

EWR Electromagnetic Wave Resistivity
DGR Dual Gamma Ray

Country		: Australia	
Field		: Casino	
Location		: Lat: 38° 47' 43.68" South Long: 142° 44' 44.60" East	
Well		: Casino-5	
Company		: Santos Ltd	
Rig		: Ocean Patriot	
LOCATION		Company : Santos Ltd Rig : Ocean Patriot Well : Casino-5 Field : Casino Country : Australia DOE Number :	
Latitude : 38° 47' 43.68" South Longitude : 142° 44' 44.60" East		Other Services	
UTM Easting = 651,604.40 m UTM Northing = 5,704,473.10 m			
Permanent Datum : LAT		Elev. : 0.00 m	
Log Measured From : Drill Floor		21.50 m Above Permanent Datum	
Drilling Measured From : Drill Floor		TVDLOG	
Depth Logged : 664.94 m To 1,801.96 m		Unit No. : 197	
Date Logged : 16-Jun-05 To 28-Jun-05		Job No. : AU-FE-000330537	
Total Depth MD : 1,806.00 m TVD: 1,801.96 m		Plot Type : Final	
Spud Date : 16-Jun-05		Plot Date : 04-Jul-05	
Run No.		Borehole Record (TVD)	
Size		Run No.	
From		Size	
To		From	
To		To	
200	311,000 mm	664.94 m	1,159.07 m
300	311,000 mm	1,159.07 m	1,390.05 m
400	311,000 mm	1,390.05 m	1,726.36 m
500	216,000 mm	1,726.36 m	1,801.96 m
Size		Casing Record (TVD)	
From		Weight	
To		From	
To		To	
		762,000 mm	573.00 kgpm
		340,000 mm	107.00 kgpm
		244,000 mm	70.00 kgpm
			89.70 m
			89.70 m
			1,716.22 m

Downhole Processor Information

Tool Type	HCIM	HCIM	HCIM	HCIM	
Software Version	68.18	68.18	68.18	68.18	
Sub Serial Number	198839	161828	161828	10630413	
Insert Serial Number	91232	161828	161828	093281	
Logging String Serial Number	DM90072859X1HGVR	DA90777824XH1GR8	DA90777824XH1GR8	DM90073263HWRG6	
Date and Time Initialized	22-Jun-05 05:44	24-Jun-05 04:46	25-Jun-05 09:54	28-Jun-05 05:53	
Date and Time Read	24-Jun-05 01:44	25-Jun-05 09:27	26-Jun-05 16:39	29-Jun-05 13:19	

Directional Sensor Information

Tool Type	PM	PM	PM	DM	
Distance From Bit (m)	16	16.26	16.06	18.90	
Software Version	N/A	N/A	N/A	3.15	
Sub Serial Number	022759	043795	043795	152535	
Sonde Serial Number	134019	143272	143272	180031	
Sensor ID Number	500	563	563	N/A	
Survey String Serial Number	90074559	90061480	90061480	N/A	
Toolface Offset (deg)	N/A	N/A	N/A	N/A	

Gamma Ray Sensor Information

Tool Type	DGR	DGR	DGR	DGR	
Distance From Bit (m)	12.75	8.97	8.77	10.03	
Recorded Sample Period (sec)	12	12	12	12	
Software Version	N/A	N/A	N/A	N/A	
Sub Serial Number	196051	102971	102971	078523	
Insert/Sonde Serial Number	132474	10505500	10505500	126021	

Resistivity Sensor Information

Tool Type	EWR-P4	EWR-P4	EWR-P4	EWR-P4	
Distance From Bit (m)	9.72	11.27	11.07	12.37	
Recorded Sample Period (sec)	14	14	14	14	
Software Version	1.38	1.38	1.38	1.38	
Sub Serial Number	82377	78631	78631	156219	
Receiver Insert Serial Number	144719	205859	205859	138389	
Transmitter Insert Serial Number	122049	151389	151389	127877	
Receiver Orientation	Down	Down	Down	Down	

Drillstring Dynamics Sensor Information

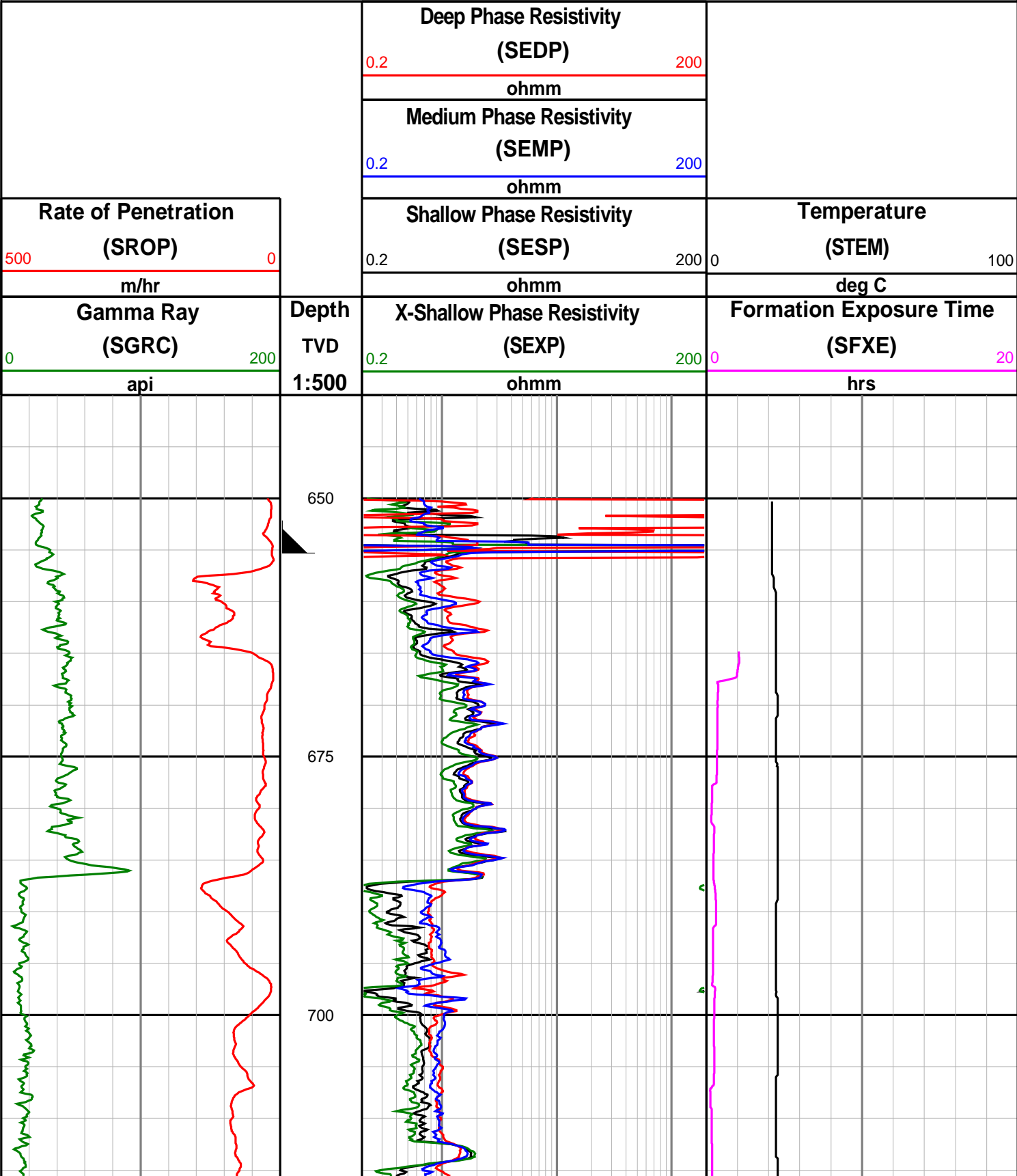
Tool Type	DDS				
Distance From Bit (m)	0				
Recorded Sample Period (sec)	12				
Software Version	0.37				
Sub Serial Number	196051				
Insert Serial Number	132474				
Sensor ID Number	699				

