



EWR Electromagnetic Wave Resistivity
DGR Dual Gamma Ray

Country		: Australia	
Field		: Casino	
Location		: Lat: 38° 47' 13.03" South Long: 142° 41' 54.49" East	
Well		: Casino-4	
Company		: Santos Ltd	
Rig		: Ocean Patriot	
LOCATION			
Latitude : 38° 47' 13.03" South Longitude : 142° 41' 54.49" East			
UTM Easting = 647,518.19 m UTM Northing = 5,705,495.28 m			
Other Services			
Permanent Datum : LAT		Elev. : 0.00 m	
Log Measured From : Drill Floor		22.00 m Above Permanent Datum	
Drilling Measured From : Drill Floor		TVD LOG	
Depth Logged : 92.78 m To 1,822.68 m		Unit No. : 197	
Date Logged : 07-May-05 To 21-May-05		Job No. : AU-FE-000330535	
Total Depth MD : 1,825.00 m TVD: 1,822.68 m		Plot Type : Final	
Spud Date : 07-May-05		Plot Date : 29-Jun-05	
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Downhole Processor Information

Tool Type	HCIM	HCIM	HCIM		
Software Version	68.18	68.18	68.18		
Sub Serial Number	198838	198838	198838		
Insert Serial Number	163155	163155	110349		
Logging String Serial Number	DM90072522	DM90072522	DM90072523		
Date and Time Initialized	12-May-05 19:10	14-May-05 21:17	18-May-05 16:42		
Date and Time Read	14-May-05 20:39	16-May-05 19:22	19-May-05 10:09		

Directional Sensor Information

Tool Type	DM	DM	DM		
Distance From Bit (m)	19.18	19.22	19.10		
Software Version	3.15	3.15	3.15		
Sub Serial Number	1	1	128402		
Sonde Serial Number	87896	87896	10581139		
Sensor ID Number	N/A	N/A	N/A		
Survey String Serial Number	N/A	N/A	N/A		
Toolface Offset (deg)	0	0	0		

Gamma Ray Sensor Information

Tool Type	DGR	DGR	DGR		
Distance From Bit (m)	10.31	10.35	10.34		
Recorded Sample Period (sec)	12	12	12		
Software Version	N/A	N/A	N/A		
Sub Serial Number	059984	059984	10603326		
Insert/Sonde Serial Number	151078	151078	084171		

Resistivity Sensor Information

Tool Type	EWR-P4	EWR-P4	EWR-P4		
Distance From Bit (m)	12.65	12.69	12.67		
Recorded Sample Period (sec)	14	14	14		
Software Version	1.38	1.38	1.38		
Sub Serial Number	96506	96506	122988		
Receiver Insert Serial Number	45162	45162	123048		
Transmitter Insert Serial Number	123860	123860	78411		
Receiver Orientation	Down	Down	Down		

