSURE BUILD UP**, if any pressure indication consult with Company Man
5. Mixing Chemical in accordance with Company Man approval, Took a sample mixing fluid.
6. Pump Spacer ahead 1.38 SG at 3.0 BPM 20 bbls
7. Mix and pump Cement slurry 1.50 SG at 3.0 BPM 23.65 bbls
Took sample cement at the beginning, middle and end of pumping slurry.
8. Pump Spacer Behind 1.38 SG at 3.0 BPM 5.63 bbls
9. Pump Displacement 1.30 SG at 3.0 BPM 8.4 bbls
10. Start POOH DP 40 joints with speed 35 ft/min when total volume of displacement was achieved
11. Reverse Out 2x Volume String 22.0 bbls & observed that the workstring was clean from cement debris
12. Perform hesitation squeeze until max volume or max pressure (based on injectivity), Which ever come first
Estimated Maximum hesitate pressure 600 psi or Maximum Hesitate Volume 18.0 bbls
Note : Max Volume & Pressure Squeeze is to be decided together with Customer
13. Close Valve at rig floor and vacuum the well until reach the recommendation waiting on cement
refer to compressive strength test result 500 psi Ongoing hh:mm
Compare with cement sample on surface condition.

2.2 Contingency Plans

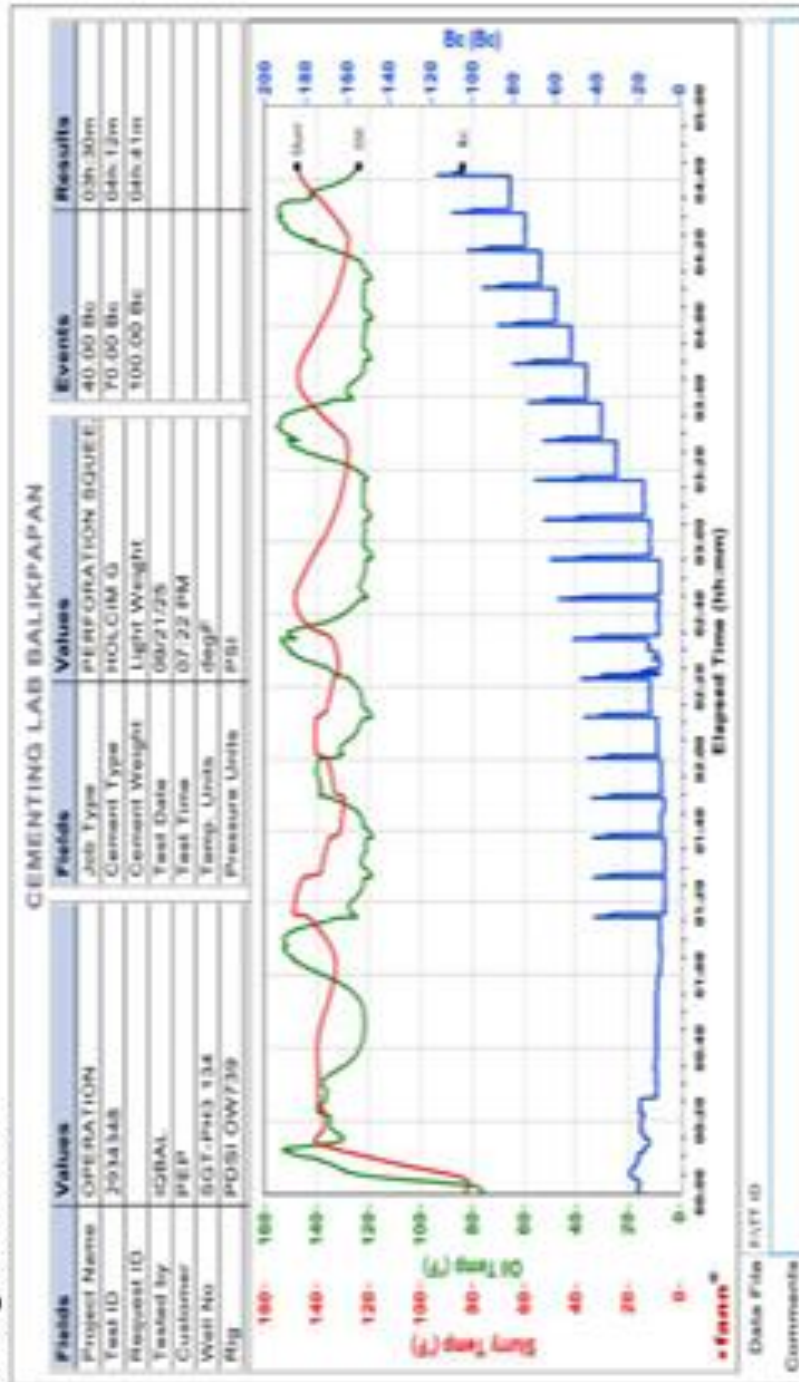
1. Increase the cement volume if found the well has loss profile
2. Always ensure to perform reverse circulation for minimum 2x vol workstring
and/or ensure the workstring are clean from cement
3. If found total losses during job, perform flushing DP after POOH instead of reverse out cement
with volume 11.0 bbls and continue to POOH string for another 8 joints.
3. If static loss is observed prior hesitate, abort the hesitation process and proceed to WOC

2.3 Job Limitation

1. Job is designed with > 2 hrs safety factor. Shutdown test is performed for 1 hrs to simulate POOH

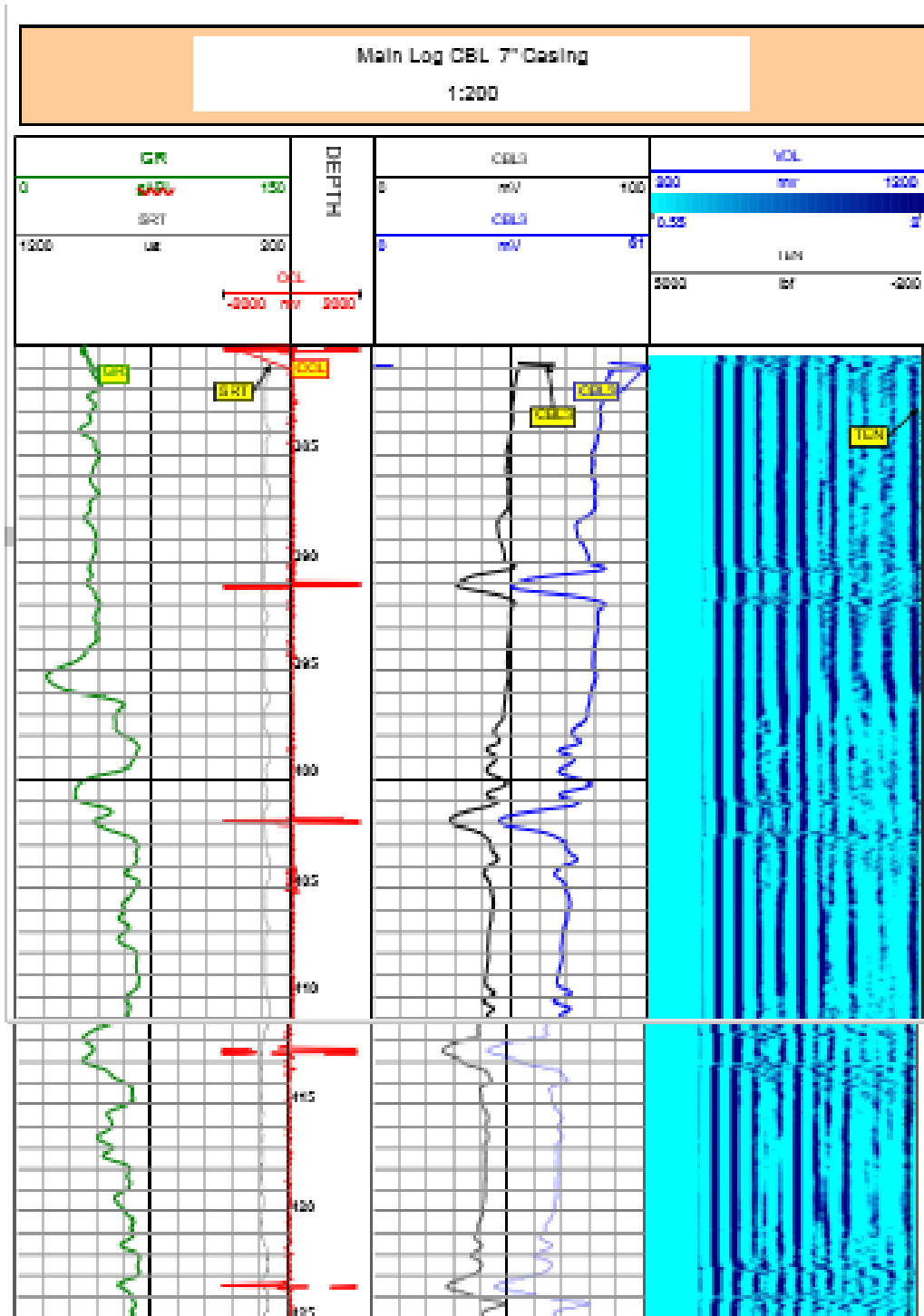
F. Thickening Time Squeeze Cementing

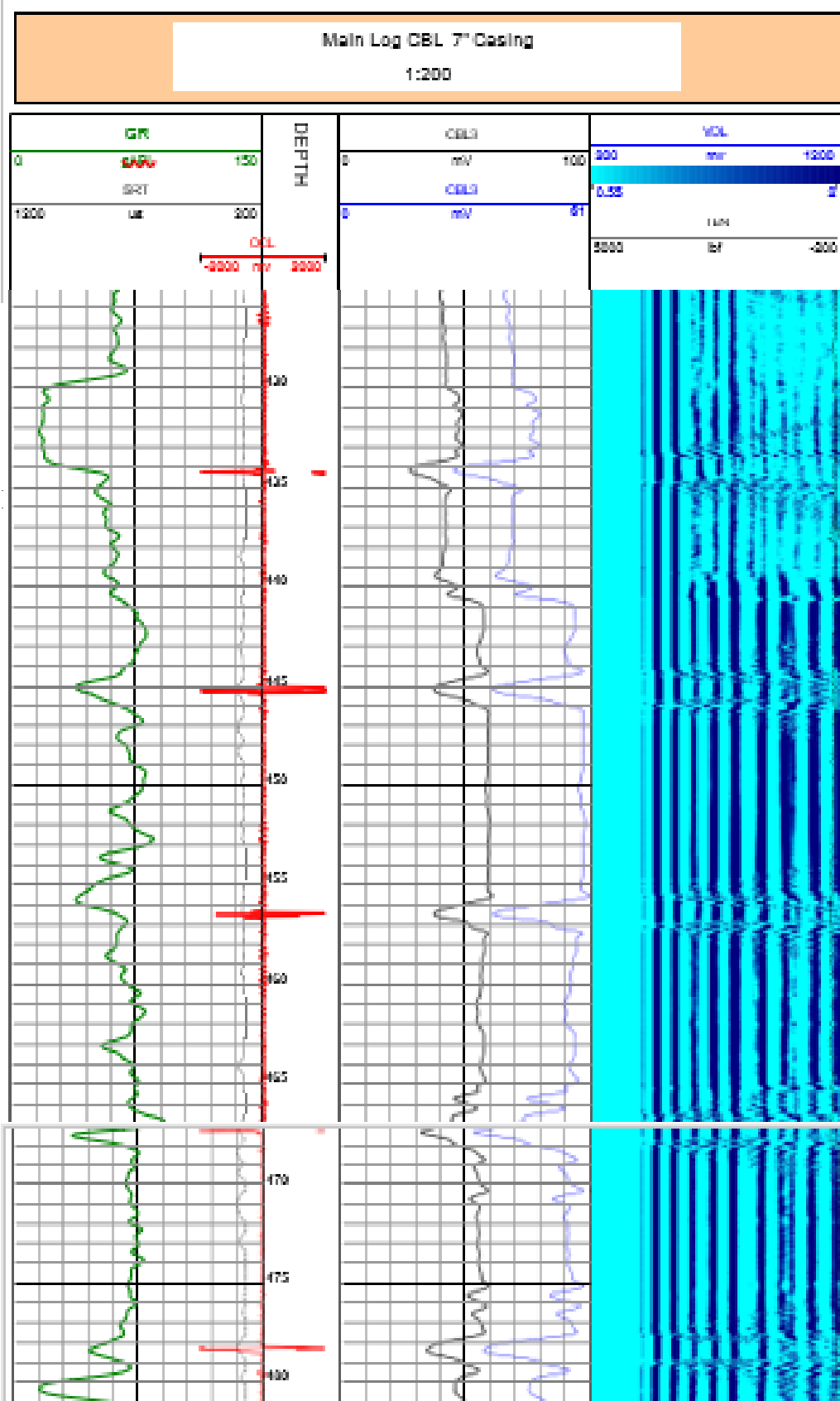
Thickening Time Chart :