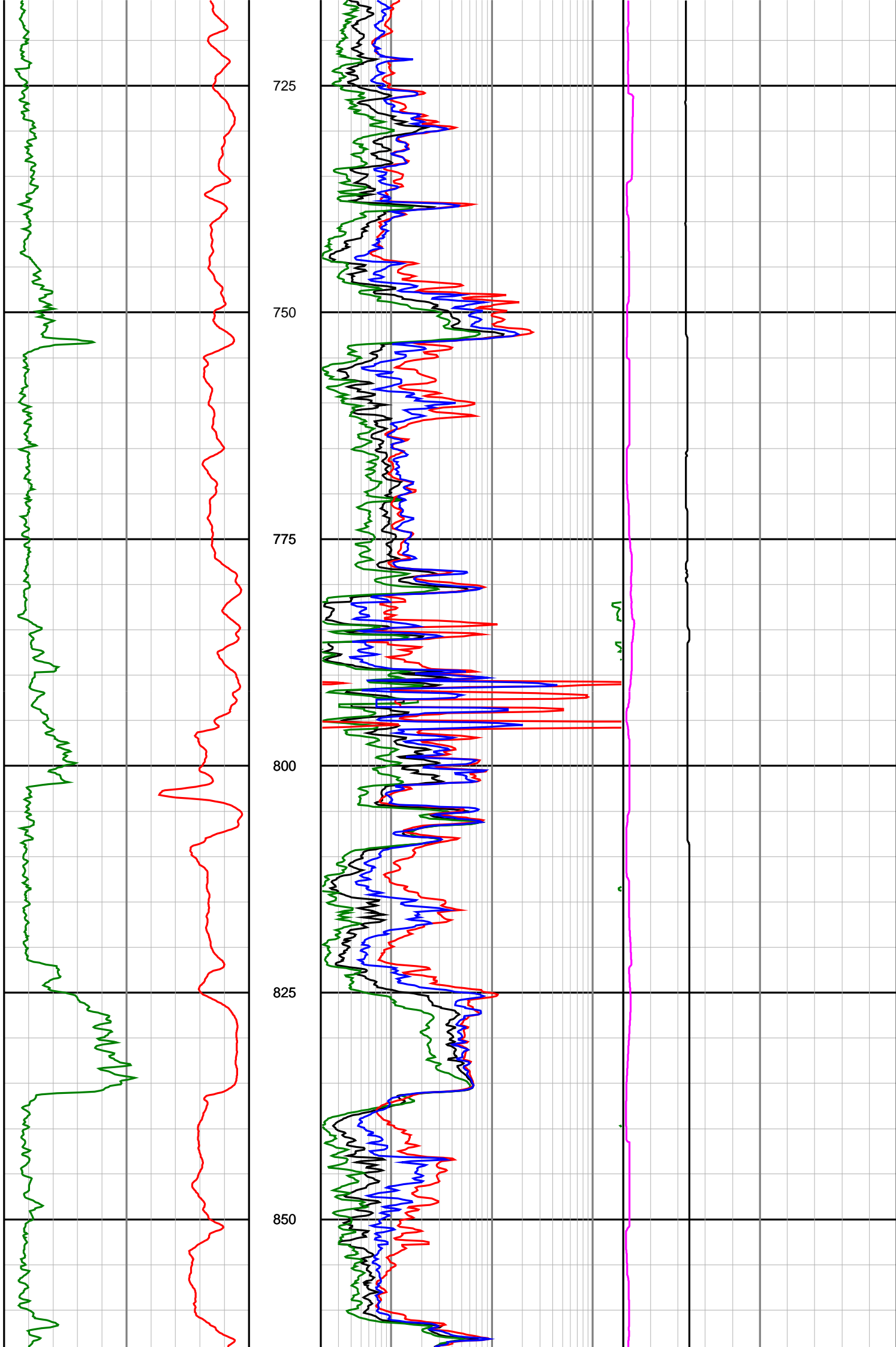
REMARKS

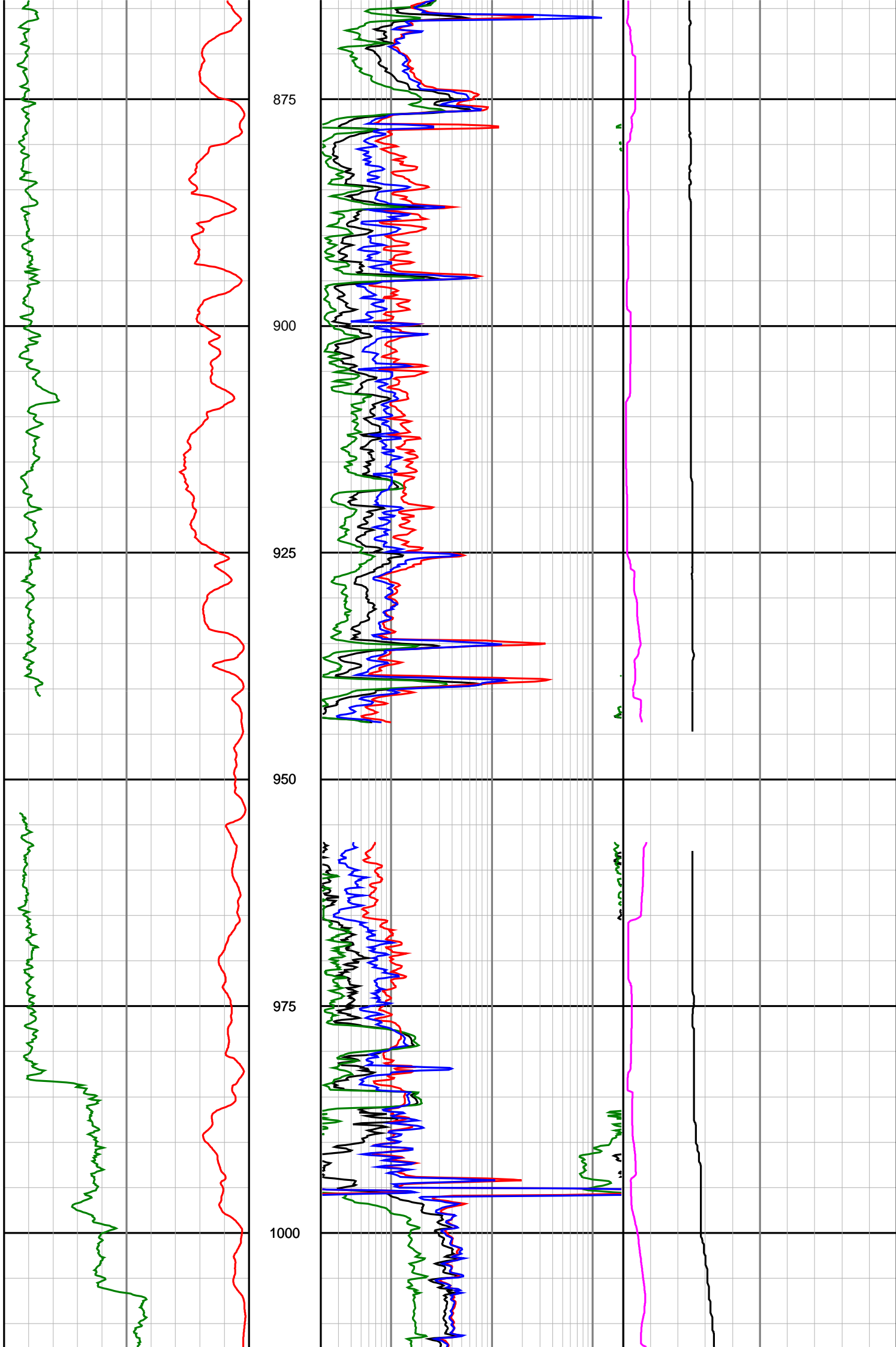
- All depths are bit depths and referenced to the drillers pipe tally
- AV/CV is calculated at the MWD collar using the Power Law for water based muds and the Bingham's Plastic Model for oil based muds, measured in m/min.
- Curve mnemonics are:
 - SGRC - Smoothed Dual Gamma Ray Combined, api
 - SEXP - Smoothed Extra Shallow Phase Resistivity, ohm-m
 - SESP - Smoothed Shallow Phase Resistivity, ohm-m
 - SEMP - Smoothed Medium Phase Resistivity, ohm-m
 - SEDP - Smoothed Deep Phase Resistivity, ohm-m
 - SRGP - Smoothed Rate of Penetration, m/hr
 - SFXE - Smoothed Formation Exposure Time, hr
 - STEM - Smoothed Resistivity Temperature, dec C
- No Data from 940.4 to 954.0 mTVDRT (gamma depths) due to the tool resetting itself after high vibration.
- No DGR data from 1146.4 to 1150.3 mTVDRT because of a BHA and subsequent sensor distance change.