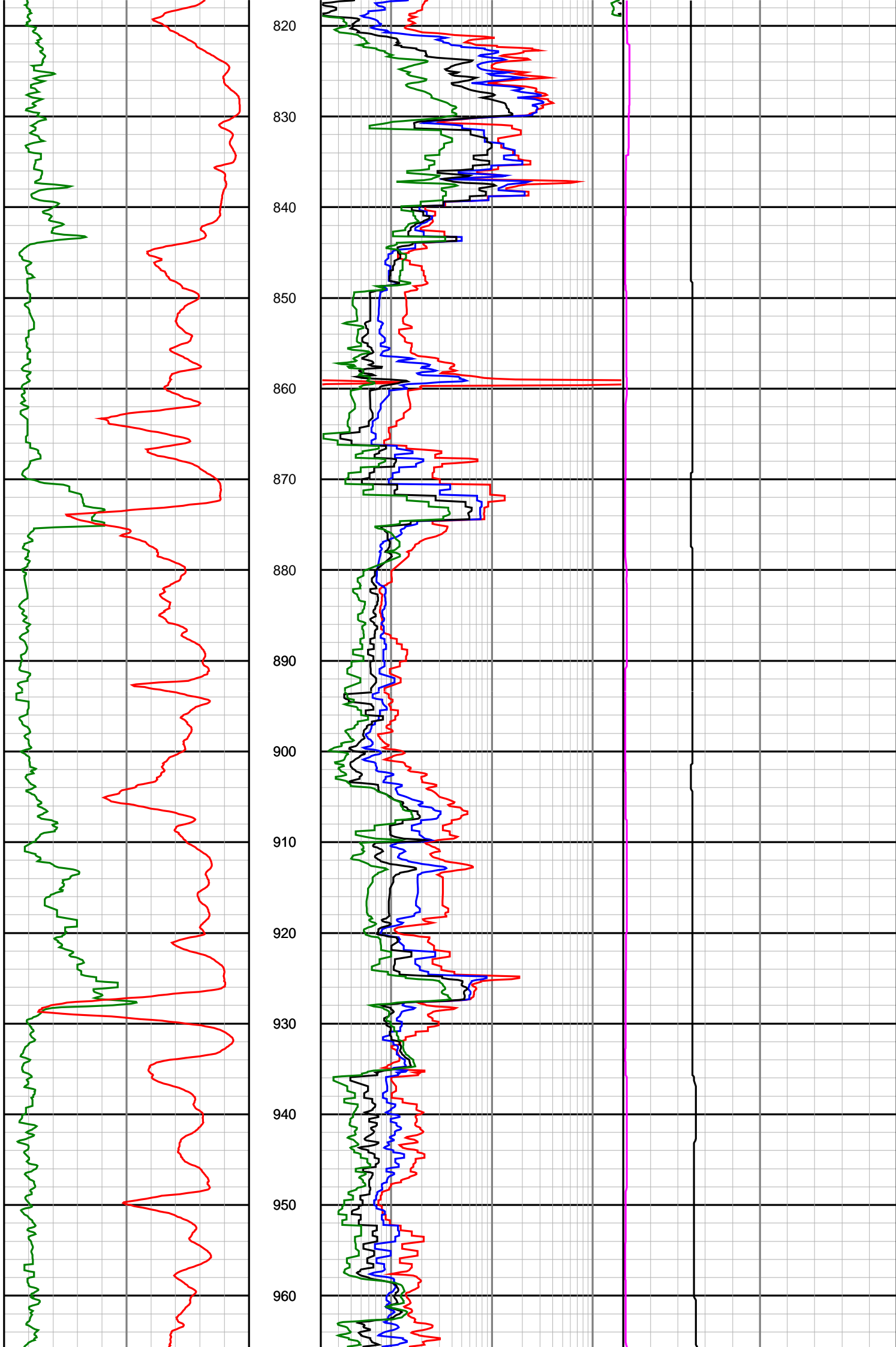
REMARKS

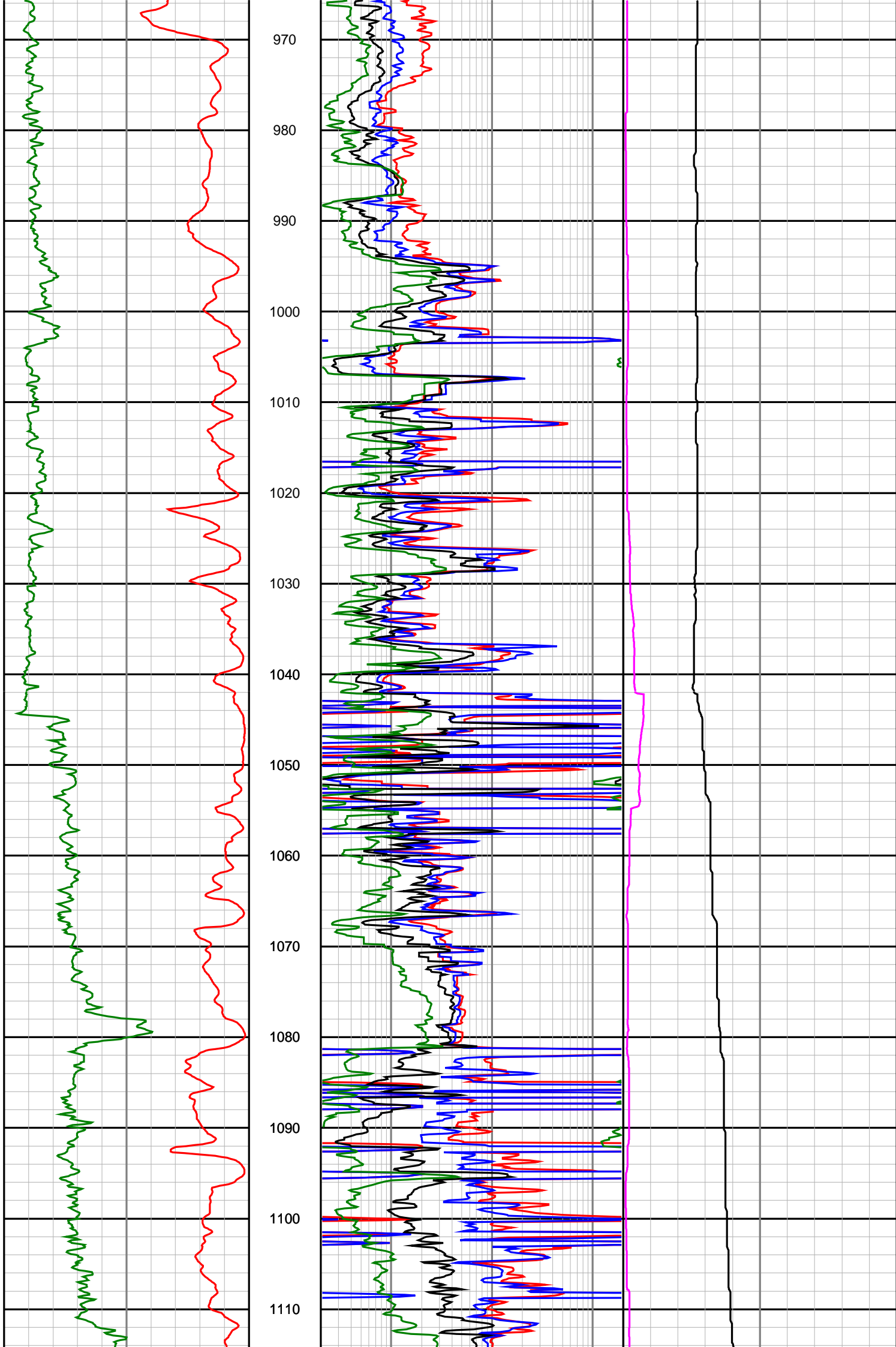
1. All depths are bit depths and referenced to the drillers pipe tally
2. AV/CV is calculated at the MWD collar using the Powere Law for water based muds and the Bingham's Plastic Law for oil based muds.
3. Curve mnemonics are:
SGRC - Smoothed Gamma Ray Combined, api
SEXP - Smoothed Extra Shallow Phase Resistivity, Ohm-m
SESP - Smoothed Shallow Phase Resistivity, Ohm-m
SEMP - Smoothed Medium Phase Resistivity, Ohm-m
SEDP - Smoothed Deep Phase Resistivity, Ohm-m
SROP - Smoothed Rate of Penetration, m/hr
STEM - Smoothed Medium Phase Resistivity Temperature, deg C
SFXE - Smoothed Formation Exposure Time, hr
4. Interval 1758.9-1791.8 mTVDRT was logged after coring.
5. EMS Surveys were adjusted by Santos Ltd to correct for magnetic interference.