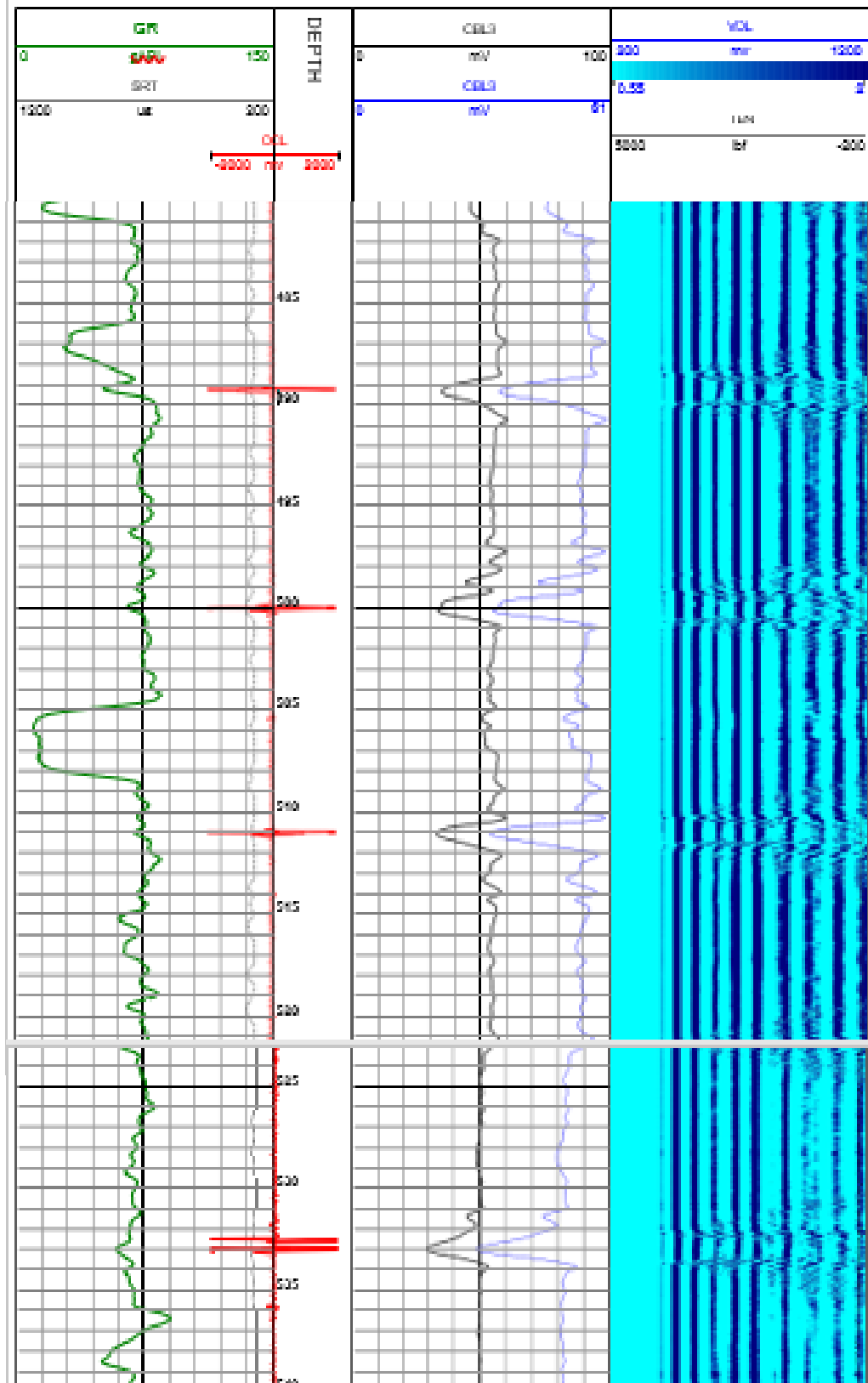
UCA Comp. Strength chart :
Test Ongoing

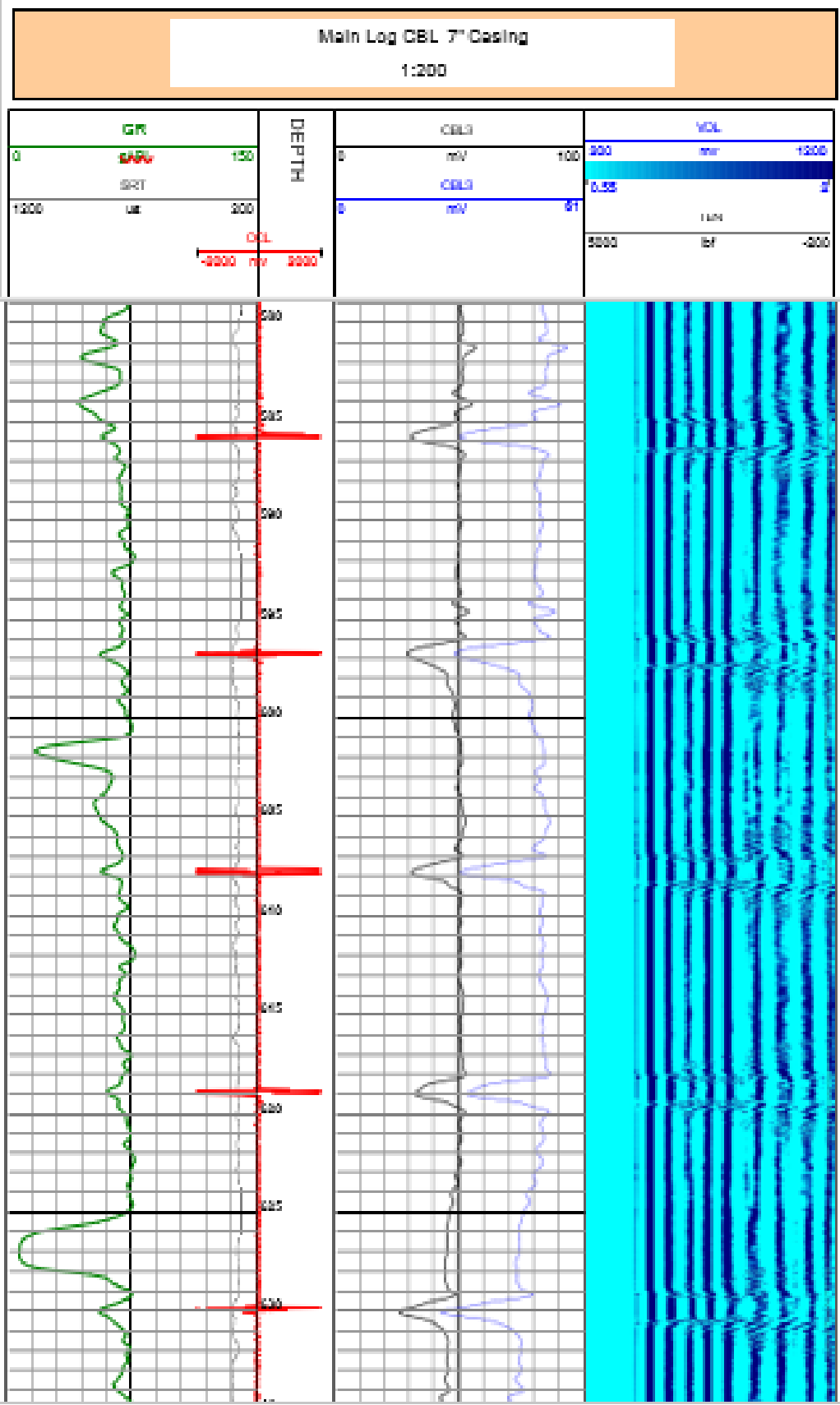
G. CBL-VDL Primary Cementing

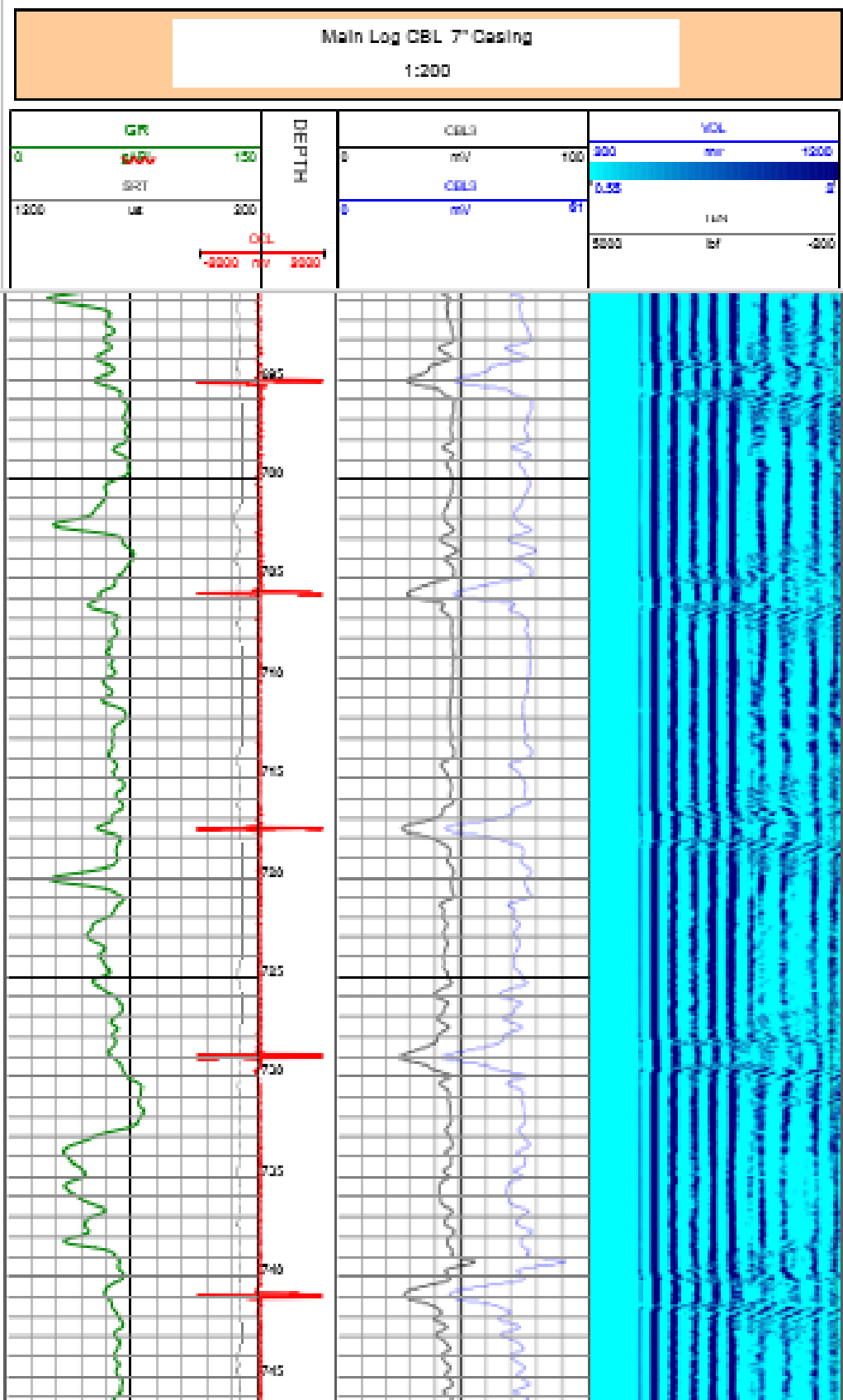


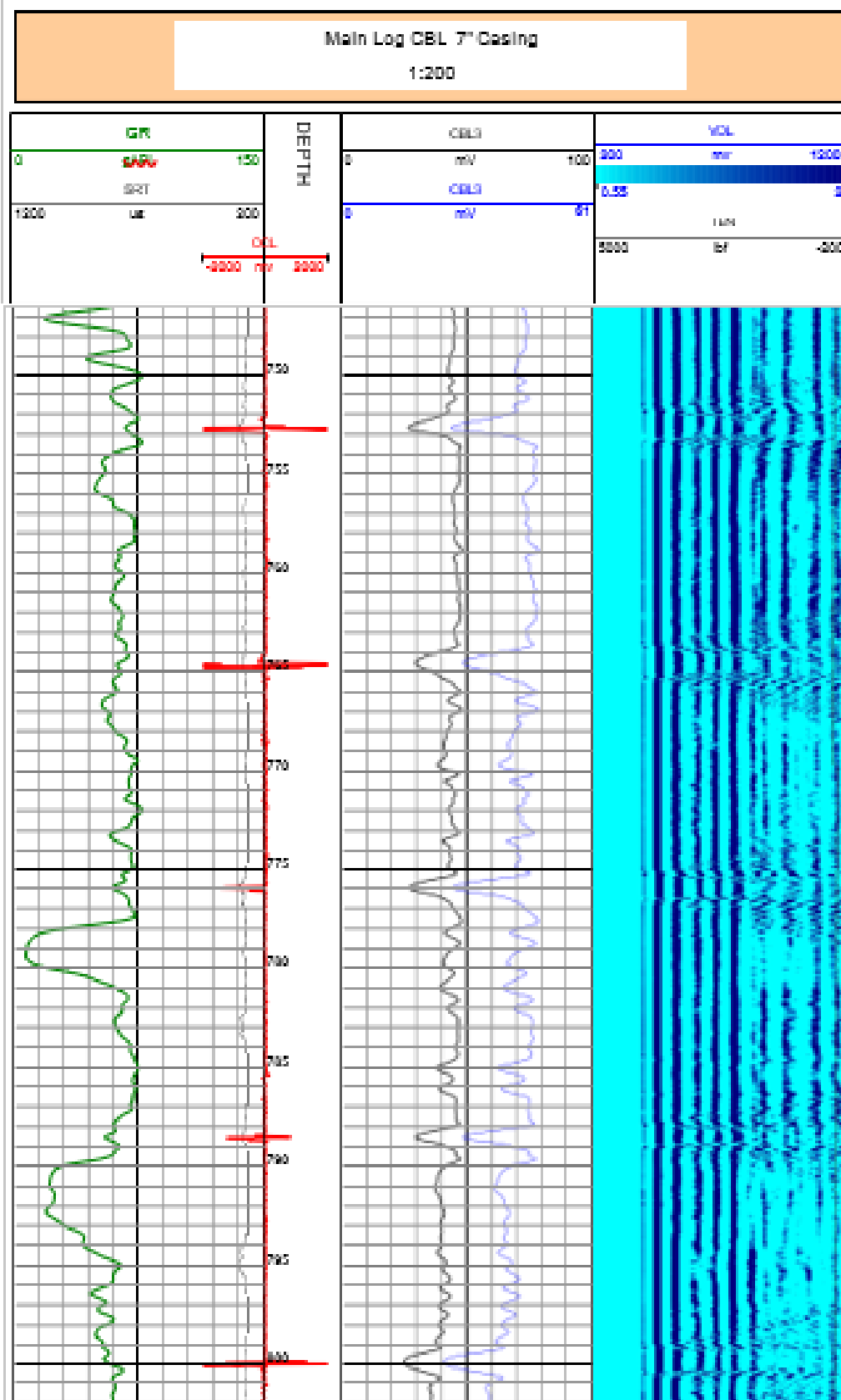


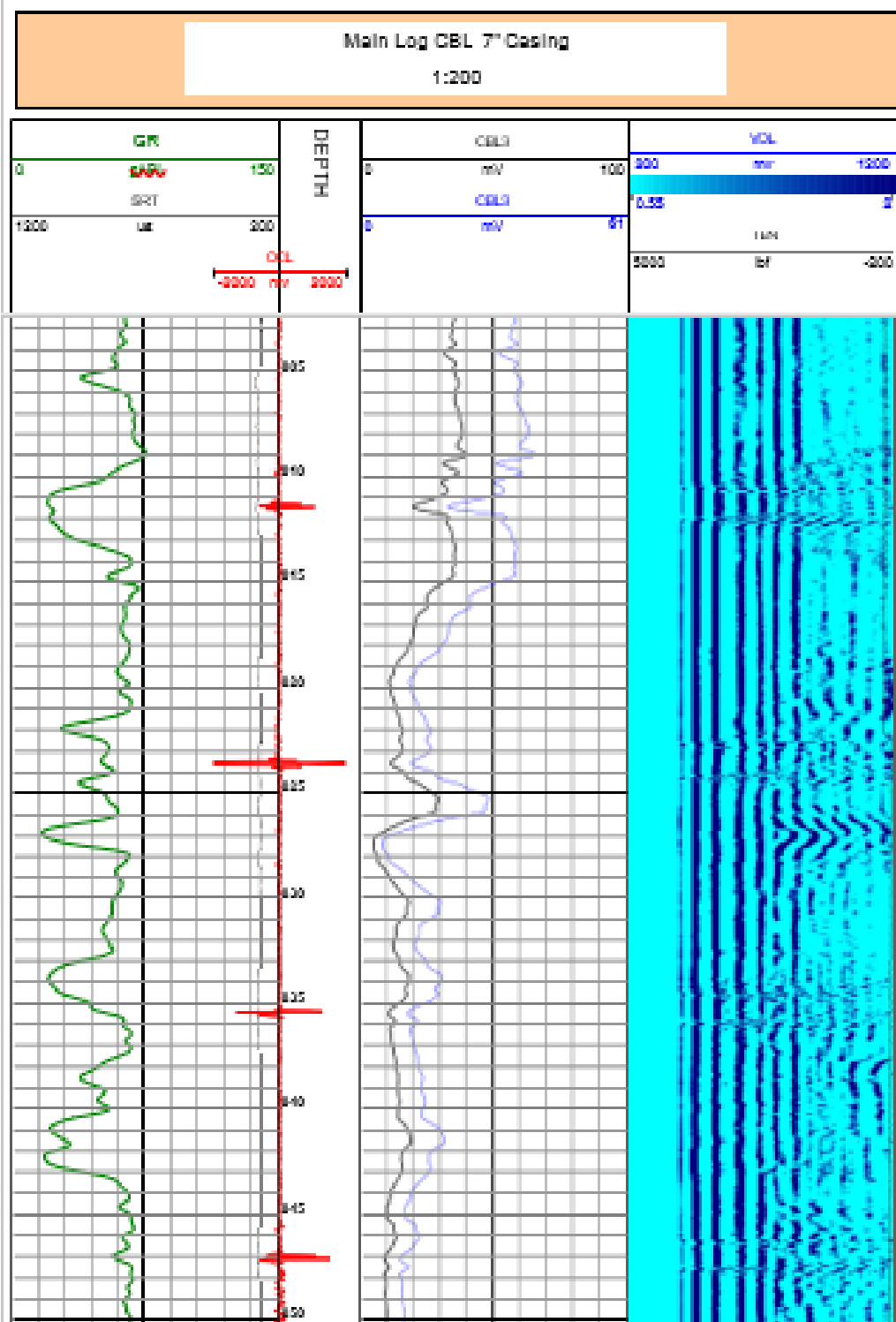
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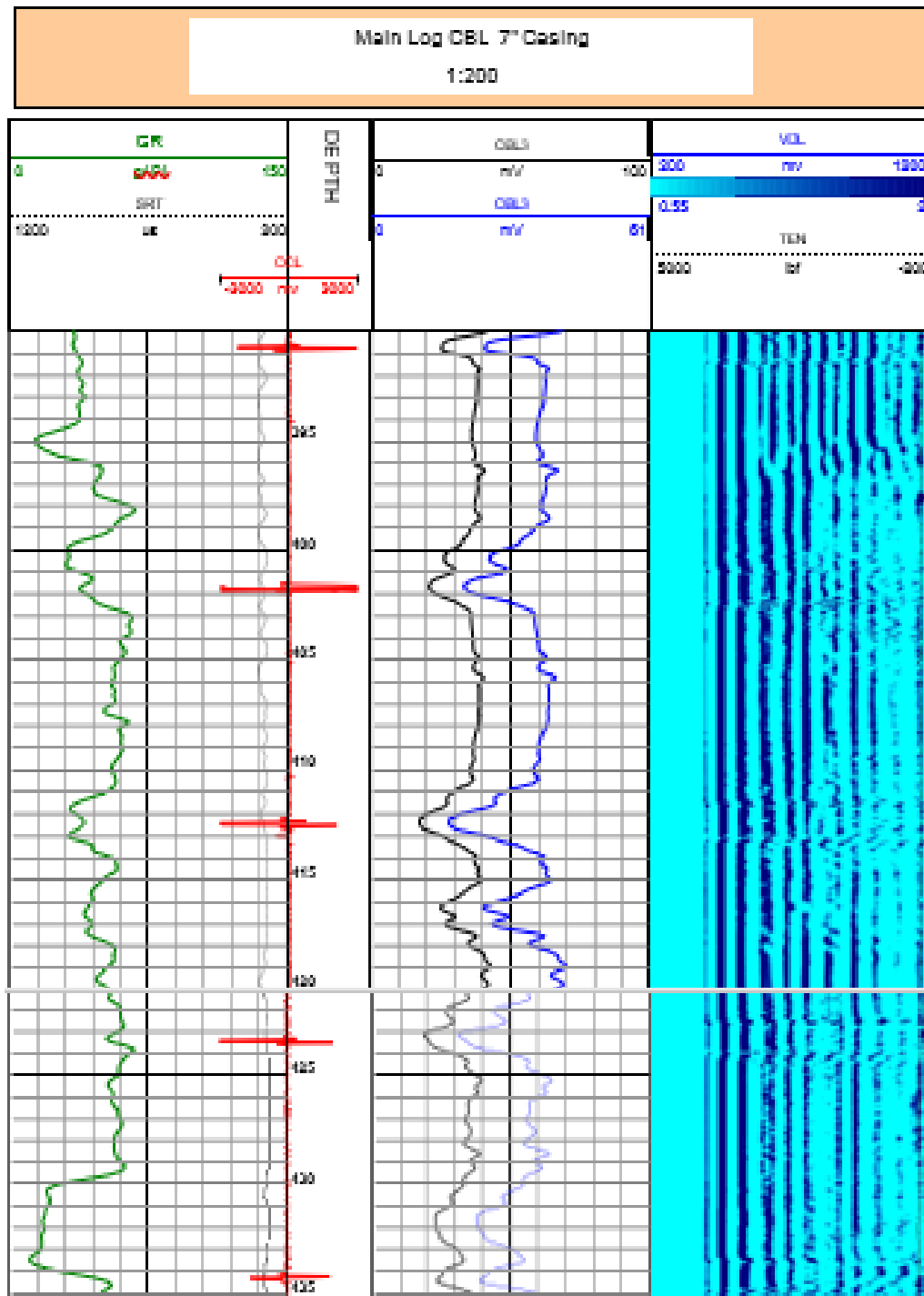