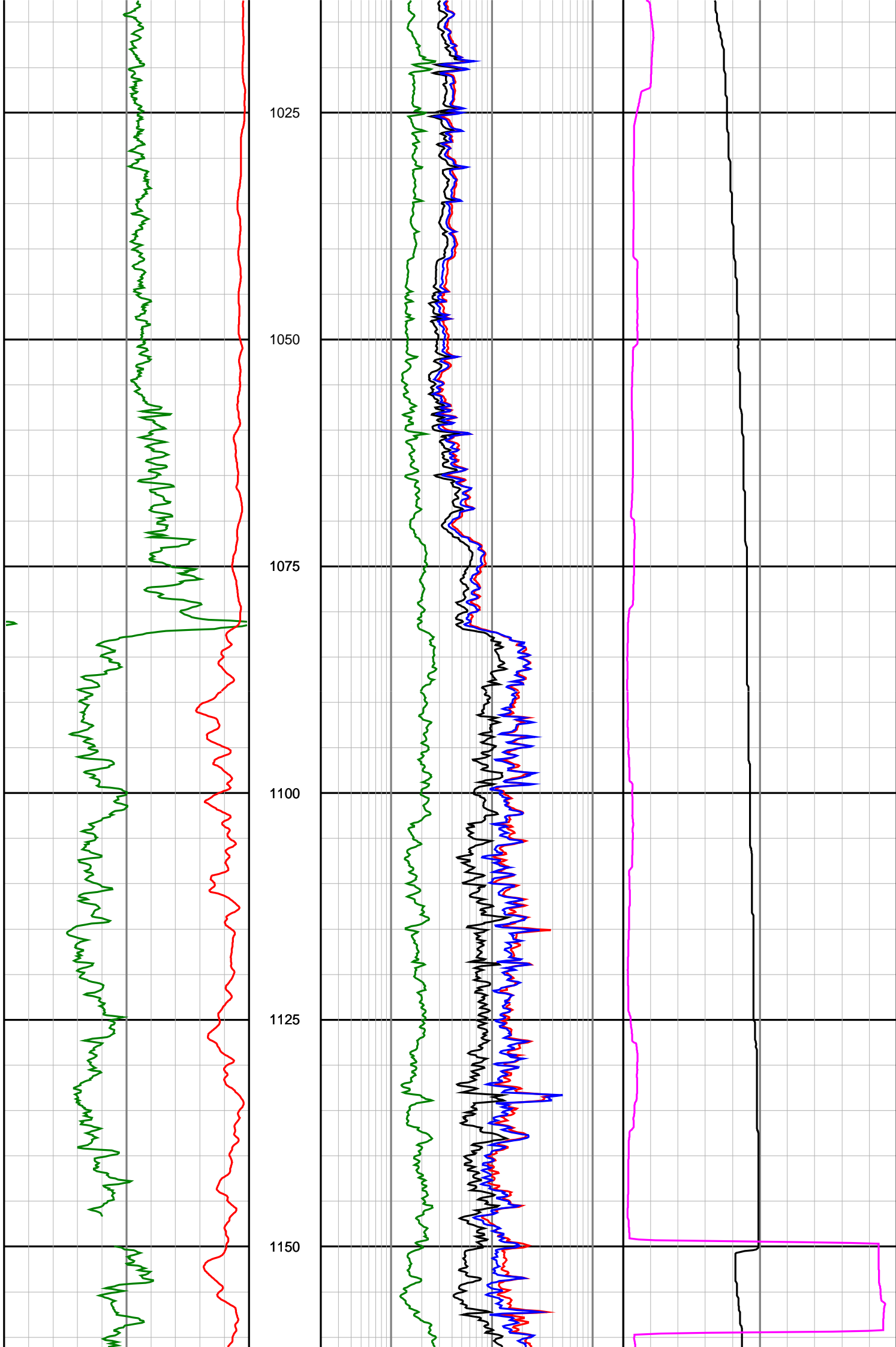
WARRANTY

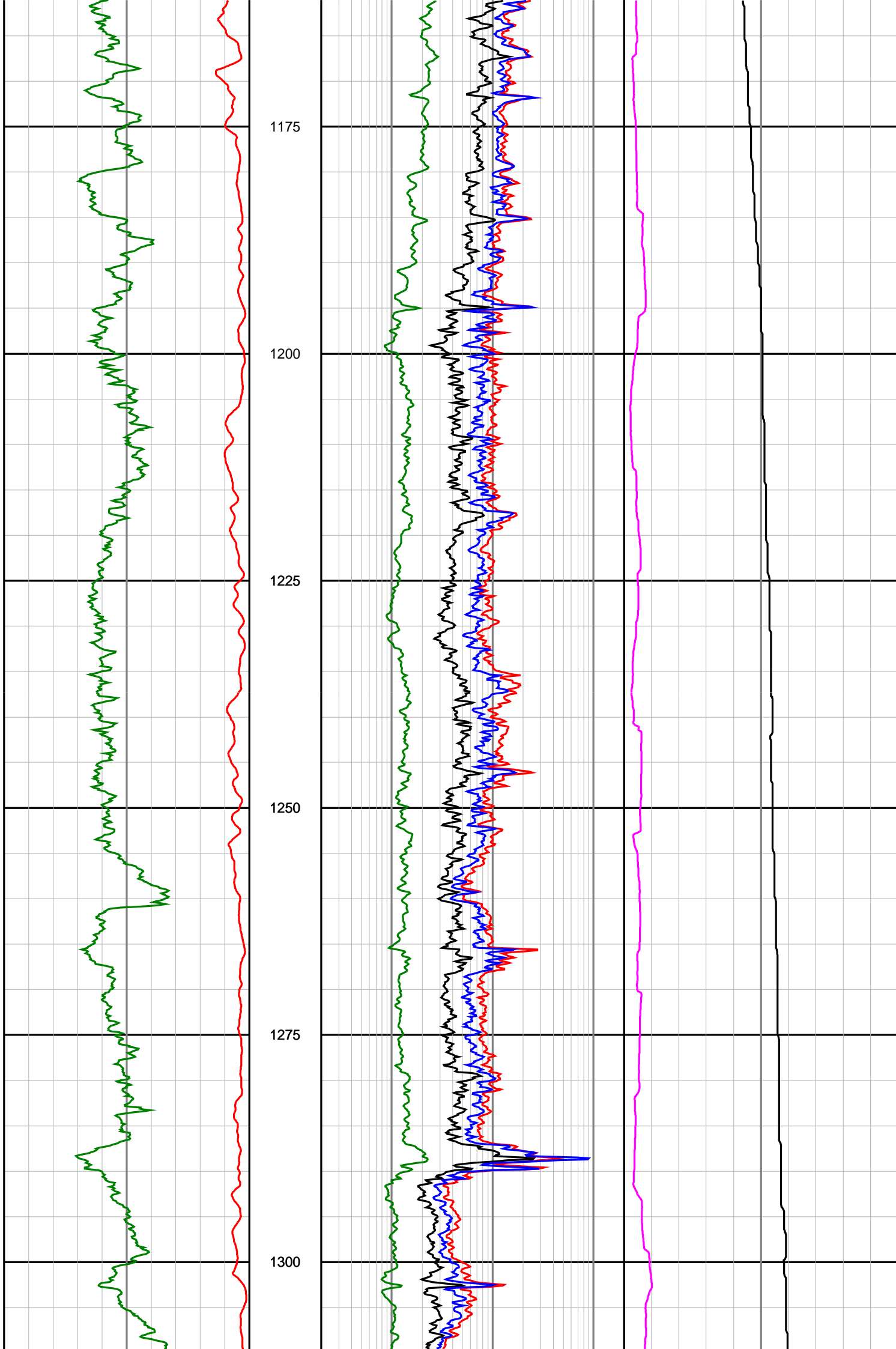
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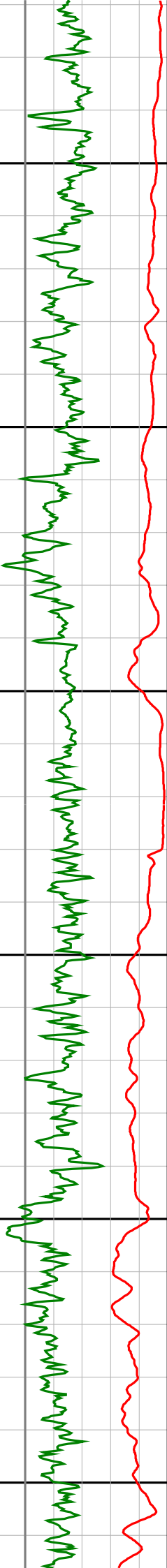












1325

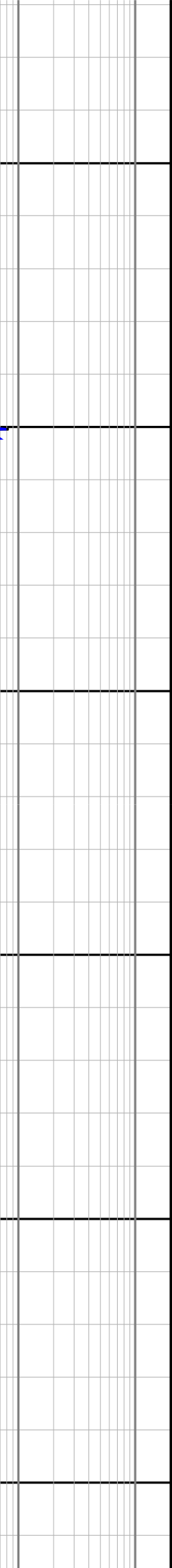
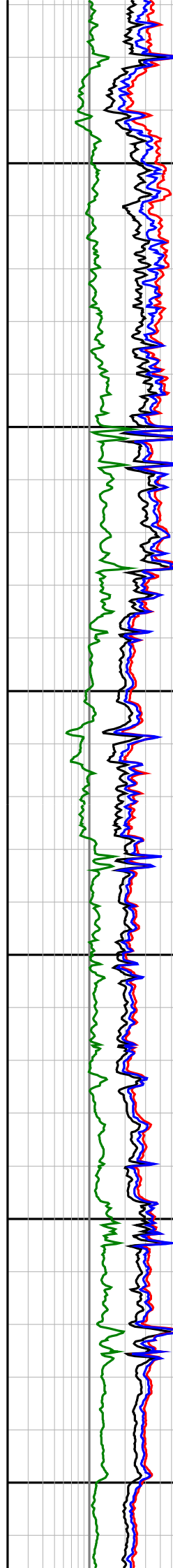
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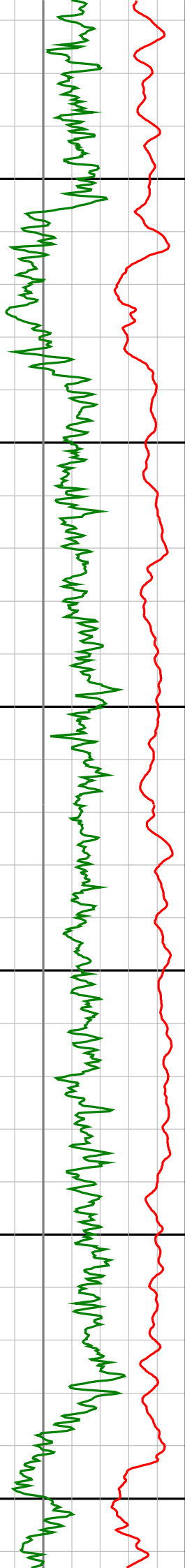
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1475