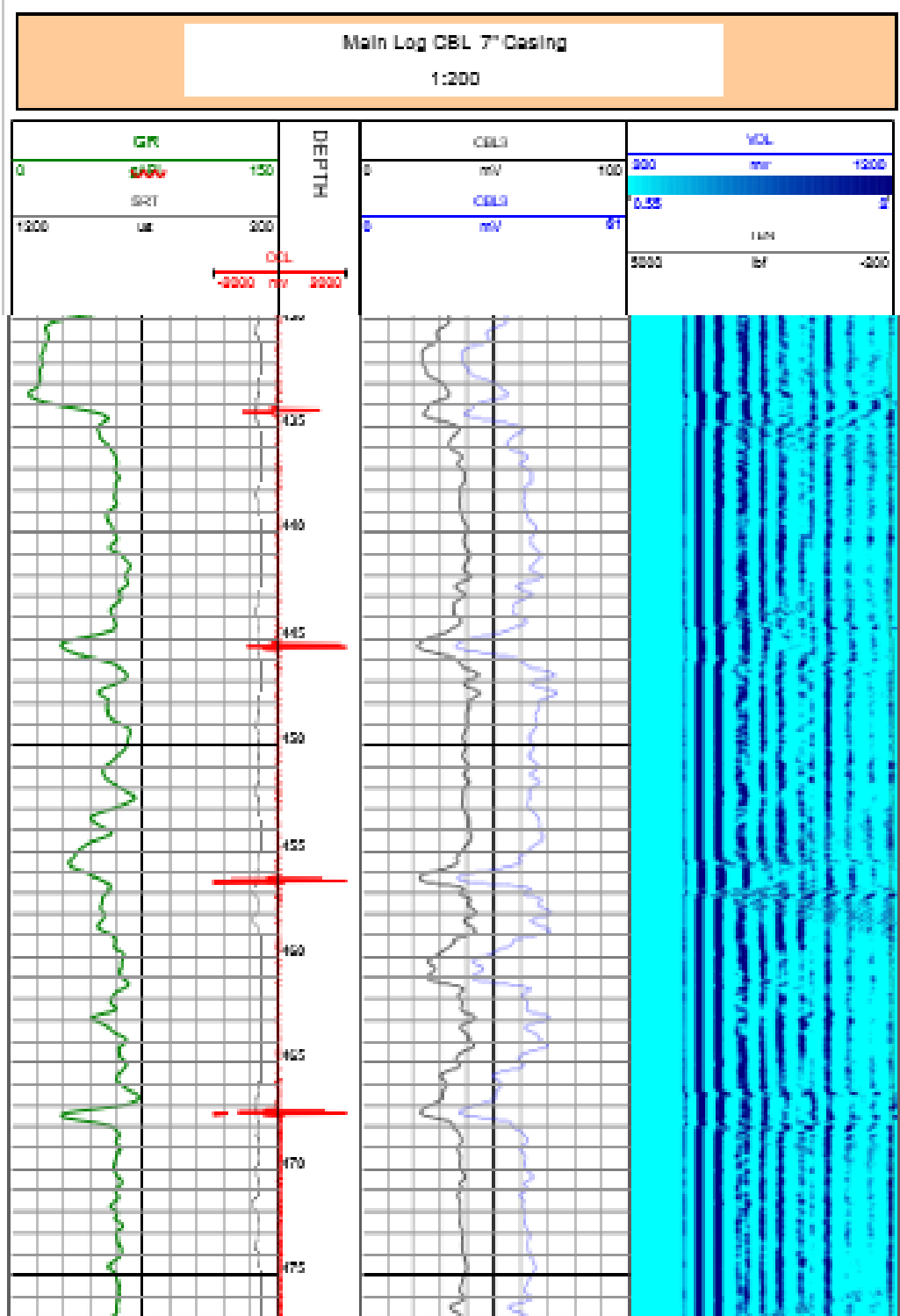


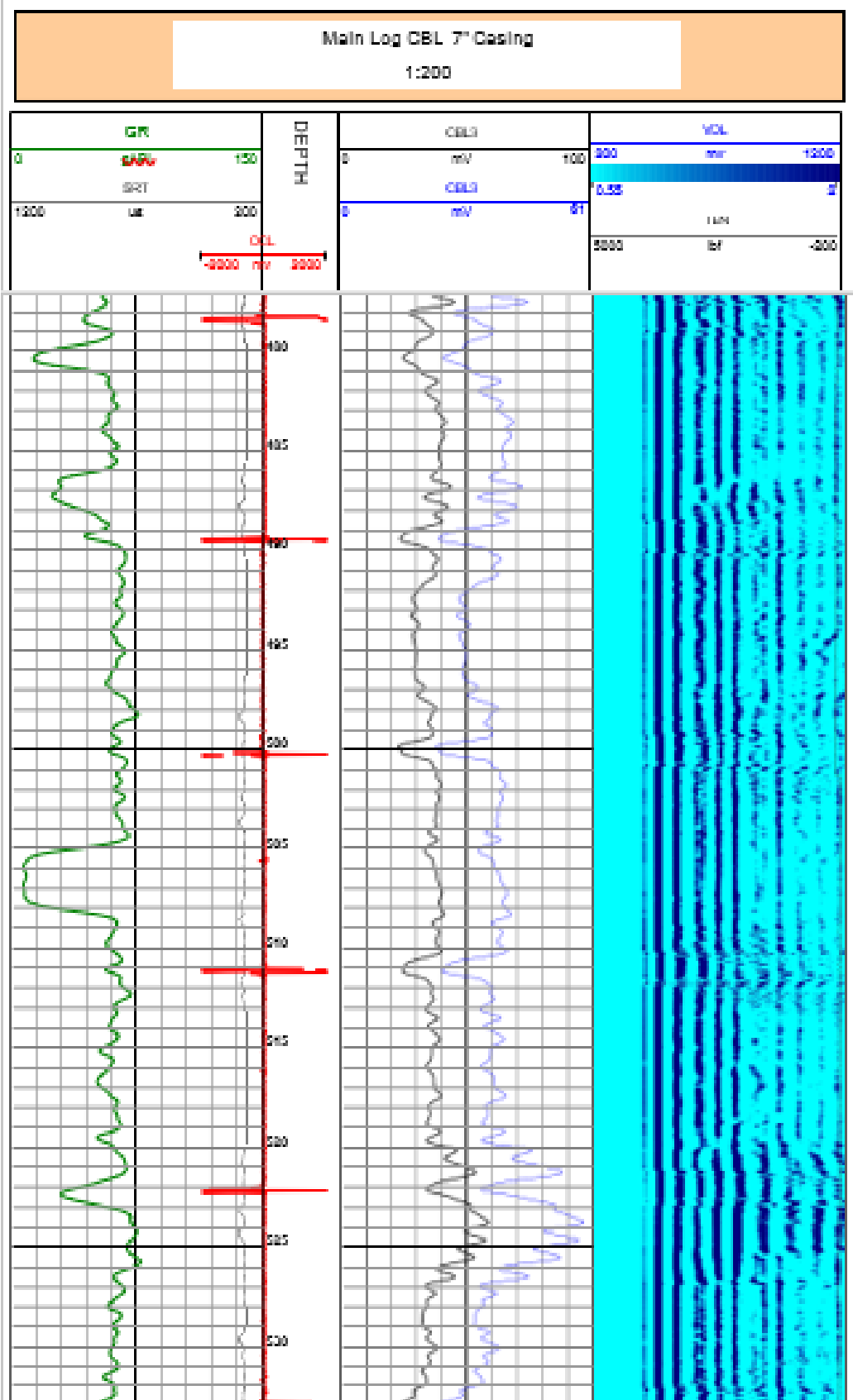




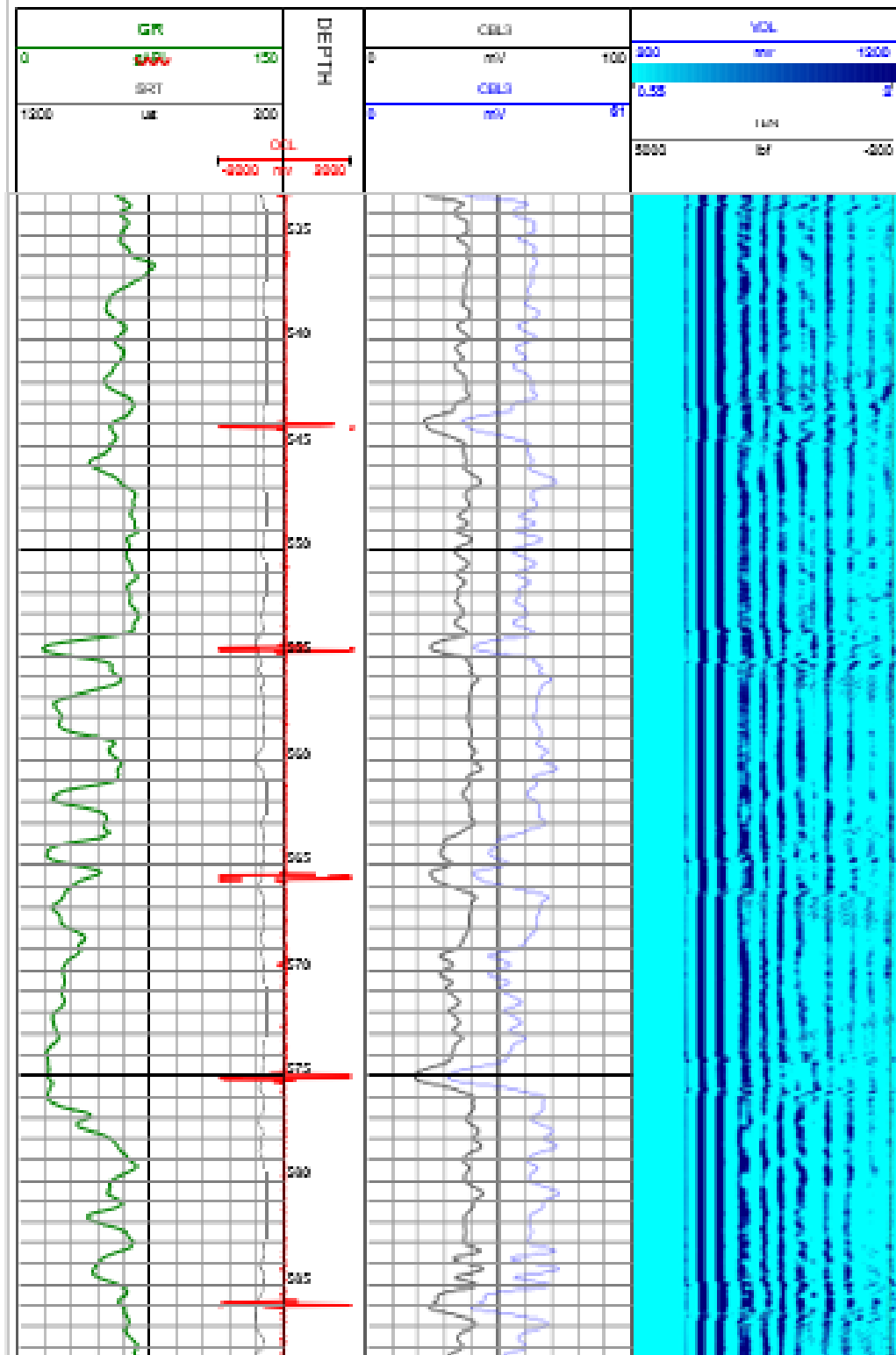
H. CBL-VDL Squeeze Cementing

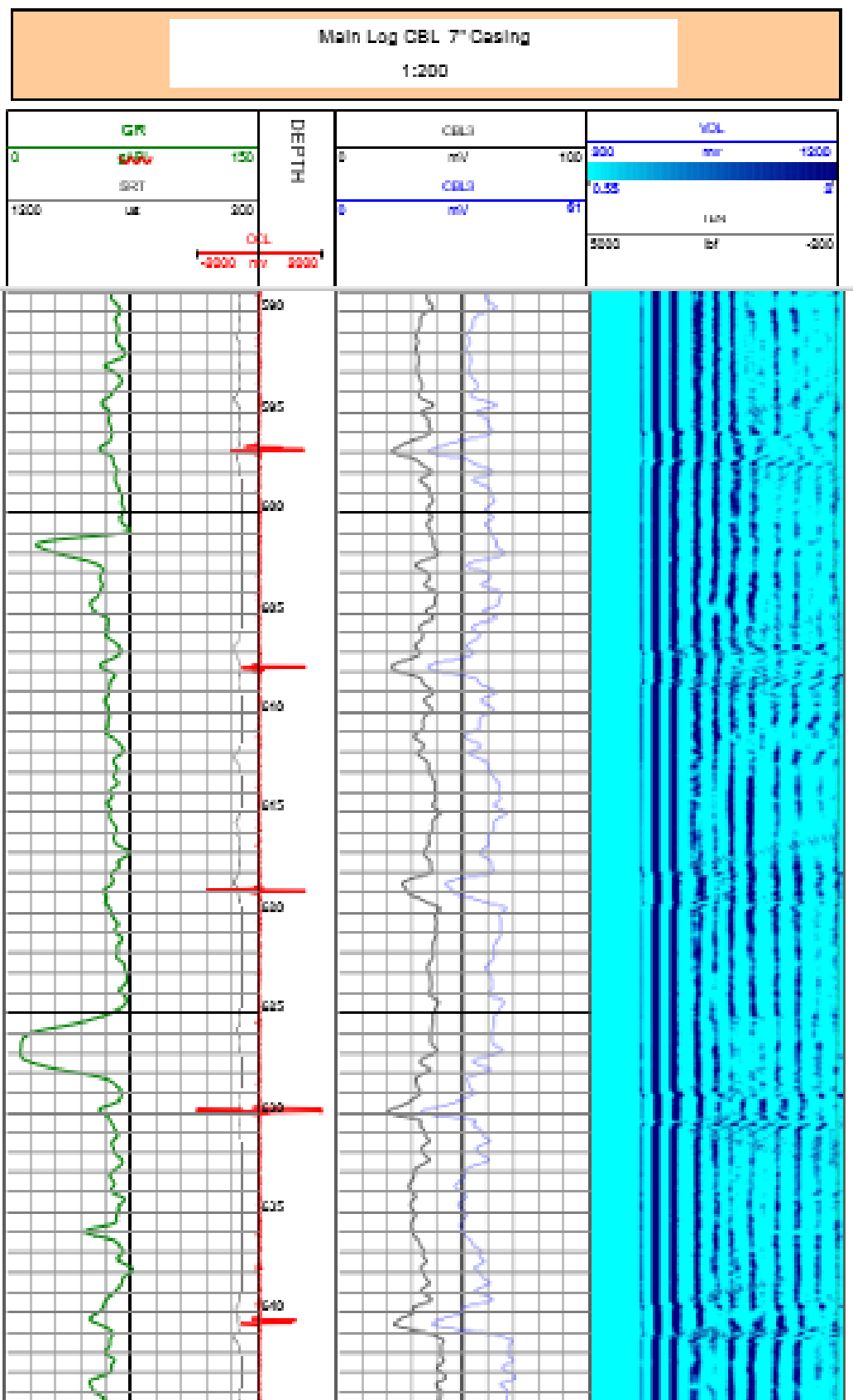