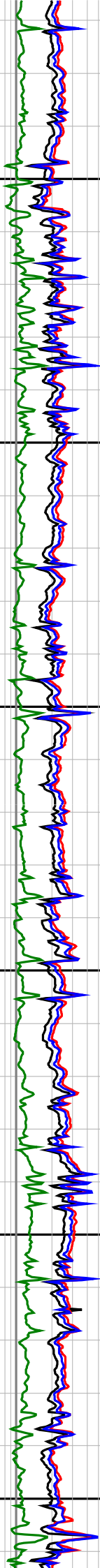
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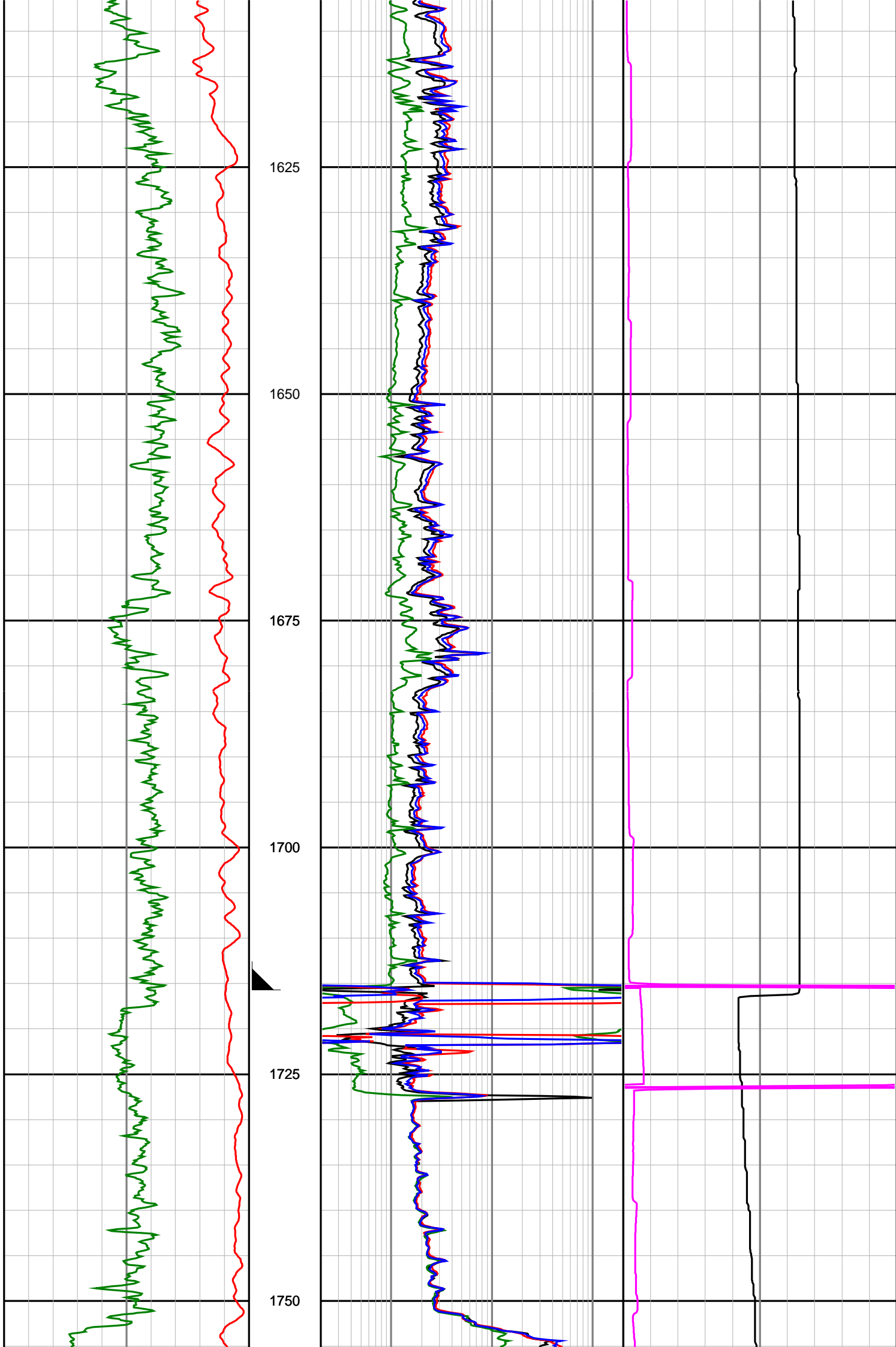
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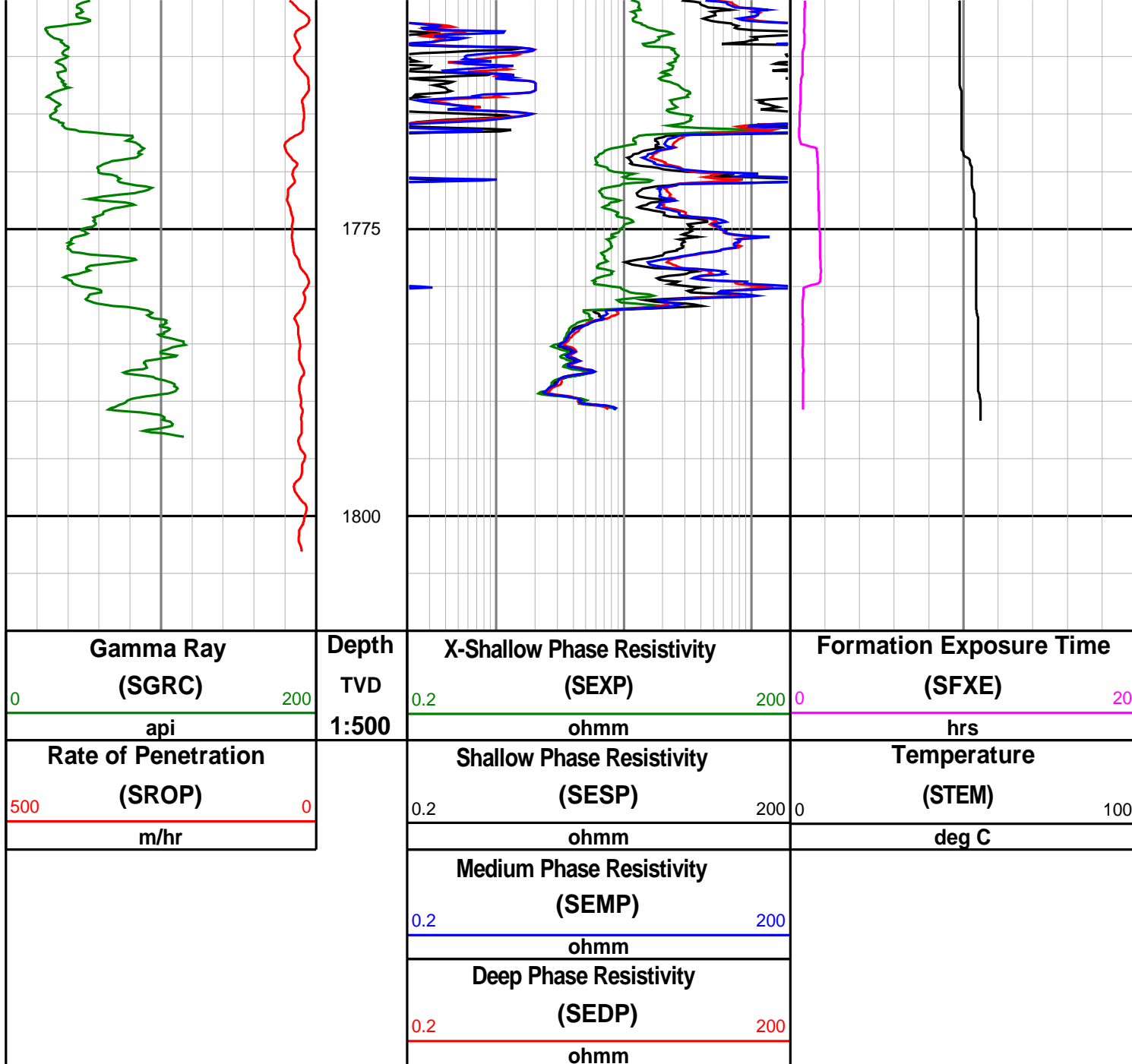
1550

1575

1600







DIRECTIONAL SURVEY REPORT

Santos Ltd
Casino-5
Casino
Victoria
Australia

AU-FE-0003530537

RT to LAT = 21.5m. Final survey projected to TD.

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
89.700	0.00	0.00	89.700	0.000 N	0.000 E	0.000	TIE-IN
153.320	0.87	155.19	153.318	0.438 S	0.203 E	-0.438	0.41
180.770	0.73	150.88	180.765	0.780 S	0.375 E	-0.780	0.17
236.210	1.06	149.10	236.198	1.529 S	0.810 E	-1.529	0.18
263.920	1.31	159.82	263.902	2.046 S	1.051 E	-2.046	0.36

Casino-5

<i>Measured Depth (metres)</i>	<i>Inclination (degrees)</i>	<i>Direction (degrees)</i>	<i>Vertical Depth (metres)</i>	<i>Latitude (metres)</i>	<i>Departure (metres)</i>	<i>Vertical Section (metres)</i>	<i>Dogleg (deg/30m)</i>
292.770	1.22	161.34	292.745	2.647 S	1.263 E	-2.647	0.10
321.460	1.16	161.70	321.429	3.212 S	1.452 E	-3.212	0.06
350.140	1.12	162.94	350.103	3.755 S	1.626 E	-3.755	0.05
378.700	1.03	165.33	378.658	4.271 S	1.773 E	-4.271	0.11
407.390	0.99	169.70	407.344	4.764 S	1.882 E	-4.764	0.09
436.080	0.89	162.06	436.030	5.220 S	1.995 E	-5.220	0.17
464.750	0.86	161.47	464.697	5.636 S	2.132 E	-5.636	0.03
493.600	0.87	164.24	493.543	6.052 S	2.260 E	-6.052	0.04
522.350	0.23	169.75	522.292	6.318 S	2.330 E	-6.318	0.67
551.140	0.52	129.89	551.081	6.459 S	2.440 E	-6.459	0.39
579.900	0.54	127.68	579.840	6.626 S	2.648 E	-6.626	0.03
608.620	0.51	119.52	608.559	6.771 S	2.866 E	-6.771	0.08
636.960	0.54	120.09	636.898	6.900 S	3.091 E	-6.900	0.03
652.270	0.52	118.09	652.207	6.969 S	3.215 E	-6.969	0.05
712.410	0.56	146.86	712.344	7.343 S	3.616 E	-7.343	0.13
741.290	1.28	173.83	741.221	7.781 S	3.728 E	-7.781	0.85
800.770	1.61	179.35	800.682	9.272 S	3.808 E	-9.272	0.18
858.080	1.58	236.40	857.973	10.512 S	3.160 E	-10.512	0.80
891.650	3.06	238.12	891.515	11.241 S	2.014 E	-11.241	1.33
1006.820	3.06	237.46	1006.520	14.520 S	3.191 W	-14.520	0.01
1067.610	5.74	249.44	1067.127	16.462 S	7.406 W	-16.462	1.39
1150.270	5.53	253.03	1149.388	19.075 S	15.085 W	-19.075	0.15
1178.550	5.52	254.47	1177.536	19.837 S	17.699 W	-19.837	0.15
1207.090	5.50	252.55	1205.944	20.615 S	20.327 W	-20.615	0.20
1294.000	5.38	250.68	1292.462	23.213 S	28.148 W	-23.213	0.07
1322.590	5.29	252.03	1320.928	24.063 S	30.668 W	-24.063	0.16
1351.220	5.31	252.31	1349.436	24.873 S	33.186 W	-24.873	0.03
1377.530	5.17	251.91	1375.636	25.611 S	35.472 W	-25.611	0.16
1406.190	5.23	251.21	1404.178	26.433 S	37.937 W	-26.433	0.09
1434.970	5.43	251.49	1432.834	27.288 S	40.470 W	-27.288	0.21
1463.790	5.42	253.43	1461.525	28.109 S	43.068 W	-28.109	0.19
1492.550	5.42	251.34	1490.156	28.931 S	45.657 W	-28.931	0.21
1521.490	5.55	253.59	1518.964	29.763 S	48.293 W	-29.763	0.26
1550.140	5.55	251.90	1547.479	30.585 S	50.939 W	-30.585	0.17
1607.590	5.88	251.40	1604.644	32.386 S	56.367 W	-32.386	0.17
1636.210	5.89	252.97	1633.113	33.283 S	59.160 W	-33.283	0.17
1664.650	6.20	254.05	1661.395	34.133 S	62.033 W	-34.133	0.35
1693.360	6.37	251.89	1689.932	35.054 S	65.039 W	-35.054	0.30
1712.400	6.06	251.82	1708.860	35.696 S	66.998 W	-35.696	0.48
1734.430	6.14	252.76	1730.765	36.409 S	69.229 W	-36.409	0.17
1763.180	5.90	251.71	1759.357	37.328 S	72.100 W	-37.328	0.28
1783.400	5.66	250.49	1779.474	37.987 S	74.026 W	-37.987	0.40
1806.000	5.66	250.49	1801.964	38.731 S	76.127 W	-38.731	0.00

CALCULATION BASED ON MINIMUM CURVATURE METHOD

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

VERTICAL SECTION RELATIVE TO WELL HEAD
VERTICAL SECTION IS COMPUTED ALONG A DIRECTION OF 0.00 DEGREES (GRID)
A TOTAL CORRECTION OF 11.99 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 1806.000 METRES
IS 85.413 METRES ALONG 243.03 DEGREES (GRID)

MWD RUN 200 - BHA
MWD RUN 200 - MWD

Date Printed:04 July 2005

HWDP

Component
Length
(m)