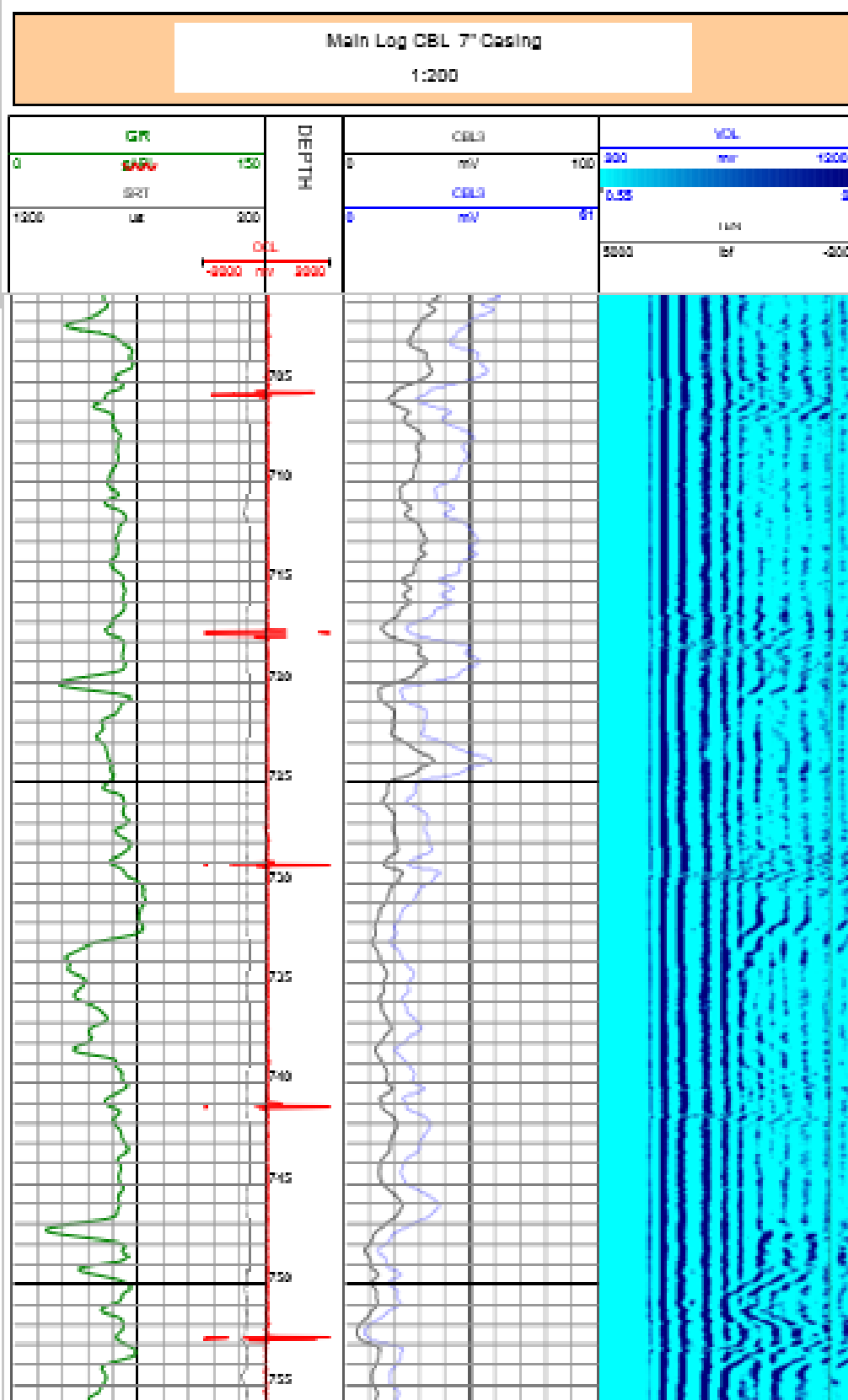




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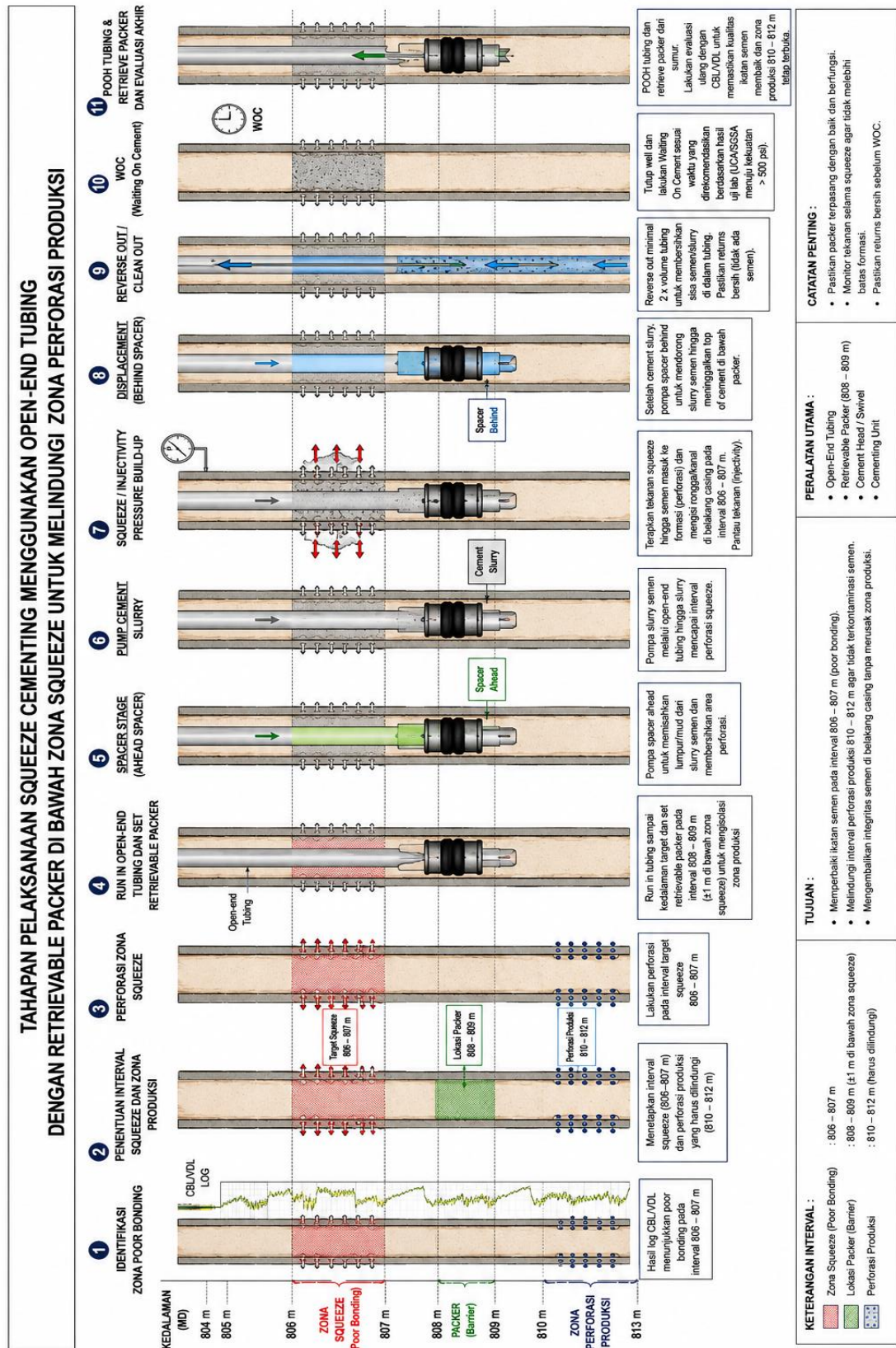
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Main Log CBL 7" Casing	
1:200	