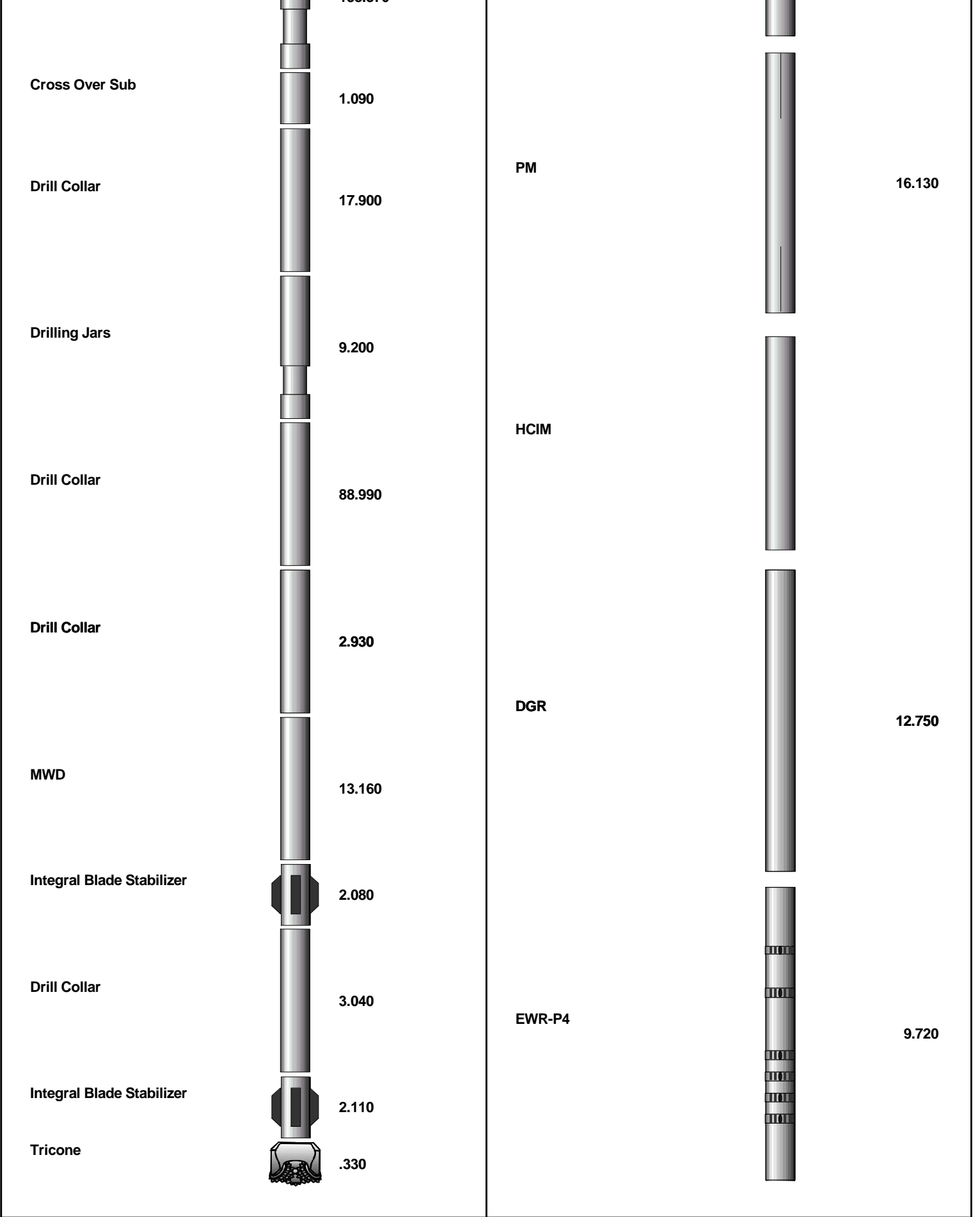
138.370

Hang-off Sub

Sensor
Measure
Point
Distance
To Bit
(m)

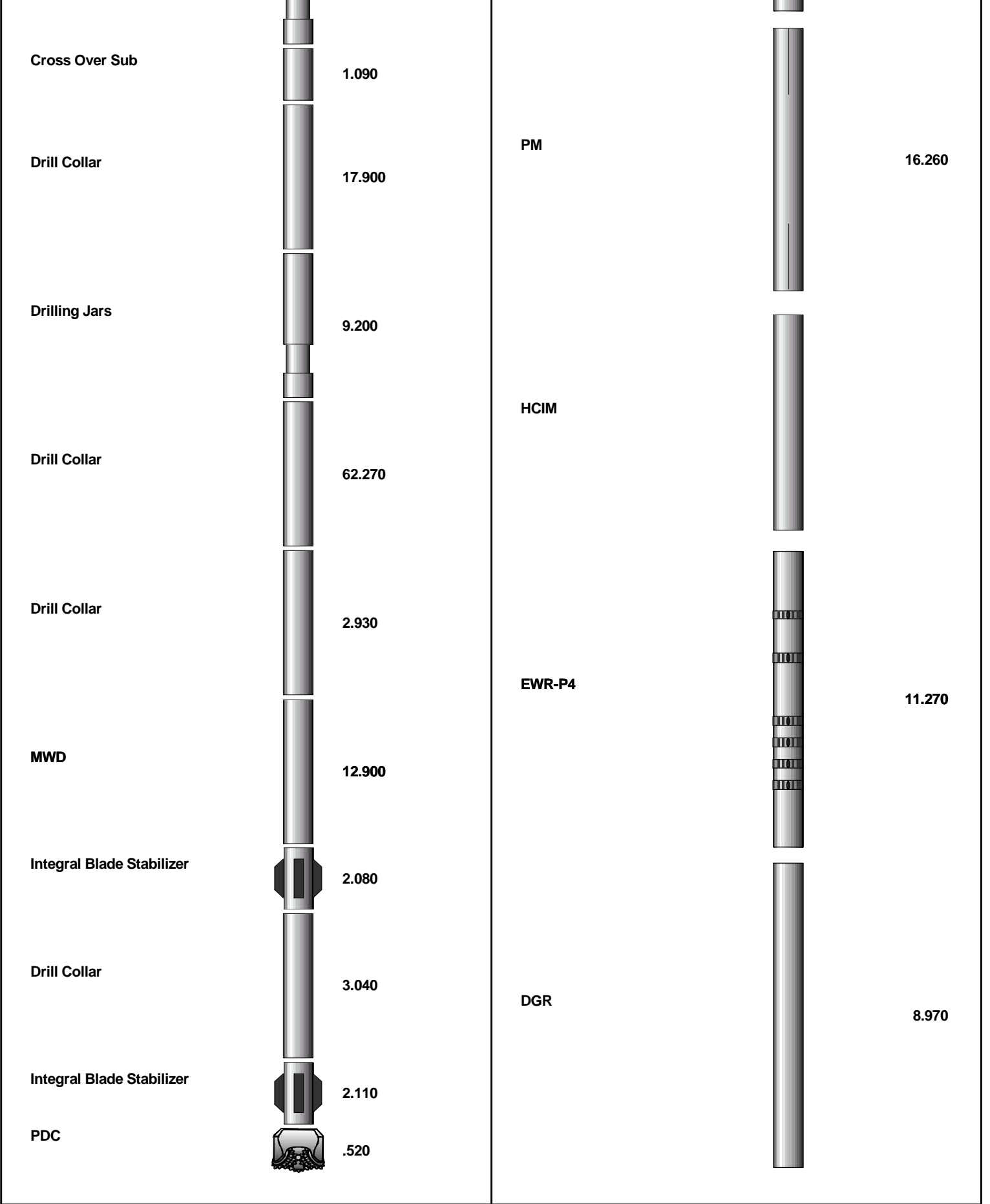


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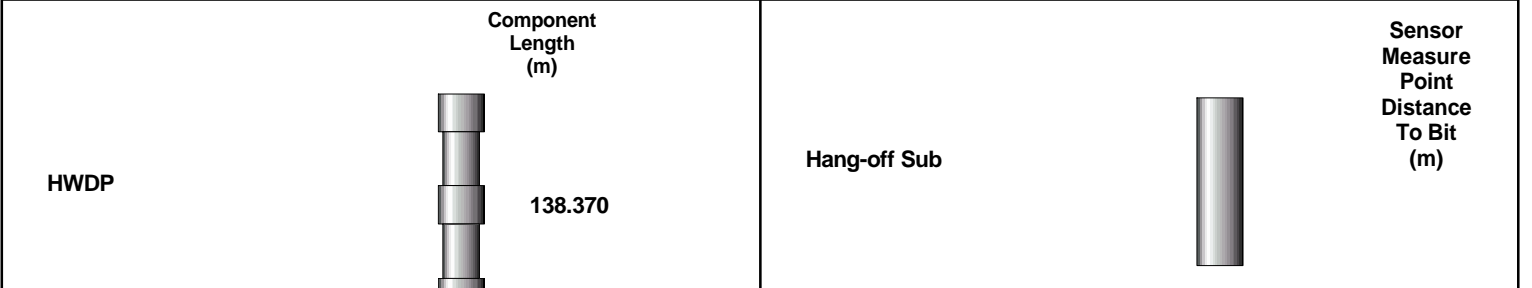