GR			DEPTH	CBL3			VOL		
0	GR	100		0	mV	100	200	mV	1200
GR				CBL3			VOL		
1200	GR	200		0	mV	81	0.55	2	
GR				CBL3			VOL		
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I. Tahapan Pelaksanaan



J. Analisa Kuantitatif CBL *Primary Cementing*

CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (Db/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
1	390	49	2	440.27	Bad	0.15	Bad
2	391	30	6	866.42	Good	0.50	Bad
3	392	50	2	422.72	Bad	0.14	Bad
4	393	50	2	422.72	Bad	0.14	Bad
5	394	50	2	422.72	Bad	0.14	Bad
6	395	50	2	422.72	Bad	0.14	Bad
7	396	49	2	440.27	Bad	0.15	Bad
8	397	48	2	458.18	Bad	0.17	Bad
9	398	45	3	514.23	Good	0.21	Bad
10	399	44	3	533.75	Good	0.23	Bad
11	400	45	3	514.23	Good	0.21	Bad
12	401	44	3	533.75	Good	0.23	Bad
13	402	29	6	895.86	Good	0.52	Bad
14	403	42	3	574.16	Good	0.26	Bad
15	404	42	3	574.16	Good	0.26	Bad
16	405	42	3	574.16	Good	0.26	Bad
17	406	42	3	574.16	Good	0.26	Bad
18	407	41	3	595.09	Good	0.28	Bad
19	408	41	3	595.09	Good	0.28	Bad
20	409	40	4	616.54	Good	0.30	Bad
21	410	41	3	595.09	Good	0.28	Bad
22	411	40	4	616.54	Good	0.30	Bad
23	412	39	4	638.53	Good	0.31	Bad
24	413	32	6	810.36	Good	0.45	Bad
25	414	42	3	574.16	Good	0.26	Bad
26	415	40	4	616.54	Good	0.30	Bad
27	416	46	2	495.14	Bad	0.20	Bad
28	417	42	3	574.16	Good	0.26	Bad
29	418	42	3	574.16	Good	0.26	Bad
30	419	41	3	595.09	Good	0.28	Bad
31	420	41	3	595.09	Good	0.28	Bad
32	421	41	3	595.09	Good	0.28	Bad
33	422	39	4	638.53	Good	0.31	Bad
34	423	38	4	661.09	Good	0.33	Bad
35	424	37	4	684.26	Good	0.35	Bad
36	425	40	4	616.54	Good	0.30	Bad
37	426	40	4	616.54	Good	0.30	Bad
38	427	41	3	595.09	Good	0.28	Bad
39	428	41	3	595.09	Good	0.28	Bad
40	429	42	3	574.16	Good	0.26	Bad
41	430	42	3	574.16	Good	0.26	Bad
42	431	42	3	574.16	Good	0.26	Bad
43	432	46	2	495.14	Bad	0.20	Bad
44	433	47	2	476.46	Bad	0.18	Bad
45	434	48	2	458.18	Bad	0.17	Bad
46	435	30	6	866.42	Good	0.50	Bad
47	436	42	3	574.16	Good	0.26	Bad
48	437	42	3	574.16	Good	0.26	Bad
49	438	42	3	574.16	Good	0.26	Bad
50	439	41	3	595.09	Good	0.28	Bad
51	440	41	3	595.09	Good	0.28	Bad
52	441	45	3	514.23	Good	0.21	Bad
53	442	56	1	324.28	Bad	0.06	Bad
54	443	56	1	324.28	Bad	0.06	Bad
55	444	55	1	339.93	Bad	0.07	Bad
56	445	56	1	324.28	Bad	0.06	Bad
57	446	49	2	440.27	Bad	0.15	Bad
58	447	55	1	339.93	Bad	0.07	Bad
59	448	59	0	278.96	Bad	0.02	Bad
60	449	59	0	278.96	Bad	0.02	Bad
61	450	59	0	278.96	Bad	0.02	Bad
62	451	59	0	278.96	Bad	0.02	Bad
63	452	59	0	278.96	Bad	0.02	Bad
64	453	59	0	278.96	Bad	0.02	Bad
65	454	59	0	278.96	Bad	0.02	Bad
66	455	59	0	278.96	Bad	0.02	Bad
67	456	50	2	422.72	Bad	0.14	Bad
68	457	50	2	422.72	Bad	0.14	Bad
69	458	58	0	293.80	Bad	0.04	Bad
70	459	57	1	308.91	Bad	0.05	Bad
71	460	57	1	308.91	Bad	0.05	Bad
72	461	58	0	293.80	Bad	0.04	Bad
73	462	57	1	308.91	Bad	0.05	Bad
74	463	58	0	293.80	Bad	0.04	Bad
75	464	57	1	308.91	Bad	0.05	Bad
76	465	58	0	293.80	Bad	0.04	Bad
77	466	50	2	422.72	Bad	0.14	Bad
78	467	48	2	458.18	Bad	0.17	Bad
79	468	48	2	458.18	Bad	0.17	Bad
80	469	55	1	339.93	Bad	0.07	Bad
81	470	55	1	339.93	Bad	0.07	Bad
82	471	53	1	372.11	Bad	0.10	Bad
83	472	55	1	339.93	Bad	0.07	Bad
84	473	55	1	339.93	Bad	0.07	Bad
85	474	55	1	339.93	Bad	0.07	Bad
86	475	55	1	339.93	Bad	0.07	Bad
87	476	55	1	339.93	Bad	0.07	Bad
88	477	55	1	339.93	Bad	0.07	Bad
89	478	40	4	616.54	Good	0.30	Bad
90	479	49	2	440.27	Bad	0.15	Bad
91	480	46	2	495.14	Bad	0.20	Bad
92	481	40	4	616.54	Good	0.30	Bad
93	482	55	1	339.93	Bad	0.07	Bad
94	483	55	1	339.93	Bad	0.07	Bad
95	484	55	1	339.93	Bad	0.07	Bad
96	485	55	1	339.93	Bad	0.07	Bad
97	486	55	1	339.93	Bad	0.07	Bad
98	487	55	1	339.93	Bad	0.07	Bad
99	488	55	1	339.93	Bad	0.07	Bad
100	489	40	4	616.54	Good	0.30	Bad

CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (Db/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
101	490	50	2	422.72	Bad	0.14	Bad
102	491	55	1	339.93	Bad	0.07	Bad
103	492	55	1	339.93	Bad	0.07	Bad
104	493	55	1	339.93	Bad	0.07	Bad
105	494	55	1	339.93	Bad	0.07	Bad
106	495	55	1	339.93	Bad	0.07	Bad
107	496	55	1	339.93	Bad	0.07	Bad
108	497	55	1	339.93	Bad	0.07	Bad
109	498	55	1	339.93	Bad	0.07	Bad
110	499	50	2	422.72	Bad	0.14	Bad
111	500	35	5	732.52	Good	0.39	Bad
112	501	55	1	339.93	Bad	0.07	Bad
113	502	54	1	355.87	Bad	0.09	Bad
114	503	55	1	339.93	Bad	0.07	Bad
115	504	54	1	355.87	Bad	0.09	Bad
116	505	55	1	339.93	Bad	0.07	Bad
117	506	54	1	355.87	Bad	0.09	Bad
118	507	55	1	339.93	Bad	0.07	Bad
119	508	54	1	355.87	Bad	0.09	Bad
120	509	55	1	339.93	Bad	0.07	Bad
121	510	55	1	339.93	Bad	0.07	Bad
122	511	32	6	810.36	Good	0.45	Bad
123	512	55	1	339.93	Bad	0.07	Bad
124	513	54	1	355.87	Bad	0.09	Bad
125	514	55	1	339.93	Bad	0.07	Bad
126	515	54	1	355.87	Bad	0.09	Bad
127	516	55	1	339.93	Bad	0.07	Bad
128	517	54	1	355.87	Bad	0.09	Bad
129	518	55	1	339.93	Bad	0.07	Bad
130	519	54	1	355.87	Bad	0.09	Bad
131	520	55	1	339.93	Bad	0.07	Bad
132	521	54	1	355.87	Bad	0.09	Bad
133	522	40	4	616.54	Good	0.30	Bad
134	523	51	2	405.52	Bad	0.13	Bad
135	524	52	1	388.65	Bad	0.11	Bad
136	525	50	2	422.72	Bad	0.14	Bad
137	526	50	2	422.72	Bad	0.14	Bad
138	527	50	2	422.72	Bad	0.14	Bad
139	528	50	2	422.72	Bad	0.14	Bad
140	529	50	2	422.72	Bad	0.14	Bad
141	530	50	2	422.72	Bad	0.14	Bad
142	531	51	2	405.52	Bad	0.13	Bad
143	532	48	2	458.18	Bad	0.17	Bad
144	533	30	6	866.42	Good	0.50	Bad
145	534	51	2	405.52	Bad	0.13	Bad
146	535	50	2	422.72	Bad	0.14	Bad
147	536	50	2	422.72	Bad	0.14	Bad
148	537	50	2	422.72	Bad	0.14	Bad
149	538	50	2	422.72	Bad	0.14	Bad
150	539	50	2	422.72	Bad	0.14	Bad
151	540	50	2	422.72	Bad	0.14	Bad
152	541	50	2	422.72	Bad	0.14	Bad
153	542	50	2	422.72	Bad	0.14	Bad
154	543	50	2	422.72	Bad	0.14	Bad
155	544	32	6	810.36	Good	0.45	Bad
156	545	50	2	422.72	Bad	0.14	Bad
157	546	55	1	339.93	Bad	0.07	Bad
158	547	50	2	422.72	Bad	0.14	Bad
159	548	50	2	422.72	Bad	0.14	Bad
160	549	50	2	422.72	Bad	0.14	Bad
161	550	50	2	422.72	Bad	0.14	Bad
162	551	50	2	422.72	Bad	0.14	Bad
163	552	50	2	422.72	Bad	0.14	Bad
164	553	50	2	422.72	Bad	0.14	Bad
165	554	50	2	422.72	Bad	0.14	Bad
166	555	40	4	616.54	Good	0.30	Bad
167	556	50	2	422.72	Bad	0.14	Bad
168	557	50	2	422.72	Bad	0.14	Bad
169	558	50	2	422.72	Bad	0.14	Bad
170	559	48	2	458.18	Bad	0.17	Bad
171	560	48	2	458.18	Bad	0.17	Bad
172	561	49	2	440.27	Bad	0.15	Bad
173	562	50	2	422.72	Bad	0.14	Bad
174	563	48	2	458.18	Bad	0.17	Bad
175	564	49	2	440.27	Bad	0.15	Bad
176	565	41	3	595.09	Good	0.28	Bad
177	566	42	3	574.16	Good	0.26	Bad
178	567	54	1	355.87	Bad	0.09	Bad
179	568	51	2	405.52	Bad	0.13	Bad
180	569	48	2	458.18	Bad	0.17	Bad
181	570	49	2	440.27	Bad	0.15	Bad
182	571	50	2	422.72	Bad	0.14	Bad
183	572	51	2	405.52	Bad	0.13	Bad
184	573	51	2	405.52	Bad	0.13	Bad
185	574	52	1	388.65	Bad	0.11	Bad
186	575	31	6	837.94	Good	0.47	Bad
187	576	565	-19	-1683.44	Bad	-1.56	Bad
188	577	52	1	388.65	Bad	0.11	Bad
189	578	51	2	405.52	Bad	0.13	Bad
190	579	51	2	405.52	Bad	0.13	Bad
191	580	52	1	388.65	Bad	0.11	Bad
192	581	51	2	405.52	Bad	0.13	Bad
193	582	53	1	372.11	Bad	0.10	Bad
194	583	49	2	440.27	Bad	0.15	Bad
195	584	32	6	810.36	Good	0.45	Bad
196	585	50	2	422.72	Bad	0.14	Bad
197	586	50	2	422.72	Bad	0.14	Bad
198	587	50	2	422.72	Bad	0.14	Bad
199	588	50	2	422.72	Bad	0.14	Bad
200	589	50	2	422.72	Bad	0.14	Bad

CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (Db/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
201	590	50	2	422.72	Bad	0.14	Bad
202	591	50	2	422.72	Bad	0.14	Bad
203	592	50	2	422.72	Bad	0.14	Bad
204	593	50	2	422.72	Bad	0.14	Bad
205	594	50	2	422.72	Bad	0.14	Bad
206	595	50	2	422.72	Bad	0.14	Bad
207	596	51	2	405.52	Bad	0.13	Bad
208	597	31	6	837.94	Good	0.47	Bad
209	598	46	2	495.14	Bad	0.20	Bad
210	599	47	2	476.46	Bad	0.18	Bad
211	600	49	2	440.27	Bad	0.15	Bad
212	601	50	2	422.72	Bad	0.14	Bad
213	602	51	2	405.52	Bad	0.13	Bad
214	603	50	2	422.72	Bad	0.14	Bad
215	604	50	2	422.72	Bad	0.14	Bad
216	605	51	2	405.52	Bad	0.13	Bad
217	606	50	2	422.72	Bad	0.14	Bad
218	607	50	2	422.72	Bad	0.14	Bad
219	608	32	6	810.36	Good	0.45	Bad
220	609	50	2	422.72	Bad	0.14	Bad
221	610	50	2	422.72	Bad	0.14	Bad
222	611	50	2	422.72	Bad	0.14	Bad
223	612	50	2	422.72	Bad	0.14	Bad
224	613	50	2	422.72	Bad	0.14	Bad
225	614	50	2	422.72	Bad	0.14	Bad
226	615	50	2	422.72	Bad	0.14	Bad
227	616	50	2	422.72	Bad	0.14	Bad
228	617	50	2	422.72	Bad	0.14	Bad
229	618	50	2	422.72	Bad	0.14	Bad
230	619	32	6	810.36	Good	0.45	Bad
231	620	51	2	405.52	Bad	0.13	Bad
232	621	50	2	422.72	Bad	0.14	Bad
233	622	50	2	422.72	Bad	0.14	Bad
234	623	50	2	422.72	Bad	0.14	Bad
235	624	49	2	440.27	Bad	0.15	Bad
236	625	48	2	458.18	Bad	0.17	Bad
237	626	48	2	458.18	Bad	0.17	Bad
238	627	48	2	458.18	Bad	0.17	Bad
239	628	48	2	458.18	Bad	0.17	Bad
240	629	48	2	458.18	Bad	0.17	Bad
241	630	27	7	957.93	Good	0.57	Bad
242	631	45	3	514.23	Good	0.21	Bad
243	632	45	3	514.23	Good	0.21	Bad
244	633	45	3	514.23	Good	0.21	Bad
245	634	45	3	514.23	Good	0.21	Bad
246	635	45	3	514.23	Good	0.21	Bad
247	636	45	3	514.23	Good	0.21	Bad
248	637	45	3	514.23	Good	0.21	Bad
249	638	45	3	514.23	Good	0.21	Bad
250	639	45	3	514.23	Good	0.21	Bad
251	640	39	4	638.53	Good	0.31	Bad
252	641	40	4	616.54	Good	0.30	Bad
253	642	49	2	440.27	Bad	0.15	Bad
254	643	48	2	458.18	Bad	0.17	Bad
255	644	49	2	440.27	Bad	0.15	Bad
256	645	48	2	458.18	Bad	0.17	Bad
257	646	49	2	440.27	Bad	0.15	Bad
258	647	48	2	458.18	Bad	0.17	Bad
259	648	49	2	440.27	Bad	0.15	Bad
260	649	48	2	458.18	Bad	0.17	Bad
261	650	49	2	440.27	Bad	0.15	Bad
262	651	40	4	616.54	Good	0.30	Bad
263	652	40	4	616.54	Good	0.30	Bad
264	653	50	2	422.72	Bad	0.14	Bad
265	654	49	2	440.27	Bad	0.15	Bad
266	655	48	2	458.18	Bad	0.17	Bad
267	656	48	2	458.18	Bad	0.17	Bad
268	657	48	2	458.18	Bad	0.17	Bad
269	658	47	2	476.46	Bad	0.18	Bad
270	659	47	2	476.46	Bad	0.18	Bad
271	660	45	3	514.23	Good	0.21	Bad
272	661	45	3	514.23	Good	0.21	Bad
273	662	30	6	866.42	Good	0.50	Bad
274	663	45	3	514.23	Good	0.21	Bad
275	664	41	3	595.09	Good	0.28	Bad
276	665	43	3	553.72	Good	0.24	Bad
277	666	45	3	514.23	Good	0.21	Bad
278	667	43	3	553.72	Good	0.24	Bad
279	668	48	2	458.18	Bad	0.17	Bad
280	669	49	2	440.27	Bad	0.15	Bad
281	670	49	2	440.27	Bad	0.15	Bad
282	671	45	3	514.23	Good	0.21	Bad
283	672	45	3	514.23	Good	0.21	Bad
284	673	30	6	866.42	Good	0.50	Bad
285	674	45	3	514.23	Good	0.21	Bad
286	675	47	2	476.46	Bad	0.18	Bad
287	676	45	3	514.23	Good	0.21	Bad
288	677	45	3	514.23	Good	0.21	Bad
289	678	45	3	514.23	Good	0.21	Bad
290	679	45	3	514.23	Good	0.21	Bad
291	680	45	3	514.23	Good	0.21	Bad
292	681	45	3	514.23	Good	0.21	Bad
293	682	45	3	514.23	Good	0.21	Bad
294	683	45	3	514.23	Good	0.21	Bad
295	684	35	5	732.52	Good	0.39	Bad
296	685	40	4	616.54	Good	0.30	Bad
297	686	45	3	514.23	Good	0.21	Bad
298	687	45	3	514.23	Good	0.21	Bad
299	688	45	3	514.23	Good	0.21	Bad
300	689	45	3	514.23	Good	0.21	Bad

CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (Db/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
301	690	45	3	514.23	Good	0.21	Bad
302	691	45	3	514.23	Good	0.21	Bad
303	692	45	3	514.23	Good	0.21	Bad
304	693	45	3	514.23	Good	0.21	Bad
305	694	45	3	514.23	Good	0.21	Bad
306	695	30	6	866.42	Good	0.50	Bad
307	696	45	3	514.23	Good	0.21	Bad
308	697	46	2	495.14	Bad	0.20	Bad
309	698	45	3	514.23	Good	0.21	Bad
310	699	46	2	495.14	Bad	0.20	Bad
311	700	45	3	514.23	Good	0.21	Bad
312	701	46	2	495.14	Bad	0.20	Bad
313	702	45	3	514.23	Good	0.21	Bad
314	703	46	2	495.14	Bad	0.20	Bad
315	704	45	3	514.23	Good	0.21	Bad
316	705	46	2	495.14	Bad	0.20	Bad
317	706	30	6	866.42	Good	0.50	Bad
318	707	45	3	514.23	Good	0.21	Bad
319	708	45	3	514.23	Good	0.21	Bad
320	709	46	2	495.14	Bad	0.20	Bad
321	710	46	2	495.14	Bad	0.20	Bad
322	711	45	3	514.23	Good	0.21	Bad
323	712	46	2	495.14	Bad	0.20	Bad
324	713	45	3	514.23	Good	0.21	Bad
325	714	46	2	495.14	Bad	0.20	Bad
326	715	45	3	514.23	Good	0.21	Bad
327	716	46	2	495.14	Bad	0.20	Bad
328	717	40	4	616.54	Good	0.30	Bad
329	718	35	5	732.52	Good	0.39	Bad
330	719	45	3	514.23	Good	0.21	Bad
331	720	45	3	514.23	Good	0.21	Bad
332	721	45	3	514.23	Good	0.21	Bad
333	722	46	2	495.14	Bad	0.20	Bad
334	723	45	3	514.23	Good	0.21	Bad
335	724	46	2	495.14	Bad	0.20	Bad
336	725	45	3	514.23	Good	0.21	Bad
337	726	40	4	616.54	Good	0.30	Bad
338	727	40	4	616.54	Good	0.30	Bad
339	728	40	4	616.54	Good	0.30	Bad
340	729	25	8	1024.78	Good	0.62	Bad
341	730	45	3	514.23	Good	0.21	Bad
342	731	46	2	495.14	Bad	0.20	Bad
343	732	45	3	514.23	Good	0.21	Bad
344	733	46	2	495.14	Bad	0.20	Bad
345	734	45	3	514.23	Good	0.21	Bad
346	735	46	2	495.14	Bad	0.20	Bad
347	736	45	3	514.23	Good	0.21	Bad
348	737	46	2	495.14	Bad	0.20	Bad
349	738	46	2	495.14	Bad	0.20	Bad
350	739	45	3	514.23	Good	0.21	Bad
351	740	45	3	514.23	Good	0.21	Bad
352	741	28	7	926.34	Good	0.55	Bad
353	742	40	4	616.54	Good	0.30	Bad
354	743	40	4	616.54	Good	0.30	Bad
355	744	41	3	595.09	Good	0.28	Bad
356	745	45	3	514.23	Good	0.21	Bad
357	746	46	2	495.14	Bad	0.20	Bad
358	747	45	3	514.23	Good	0.21	Bad
359	748	46	2	495.14	Bad	0.20	Bad
360	749	45	3	514.23	Good	0.21	Bad
361	750	46	2	495.14	Bad	0.20	Bad
362	751	45	3	514.23	Good	0.21	Bad
363	752	41	3	595.09	Good	0.28	Bad
364	753	33	5	783.63	Good	0.43	Bad
365	754	45	3	514.23	Good	0.21	Bad
366	755	45	3	514.23	Good	0.21	Bad
367	756	46	2	495.14	Bad	0.20	Bad
368	757	45	3	514.23	Good	0.21	Bad
369	758	46	2	495.14	Bad	0.20	Bad
370	759	45	3	514.23	Good	0.21	Bad
371	760	46	2	495.14	Bad	0.20	Bad
372	761	45	3	514.23	Good	0.21	Bad
373	762	46	2	495.14	Bad	0.20	Bad
374	763	45	3	514.23	Good	0.21	Bad
375	764	46	2	495.14	Bad	0.20	Bad
376	765	40	4	616.54	Good	0.30	Bad
377	766	35	5	732.52	Good	0.39	Bad
378	767	48	2	458.18	Bad	0.17	Bad
379	768	41	3	595.09	Good	0.28	Bad
380	769	41	3	595.09	Good	0.28	Bad
381	770	40	4	616.54	Good	0.30	Bad
382	771	45	3	514.23	Good	0.21	Bad
383	772	43	3	553.72	Good	0.24	Bad
384	773	45	3	514.23	Good	0.21	Bad
385	774	45	3	514.23	Good	0.21	Bad
386	775	43	3	553.72	Good	0.24	Bad
387	776	43	3	553.72	Good	0.24	Bad
388	777	28	7	926.34	Good	0.55	Bad
389	778	45	3	514.23	Good	0.21	Bad
390	779	45	3	514.23	Good	0.21	Bad
391	780	40	4	616.54	Good	0.30	Bad
392	781	40	4	616.54	Good	0.30	Bad
393	782	41	3	595.09	Good	0.28	Bad
394	783	46	2	495.14	Bad	0.20	Bad
395	784	46	2	495.14	Bad	0.20	Bad
396	785	40	4	616.54	Good	0.30	Bad
397	786	45	3	514.23	Good	0.21	Bad
398	787	45	3	514.23	Good	0.21	Bad
399	788	45	3	514.23	Good	0.21	Bad
400	789	40	4	616.54	Good	0.30	Bad

CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (Db/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
401	790	41	3	595.09	Good	0.28	Bad
402	791	9	17	1912.17	Good	1.34	Good
403	792	40	4	616.54	Good	0.30	Bad
404	793	40	4	616.54	Good	0.30	Bad
405	794	40	4	616.54	Good	0.30	Bad
406	795	41	3	595.09	Good	0.28	Bad
407	796	40	4	616.54	Good	0.30	Bad
408	797	40	4	616.54	Good	0.30	Bad
409	798	40	4	616.54	Good	0.30	Bad
410	799	39	4	638.53	Good	0.31	Bad
411	800	25	8	1024.78	Good	0.62	Bad
412	801	35	5	732.52	Good	0.39	Bad
413	802	35	5	732.52	Good	0.39	Bad
414	803	35	5	732.52	Good	0.39	Bad
415	804	34	5	757.70	Good	0.41	Bad
416	805	35	5	732.52	Good	0.39	Bad
417	806	27	7	957.93	Good	0.57	Bad
418	807	27	7	957.93	Good	0.57	Bad
419	808	28	7	926.34	Good	0.55	Bad
420	809	28	7	926.34	Good	0.55	Bad
421	810	29	6	895.86	Good	0.52	Bad
422	811	29	6	895.86	Good	0.52	Bad
423	812	30	6	866.42	Good	0.50	Bad
424	813	30	6	866.42	Good	0.50	Bad
425	814	31	6	837.94	Good	0.47	Bad
426	815	31	6	837.94	Good	0.47	Bad
427	816	32	6	810.36	Good	0.45	Bad
428	817	32	6	810.36	Good	0.45	Bad
429	818	33	5	783.63	Good	0.43	Bad
430	819	33	5	783.63	Good	0.43	Bad
431	820	34	5	757.70	Good	0.41	Bad
432	821	34	5	757.70	Good	0.41	Bad
433	822	35	5	732.52	Good	0.39	Bad
434	823	35	5	732.52	Good	0.39	Bad
435	824	36	5	708.05	Good	0.37	Bad
436	825	36	5	708.05	Good	0.37	Bad
437	826	35	5	732.52	Good	0.39	Bad
438	827	34	5	757.70	Good	0.41	Bad
439	828	33	5	783.63	Good	0.43	Bad
440	829	32	6	810.36	Good	0.45	Bad
441	830	31	6	837.94	Good	0.47	Bad
442	831	30	6	866.42	Good	0.50	Bad
443	832	29	6	895.86	Good	0.52	Bad
444	833	28	7	926.34	Good	0.55	Bad
445	834	27	7	957.93	Good	0.57	Bad
446	835	26	7	990.71	Good	0.60	Bad
447	836	25	8	1024.78	Good	0.62	Bad
448	837	24	8	1060.24	Good	0.65	Bad
449	838	23	8	1097.20	Good	0.68	Bad
450	839	22	9	1135.81	Good	0.71	Bad
451	840	21	9	1176.22	Good	0.75	Bad
452	841	20	10	1218.60	Good	0.78	Bad
453	842	19	10	1263.15	Good	0.82	Good
454	843	18	11	1310.11	Good	0.85	Good
455	844	17	11	1359.76	Good	0.89	Good
456	845	16	12	1412.42	Good	0.94	Good
457	846	15	12	1468.48	Good	0.98	Good
458	847	14	13	1528.40	Good	1.03	Good
459	848	13	13	1592.77	Good	1.08	Good
460	849	12	14	1662.30	Good	1.14	Good
461	850	11	15	1737.87	Good	1.20	Good

K. Analisa Kuantitatif CBL *Squeeze Cementing*

CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (DB/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
1	390	40	4	616.54	Good	0.30	Bad
2	391	30	6	866.42	Good	0.50	Bad
3	392	38	4	661.09	Good	0.33	Bad
4	393	37	4	684.26	Good	0.35	Bad
5	394	36	5	708.05	Good	0.37	Bad
6	395	35	5	732.52	Good	0.39	Bad
7	396	36	5	708.05	Good	0.37	Bad
8	397	38	4	661.09	Good	0.33	Bad
9	398	37	4	684.26	Good	0.35	Bad
10	399	35	5	732.52	Good	0.39	Bad
11	400	28	7	926.34	Good	0.55	Bad
12	401	30	6	866.42	Good	0.50	Bad
13	402	21	9	1176.22	Good	0.75	Bad
14	403	32	6	810.36	Good	0.45	Bad
15	404	36	5	708.05	Good	0.37	Bad
16	405	36	5	708.05	Good	0.37	Bad
17	406	39	4	638.53	Good	0.31	Bad
18	407	39	4	638.53	Good	0.31	Bad
19	408	38	4	661.09	Good	0.33	Bad
20	409	36	5	708.05	Good	0.37	Bad
21	410	36	5	708.05	Good	0.37	Bad
22	411	29	6	895.86	Good	0.52	Bad
23	412	20	10	1218.60	Good	0.78	Bad
24	413	25	8	1024.78	Good	0.62	Bad
25	414	38	4	661.09	Good	0.33	Bad
26	415	39	4	638.53	Good	0.31	Bad
27	416	29	6	895.86	Good	0.52	Bad
28	417	28	7	926.34	Good	0.55	Bad
29	418	35	5	732.52	Good	0.39	Bad
30	419	41	3	595.09	Good	0.28	Bad
31	420	40	4	616.54	Good	0.30	Bad
32	421	38	4	661.09	Good	0.33	Bad
33	422	28	7	926.34	Good	0.55	Bad
34	423	25	8	1024.78	Good	0.62	Bad
35	424	26	7	990.71	Good	0.60	Bad
36	425	36	5	708.05	Good	0.37	Bad
37	426	37	4	684.26	Good	0.35	Bad
38	427	35	5	732.52	Good	0.39	Bad
39	428	35	5	732.52	Good	0.39	Bad
40	429	38	4	661.09	Good	0.33	Bad
41	430	32	6	810.36	Good	0.45	Bad
42	431	30	6	866.42	Good	0.50	Bad
43	432	24	8	1060.24	Good	0.65	Bad
44	433	30	6	866.42	Good	0.50	Bad
45	434	26	7	990.71	Good	0.60	Bad
46	435	27	7	957.93	Good	0.57	Bad
47	436	37	4	684.26	Good	0.35	Bad
48	437	38	4	661.09	Good	0.33	Bad
49	438	38	4	661.09	Good	0.33	Bad
50	439	38	4	661.09	Good	0.33	Bad
51	440	40	4	616.54	Good	0.30	Bad
52	441	40	4	616.54	Good	0.30	Bad
53	442	40	4	616.54	Good	0.30	Bad
54	443	40	4	616.54	Good	0.30	Bad
55	444	38	4	661.09	Good	0.33	Bad
56	445	25	8	1024.78	Good	0.62	Bad
57	446	35	5	732.52	Good	0.39	Bad
58	447	40	4	616.54	Good	0.30	Bad
59	448	40	4	616.54	Good	0.30	Bad
60	449	40	4	616.54	Good	0.30	Bad
61	450	40	4	616.54	Good	0.30	Bad
62	451	40	4	616.54	Good	0.30	Bad
63	452	40	4	616.54	Good	0.30	Bad
64	453	39	4	638.53	Good	0.31	Bad
65	454	41	3	595.09	Good	0.28	Bad
66	455	38	4	661.09	Good	0.33	Bad
67	456	29	6	895.86	Good	0.52	Bad
68	457	38	4	661.09	Good	0.33	Bad
69	458	42	3	574.16	Good	0.26	Bad
70	459	40	4	616.54	Good	0.30	Bad
71	460	27	7	957.93	Good	0.57	Bad
72	461	27	7	957.93	Good	0.57	Bad
73	462	38	4	661.09	Good	0.33	Bad
74	463	41	3	595.09	Good	0.28	Bad
75	464	41	3	595.09	Good	0.28	Bad
76	465	37	4	684.26	Good	0.35	Bad
77	466	32	6	810.36	Good	0.45	Bad
78	467	28	7	926.34	Good	0.55	Bad
79	468	36	5	708.05	Good	0.37	Bad
80	469	38	4	661.09	Good	0.33	Bad
81	470	39	4	638.53	Good	0.31	Bad
82	471	37	4	684.26	Good	0.35	Bad
83	472	37	4	684.26	Good	0.35	Bad
84	473	37	4	684.26	Good	0.35	Bad
85	474	38	4	661.09	Good	0.33	Bad
86	475	40	4	616.54	Good	0.30	Bad
87	476	38	4	661.09	Good	0.33	Bad
88	477	37	4	684.26	Good	0.35	Bad
89	478	29	6	895.86	Good	0.52	Bad
90	479	37	4	684.26	Good	0.35	Bad
91	480	29	6	895.86	Good	0.52	Bad
92	481	31	6	837.94	Good	0.47	Bad
93	482	35	5	732.52	Good	0.39	Bad
94	483	37	4	684.26	Good	0.35	Bad
95	484	40	4	616.54	Good	0.30	Bad
96	485	40	4	616.54	Good	0.30	Bad
97	486	40	4	616.54	Good	0.30	Bad
98	487	39	4	638.53	Good	0.31	Bad
99	488	41	3	595.09	Good	0.28	Bad
100	489	30	6	866.42	Good	0.50	Bad

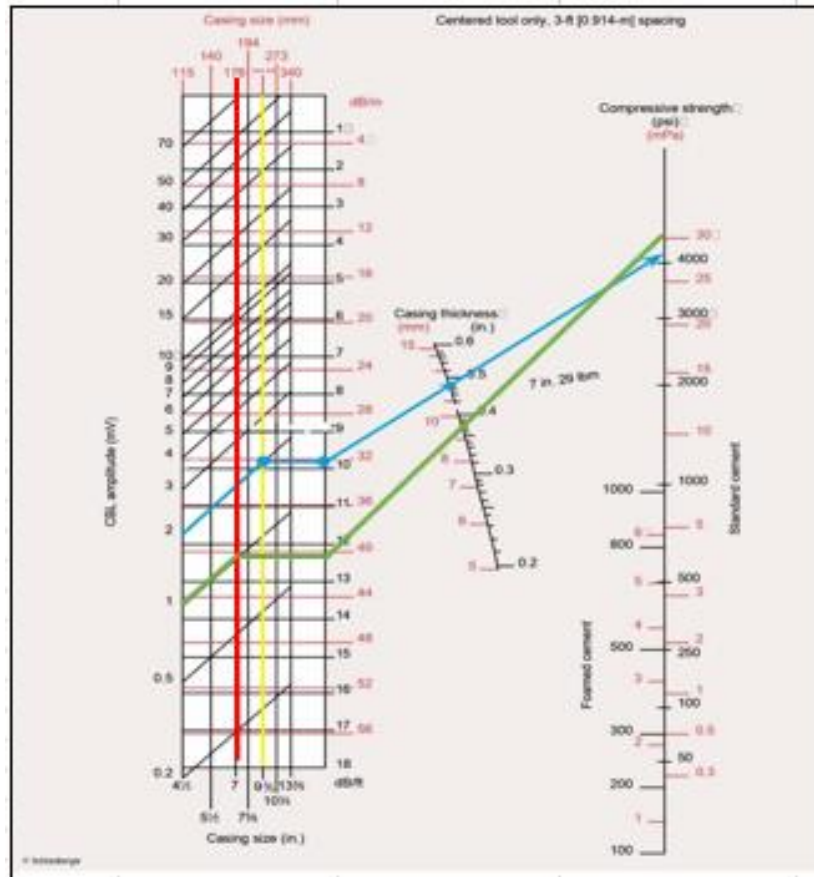
CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (Db/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
101	490	35	5	732.52	Good	0.39	Bad
102	491	37	4	684.26	Good	0.35	Bad
103	492	31	6	837.94	Good	0.47	Bad
104	493	30	6	866.42	Good	0.50	Bad
105	494	30	6	866.42	Good	0.50	Bad
106	495	30	6	866.42	Good	0.50	Bad
107	496	30	6	866.42	Good	0.50	Bad
108	497	31	6	837.94	Good	0.47	Bad
109	498	37	4	684.26	Good	0.35	Bad
110	499	36	5	708.05	Good	0.37	Bad
111	500	25	8	1024.78	Good	0.62	Bad
112	501	37	4	684.26	Good	0.35	Bad
113	502	37	4	684.26	Good	0.35	Bad
114	503	37	4	684.26	Good	0.35	Bad
115	504	37	4	684.26	Good	0.35	Bad
116	505	35	5	732.52	Good	0.39	Bad
117	506	37	4	684.26	Good	0.35	Bad
118	507	40	4	616.54	Good	0.30	Bad
119	508	40	4	616.54	Good	0.30	Bad
120	509	38	4	661.09	Good	0.33	Bad
121	510	40	4	616.54	Good	0.30	Bad
122	511	25	8	1024.78	Good	0.62	Bad
123	512	36	5	708.05	Good	0.37	Bad
124	513	33	5	783.63	Good	0.43	Bad
125	514	33	5	783.63	Good	0.43	Bad
126	515	37	4	684.26	Good	0.35	Bad
127	516	33	5	783.63	Good	0.43	Bad
128	517	37	4	684.26	Good	0.35	Bad
129	518	37	4	684.26	Good	0.35	Bad
130	519	37	4	684.26	Good	0.35	Bad
131	520	40	4	616.54	Good	0.30	Bad
132	521	48	2	458.18	Bad	0.17	Bad
133	522	36	5	708.05	Good	0.37	Bad
134	523	51	2	405.52	Bad	0.13	Bad
135	524	53	1	372.11	Bad	0.10	Bad
136	525	50	2	422.72	Bad	0.14	Bad
137	526	40	4	616.54	Good	0.30	Bad
138	527	33	5	783.63	Good	0.43	Bad
139	528	34	5	757.70	Good	0.41	Bad
140	529	32	6	810.36	Good	0.45	Bad
141	530	36	5	708.05	Good	0.37	Bad
142	531	33	5	783.63	Good	0.43	Bad
143	532	31	6	837.94	Good	0.47	Bad
144	533	22	9	1135.81	Good	0.71	Bad
145	534	35	5	732.52	Good	0.39	Bad
146	535	35	5	732.52	Good	0.39	Bad
147	536	36	5	708.05	Good	0.37	Bad
148	537	36	5	708.05	Good	0.37	Bad
149	538	35	5	732.52	Good	0.39	Bad
150	539	39	4	638.53	Good	0.31	Bad
151	540	38	4	661.09	Good	0.33	Bad
152	541	36	5	708.05	Good	0.37	Bad
153	542	37	4	684.26	Good	0.35	Bad
154	543	35	5	732.52	Good	0.39	Bad
155	544	22	9	1135.81	Good	0.71	Bad
156	545	37	4	684.26	Good	0.35	Bad
157	546	38	4	661.09	Good	0.33	Bad
158	547	40	4	616.54	Good	0.30	Bad
159	548	39	4	638.53	Good	0.31	Bad
160	549	35	5	732.52	Good	0.39	Bad
161	550	34	5	757.70	Good	0.41	Bad
162	551	35	5	732.52	Good	0.39	Bad
163	552	35	5	732.52	Good	0.39	Bad
164	553	37	4	684.26	Good	0.35	Bad
165	554	39	4	638.53	Good	0.31	Bad
166	555	31	6	837.94	Good	0.47	Bad
167	556	40	4	616.54	Good	0.30	Bad
168	557	40	4	616.54	Good	0.30	Bad
169	558	40	4	616.54	Good	0.30	Bad
170	559	40	4	616.54	Good	0.30	Bad
171	560	40	4	616.54	Good	0.30	Bad
172	561	40	4	616.54	Good	0.30	Bad
173	562	40	4	616.54	Good	0.30	Bad
174	563	40	4	616.54	Good	0.30	Bad
175	564	30	6	866.42	Good	0.50	Bad
176	565	32	6	810.36	Good	0.45	Bad
177	566	30	6	866.42	Good	0.50	Bad
178	567	40	4	616.54	Good	0.30	Bad
179	568	40	4	616.54	Good	0.30	Bad
180	569	35	5	732.52	Good	0.39	Bad
181	570	30	6	866.42	Good	0.50	Bad
182	571	31	6	837.94	Good	0.47	Bad
183	572	32	6	810.36	Good	0.45	Bad
184	573	34	5	757.70	Good	0.41	Bad
185	574	32	6	810.36	Good	0.45	Bad
186	575	19	10	1263.15	Good	0.82	Good
187	576	40	4	616.54	Good	0.30	Bad
188	577	39	4	638.53	Good	0.31	Bad
189	578	31	6	837.94	Good	0.47	Bad
190	579	36	5	708.05	Good	0.37	Bad
191	580	37	4	684.26	Good	0.35	Bad
192	581	40	4	616.54	Good	0.30	Bad
193	582	38	4	661.09	Good	0.33	Bad
194	583	38	4	661.09	Good	0.33	Bad
195	584	40	4	616.54	Good	0.30	Bad
196	585	41	3	595.09	Good	0.28	Bad
197	586	25	8	1024.78	Good	0.62	Bad
198	587	40	4	616.54	Good	0.30	Bad
199	588	36	5	708.05	Good	0.37	Bad
200	589	36	5	708.05	Good	0.37	Bad

CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (Db/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
201	590	37	4	684.26	Good	0.35	Bad
202	591	32	6	810.36	Good	0.45	Bad
203	592	32	6	810.36	Good	0.45	Bad
204	593	33	5	783.63	Good	0.43	Bad
205	594	33	5	783.63	Good	0.43	Bad
206	595	35	5	732.52	Good	0.39	Bad
207	596	36	5	708.05	Good	0.37	Bad
208	597	22	9	1135.81	Good	0.71	Bad
209	598	37	4	684.26	Good	0.35	Bad
210	599	36	5	708.05	Good	0.37	Bad
211	600	37	4	684.26	Good	0.35	Bad
212	601	38	4	661.09	Good	0.33	Bad
213	602	40	4	616.54	Good	0.30	Bad
214	603	34	5	757.70	Good	0.41	Bad
215	604	40	4	616.54	Good	0.30	Bad
216	605	37	4	684.26	Good	0.35	Bad
217	606	32	6	810.36	Good	0.45	Bad
218	607	32	6	810.36	Good	0.45	Bad
219	608	22	9	1135.81	Good	0.71	Bad
220	609	36	5	708.05	Good	0.37	Bad
221	610	36	5	708.05	Good	0.37	Bad
222	611	32	6	810.36	Good	0.45	Bad
223	612	33	5	783.63	Good	0.43	Bad
224	613	37	4	684.26	Good	0.35	Bad
225	614	40	4	616.54	Good	0.30	Bad
226	615	40	4	616.54	Good	0.30	Bad
227	616	36	5	708.05	Good	0.37	Bad
228	617	35	5	732.52	Good	0.39	Bad
229	618	38	4	661.09	Good	0.33	Bad
230	619	29	6	895.86	Good	0.52	Bad
231	620	40	4	616.54	Good	0.30	Bad
232	621	40	4	616.54	Good	0.30	Bad
233	622	39	4	638.53	Good	0.31	Bad
234	623	38	4	661.09	Good	0.33	Bad
235	624	39	4	638.53	Good	0.31	Bad
236	625	38	4	661.09	Good	0.33	Bad
237	626	38	4	661.09	Good	0.33	Bad
238	627	40	4	616.54	Good	0.30	Bad
239	628	35	5	732.52	Good	0.39	Bad
240	629	32	6	810.36	Good	0.45	Bad
241	630	20	10	1218.60	Good	0.78	Bad
242	631	35	5	732.52	Good	0.39	Bad
243	632	34	5	757.70	Good	0.41	Bad
244	633	31	6	837.94	Good	0.47	Bad
245	634	30	6	866.42	Good	0.50	Bad
246	635	30	6	866.42	Good	0.50	Bad
247	636	30	6	866.42	Good	0.50	Bad
248	637	34	5	757.70	Good	0.41	Bad
249	638	35	5	732.52	Good	0.39	Bad
250	639	34	5	757.70	Good	0.41	Bad
251	640	30	6	866.42	Good	0.50	Bad
252	641	32	6	810.36	Good	0.45	Bad
253	642	41	3	595.09	Good	0.28	Bad
254	643	40	4	616.54	Good	0.30	Bad
255	644	41	3	595.09	Good	0.28	Bad
256	645	40	4	616.54	Good	0.30	Bad
257	646	40	4	616.54	Good	0.30	Bad
258	647	39	4	638.53	Good	0.31	Bad
259	648	32	6	810.36	Good	0.45	Bad
260	649	30	6	866.42	Good	0.50	Bad
261	650	30	6	866.42	Good	0.50	Bad
262	651	20	10	1218.60	Good	0.78	Bad
263	652	32	6	810.36	Good	0.45	Bad
264	653	37	4	684.26	Good	0.35	Bad
265	654	35	5	732.52	Good	0.39	Bad
266	655	32	6	810.36	Good	0.45	Bad
267	656	35	5	732.52	Good	0.39	Bad
268	657	35	5	732.52	Good	0.39	Bad
269	658	35	5	732.52	Good	0.39	Bad
270	659	35	5	732.52	Good	0.39	Bad
271	660	35	5	732.52	Good	0.39	Bad
272	661	35	5	732.52	Good	0.39	Bad
273	662	25	8	1024.78	Good	0.62	Bad
274	663	31	6	837.94	Good	0.47	Bad
275	664	32	6	810.36	Good	0.45	Bad
276	665	31	6	837.94	Good	0.47	Bad
277	666	32	6	810.36	Good	0.45	Bad
278	667	28	7	926.34	Good	0.55	Bad
279	668	28	7	926.34	Good	0.55	Bad
280	669	30	6	866.42	Good	0.50	Bad
281	670	32	6	810.36	Good	0.45	Bad
282	671	30	6	866.42	Good	0.50	Bad
283	672	32	6	810.36	Good	0.45	Bad
284	673	25	8	1024.78	Good	0.62	Bad
285	674	32	6	810.36	Good	0.45	Bad
286	675	29	6	895.86	Good	0.52	Bad
287	676	30	6	866.42	Good	0.50	Bad
288	677	29	6	895.86	Good	0.52	Bad
289	678	30	6	866.42	Good	0.50	Bad
290	679	29	6	895.86	Good	0.52	Bad
291	680	32	6	810.36	Good	0.45	Bad
292	681	35	5	732.52	Good	0.39	Bad
293	682	34	5	757.70	Good	0.41	Bad
294	683	36	5	708.05	Good	0.37	Bad
295	684	25	8	1024.78	Good	0.62	Bad
296	685	35	5	732.52	Good	0.39	Bad
297	686	36	5	708.05	Good	0.37	Bad
298	687	35	5	732.52	Good	0.39	Bad
299	688	35	5	732.52	Good	0.39	Bad
300	689	22	9	1135.81	Good	0.71	Bad

CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (Db/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
301	690	15	12	1468.48	Good	0.98	Good
302	691	23	8	1097.20	Good	0.68	Bad
303	692	31	6	837.94	Good	0.47	Bad
304	693	31	6	837.94	Good	0.47	Bad
305	694	28	7	926.34	Good	0.55	Bad
306	695	21	9	1176.22	Good	0.75	Bad
307	696	37	4	684.26	Good	0.35	Bad
308	697	37	4	684.26	Good	0.35	Bad
309	698	32	6	810.36	Good	0.45	Bad
310	699	23	8	1097.20	Good	0.68	Bad
311	700	32	6	810.36	Good	0.45	Bad
312	701	35	5	732.52	Good	0.39	Bad
313	702	30	6	866.42	Good	0.50	Bad
314	703	25	8	1024.78	Good	0.62	Bad
315	704	32	6	810.36	Good	0.45	Bad
316	705	30	6	866.42	Good	0.50	Bad
317	706	18	11	1310.11	Good	0.85	Good
318	707	24	8	1060.24	Good	0.65	Bad
319	708	30	6	866.42	Good	0.50	Bad
320	709	29	6	895.86	Good	0.52	Bad
321	710	26	7	990.71	Good	0.60	Bad
322	711	22	9	1135.81	Good	0.71	Bad
323	712	28	7	926.34	Good	0.55	Bad
324	713	32	6	810.36	Good	0.45	Bad
325	714	30	6	866.42	Good	0.50	Bad
326	715	22	9	1135.81	Good	0.71	Bad
327	716	25	8	1024.78	Good	0.62	Bad
328	717	19	10	1263.15	Good	0.82	Good
329	718	22	9	1135.81	Good	0.71	Bad
330	719	31	6	837.94	Good	0.47	Bad
331	720	20	10	1218.60	Good	0.78	Bad
332	721	15	12	1468.48	Good	0.98	Good
333	722	20	10	1218.60	Good	0.78	Bad
334	723	22	9	1135.81	Good	0.71	Bad
335	724	35	5	732.52	Good	0.39	Bad
336	725	19	10	1263.15	Good	0.82	Good
337	726	16	12	1412.42	Good	0.94	Good
338	727	20	10	1218.60	Good	0.78	Bad
339	728	20	10	1218.60	Good	0.78	Bad
340	729	17	11	1359.76	Good	0.89	Good
341	730	20	10	1218.60	Good	0.78	Bad
342	731	17	11	1359.76	Good	0.89	Good
343	732	12	14	1662.30	Good	1.14	Good
344	733	10	16	1820.66	Good	1.27	Good
345	734	17	11	1359.76	Good	0.89	Good
346	735	15	12	1468.48	Good	0.98	Good
347	736	14	13	1528.40	Good	1.03	Good
348	737	18	11	1310.11	Good	0.85	Good
349	738	14	13	1528.40	Good	1.03	Good
350	739	15	12	1468.48	Good	0.98	Good
351	740	17	11	1359.76	Good	0.89	Good
352	741	15	12	1468.48	Good	0.98	Good
353	742	20	10	1218.60	Good	0.78	Bad
354	743	19	10	1263.15	Good	0.82	Good
355	744	15	12	1468.48	Good	0.98	Good
356	745	15	12	1468.48	Good	0.98	Good
357	746	21	9	1176.22	Good	0.75	Bad
358	747	18	11	1310.11	Good	0.85	Good
359	748	10	16	1820.66	Good	1.27	Good
360	749	10	16	1820.66	Good	1.27	Good
361	750	11	15	1737.87	Good	1.20	Good
362	751	12	14	1662.30	Good	1.14	Good
363	752	8	18	2014.48	Good	1.42	Good
364	753	10	16	1820.66	Good	1.27	Good
365	754	12	14	1662.30	Good	1.14	Good
366	755	11	15	1737.87	Good	1.20	Good
367	756	10	16	1820.66	Good	1.27	Good
368	757	10	16	1820.66	Good	1.27	Good
369	758	10	16	1820.66	Good	1.27	Good
370	759	12	14	1662.30	Good	1.14	Good
371	760	12	14	1662.30	Good	1.14	Good
372	761	10	16	1820.66	Good	1.27	Good
373	762	12	14	1662.30	Good	1.14	Good
374	763	9	17	1912.17	Good	1.34	Good
375	764	10	16	1820.66	Good	1.27	Good
376	765	8	18	2014.48	Good	1.42	Good
377	766	9	17	1912.17	Good	1.34	Good
378	767	10	16	1820.66	Good	1.27	Good
379	768	10	16	1820.66	Good	1.27	Good
380	769	10	16	1820.66	Good	1.27	Good
381	770	12	14	1662.30	Good	1.14	Good
382	771	12	14	1662.30	Good	1.14	Good
383	772	12	14	1662.30	Good	1.14	Good
384	773	12	14	1662.30	Good	1.14	Good
385	774	12	14	1662.30	Good	1.14	Good
386	775	10	16	1820.66	Good	1.27	Good
387	776	3	26	2866.42	Good	2.11	Good
388	777	12	14	1662.30	Good	1.14	Good
389	778	16	12	1412.42	Good	0.94	Good
390	779	11	15	1737.87	Good	1.20	Good
391	780	17	11	1359.76	Good	0.89	Good
392	781	11	15	1737.87	Good	1.20	Good
393	782	11	15	1737.87	Good	1.20	Good
394	783	10	16	1820.66	Good	1.27	Good
395	784	10	16	1820.66	Good	1.27	Good
396	785	17	11	1359.76	Good	0.89	Good
397	786	13	13	1592.77	Good	1.08	Good
398	787	10	16	1820.66	Good	1.27	Good
399	788	4	24	2616.54	Good	1.91	Good
400	789	4	24	2616.54	Good	1.91	Good

CEMENT BOND LOG (CBL) CASING 7"							
NO	Kedalaman (m)	Amplitude (mV)	Attenuasi (Db/m)	CS (psi)	Analisa CS	Bond Index	Analisa BI
401	790	4	24	2616.54	Good	1.91	Good
402	791	4	24	2616.54	Good	1.91	Good
403	792	4	24	2616.54	Good	1.91	Good
404	793	4	24	2616.54	Good	1.91	Good
405	794	6	20	2264.36	Good	1.62	Good
406	795	7	19	2130.46	Good	1.52	Good
407	796	7	19	2130.46	Good	1.52	Good
408	797	7	19	2130.46	Good	1.52	Good
409	798	10	16	1820.66	Good	1.27	Good
410	799	10	16	1820.66	Good	1.27	Good
411	800	8	18	2014.48	Good	1.42	Good
412	801	12	14	1662.30	Good	1.14	Good
413	802	12	14	1662.30	Good	1.14	Good
414	803	10	16	1820.66	Good	1.27	Good
415	804	11	15	1737.87	Good	1.20	Good
416	805	10	16	1820.66	Good	1.27	Good
417	806	8	18	2014.48	Good	1.42	Good
418	807	12	14	1662.30	Good	1.14	Good
419	808	10	16	1820.66	Good	1.27	Good
420	809	10	16	1820.66	Good	1.27	Good
421	810	12	14	1662.30	Good	1.14	Good
422	811	7	19	2130.46	Good	1.52	Good
423	812	11	15	1737.87	Good	1.20	Good
424	813	11	15	1737.87	Good	1.20	Good
425	814	20	10	1218.60	Good	0.78	Bad
426	815	12	14	1662.30	Good	1.14	Good
427	816	12	14	1662.30	Good	1.14	Good
428	817	10	16	1820.66	Good	1.27	Good
429	818	10	16	1820.66	Good	1.27	Good
430	819	8	18	2014.48	Good	1.42	Good
431	820	8	18	2014.48	Good	1.42	Good
432	821	8	18	2014.48	Good	1.42	Good
433	822	9	17	1912.17	Good	1.34	Good
434	823	10	16	1820.66	Good	1.27	Good
435	824	10	16	1820.66	Good	1.27	Good
436	825	10	16	1820.66	Good	1.27	Good
437	826	8	18	2014.48	Good	1.42	Good
438	827	2	30	3218.60	Good	2.39	Good
439	828	3	26	2866.42	Good	2.11	Good
440	829	7	19	2130.46	Good	1.52	Good
441	830	11	15	1737.87	Good	1.20	Good
442	831	8	18	2014.48	Good	1.42	Good
443	832	6	20	2264.36	Good	1.62	Good
444	833	5	22	2422.72	Good	1.75	Good
445	834	4	24	2616.54	Good	1.91	Good
446	835	4	24	2616.54	Good	1.91	Good
447	836	7	19	2130.46	Good	1.52	Good
448	837	8	18	2014.48	Good	1.42	Good
449	838	10	16	1820.66	Good	1.27	Good
450	839	16	12	1412.42	Good	0.94	Good
451	840	11	15	1737.87	Good	1.20	Good
452	841	13	13	1592.77	Good	1.08	Good
453	842	15	12	1468.48	Good	0.98	Good
454	843	12	14	1662.30	Good	1.14	Good
455	844	9	17	1912.17	Good	1.34	Good
456	845	10	16	1820.66	Good	1.27	Good
457	846	12	14	1662.30	Good	1.14	Good
458	847	10	16	1820.66	Good	1.27	Good
459	848	10	16	1820.66	Good	1.27	Good
460	849	10	16	1820.66	Good	1.27	Good
461	850	10	16	1820.66	Good	1.27	Good

L. Analisa *Interpretation Chart* Pada Kedalaman 1623 mMD



Zona Tersemen 100%		Amplitud (mV)	Attenuasi (dB/m)
Depth	1623 m	1	12.4