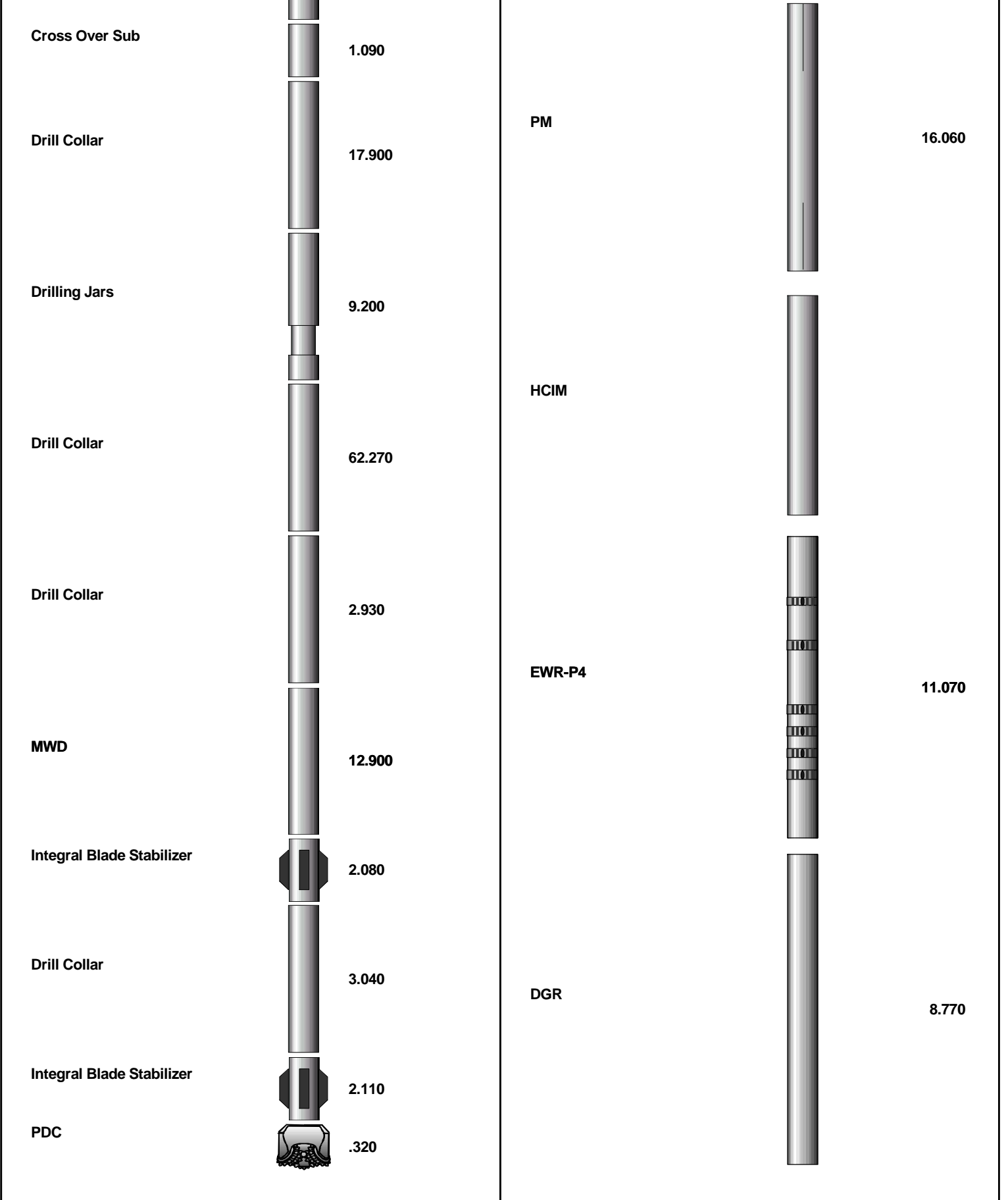
MWD RUN 300 - BHA	MWD RUN 300 - MWD
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	Component Length (m)		Sensor Measure Point Distance To Bit (m)
HWDP	138.370	Hang-off Sub	

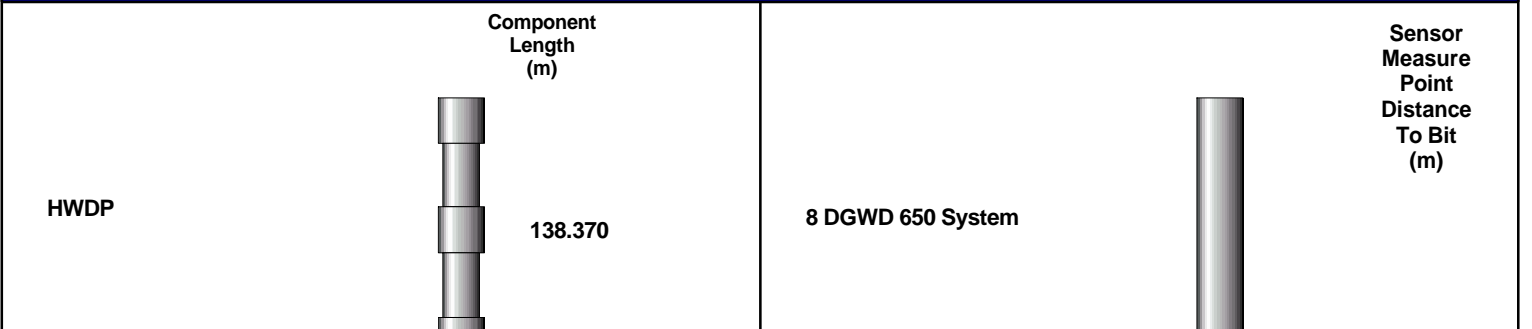




















MWD RUN 400 - BHA	MWD RUN 400 - MWD
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MWD RUN 500 - BHA	MWD RUN 500 - MWD
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Drill Collar		18.560	DM		18.900
					
Drilling Jars		9.240	HCIM		
					
					
Drill Collar		74.440	PWD		14.900
					
Integral Blade Stabilizer		1.780	EWR-P4		12.370
					
MWD		15.600			
					
Pony collar		5.040	DGR		10.030
					
Integral Blade Stabilizer		2.400	Sub		
					
PDC		.230			