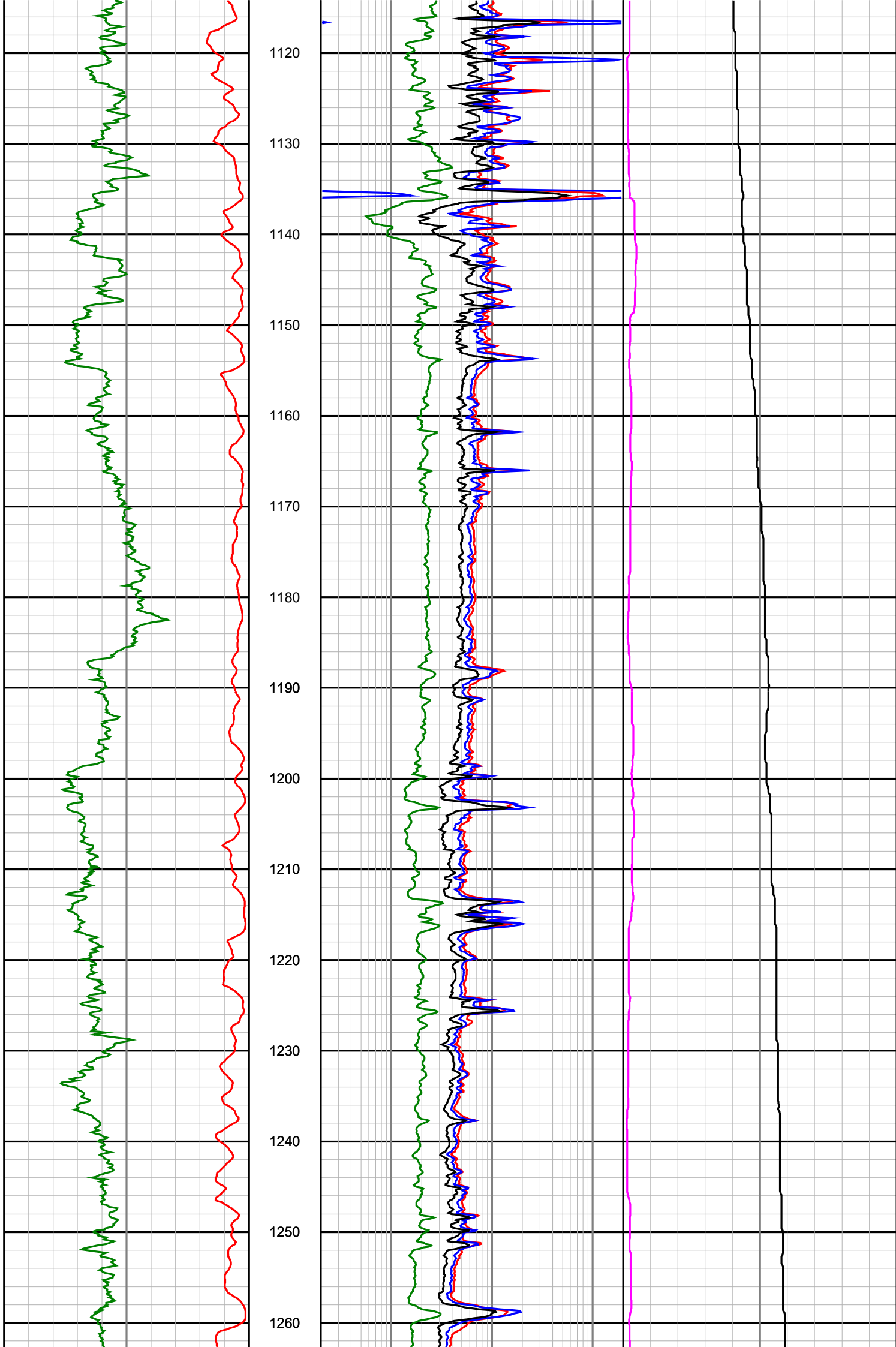
WARRANTY

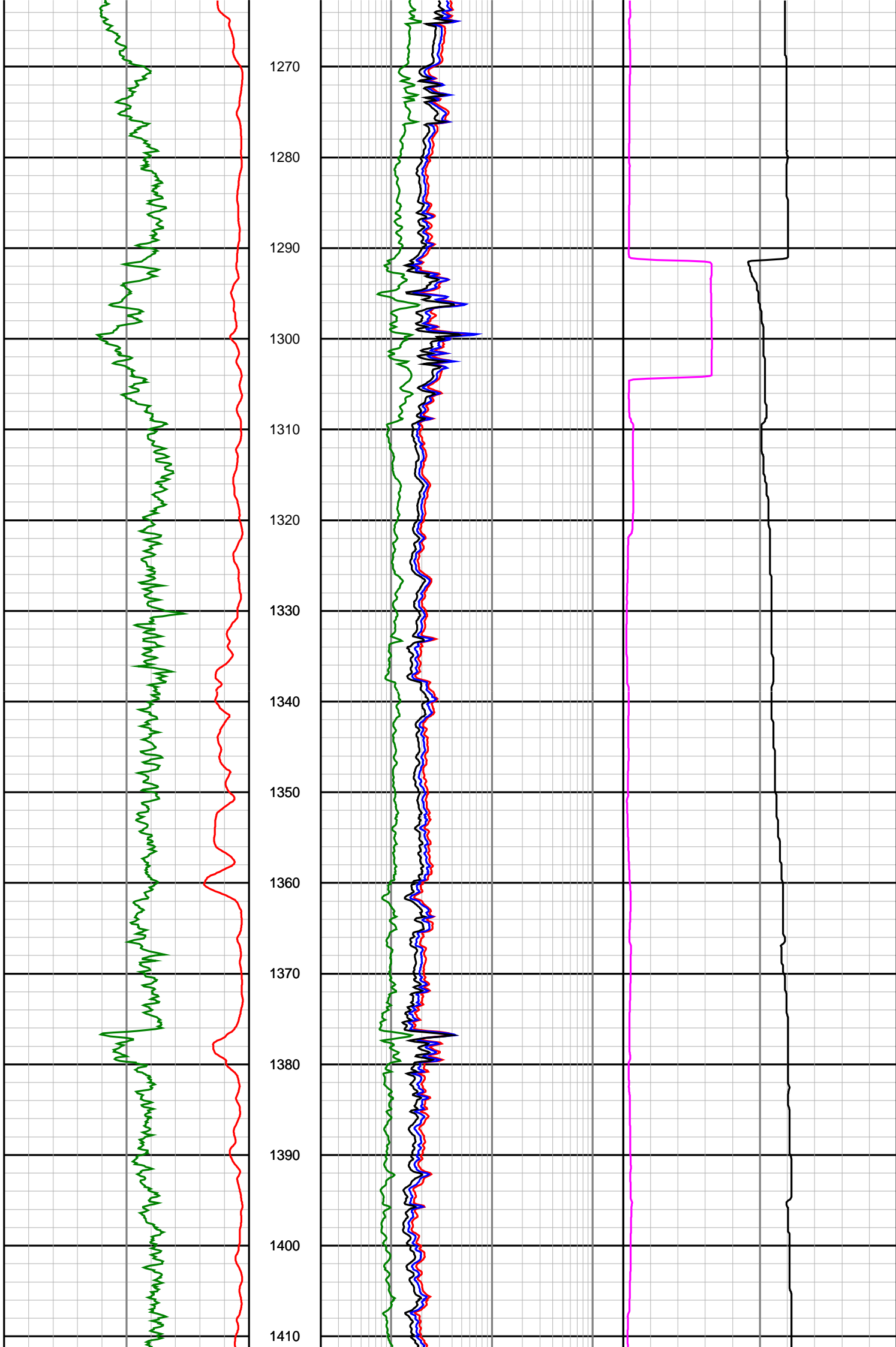
HALLIBURTON ENERGY SERVICES (HES) WILL USE ITS BEST EFFORTS TO FURNISH CUSTOMERS WITH ACCURATE INFORMATION AND INTERPRETATIONS THAT ARE PART OF, AND INCIDENT TO, THE SERVICES PROVIDED. HOWEVER, HES CANNOT AND DOES NOT WARRANT THE ACCURACY OR CORRECTNESS OF SUCH INFORMATION AND INTERPRETATIONS. UNDER NO CIRCUMSTANCES SHOULD ANY SUCH INFORMATION OR INTERPRETATION BE RELIED UPON AS THE SOLE BASIS FOR ANY DRILLING, COMPLETION, PRODUCTION, OR FINANCIAL DECISION OR ANY PROCEDURE INVOLVING ANY RISK TO THE

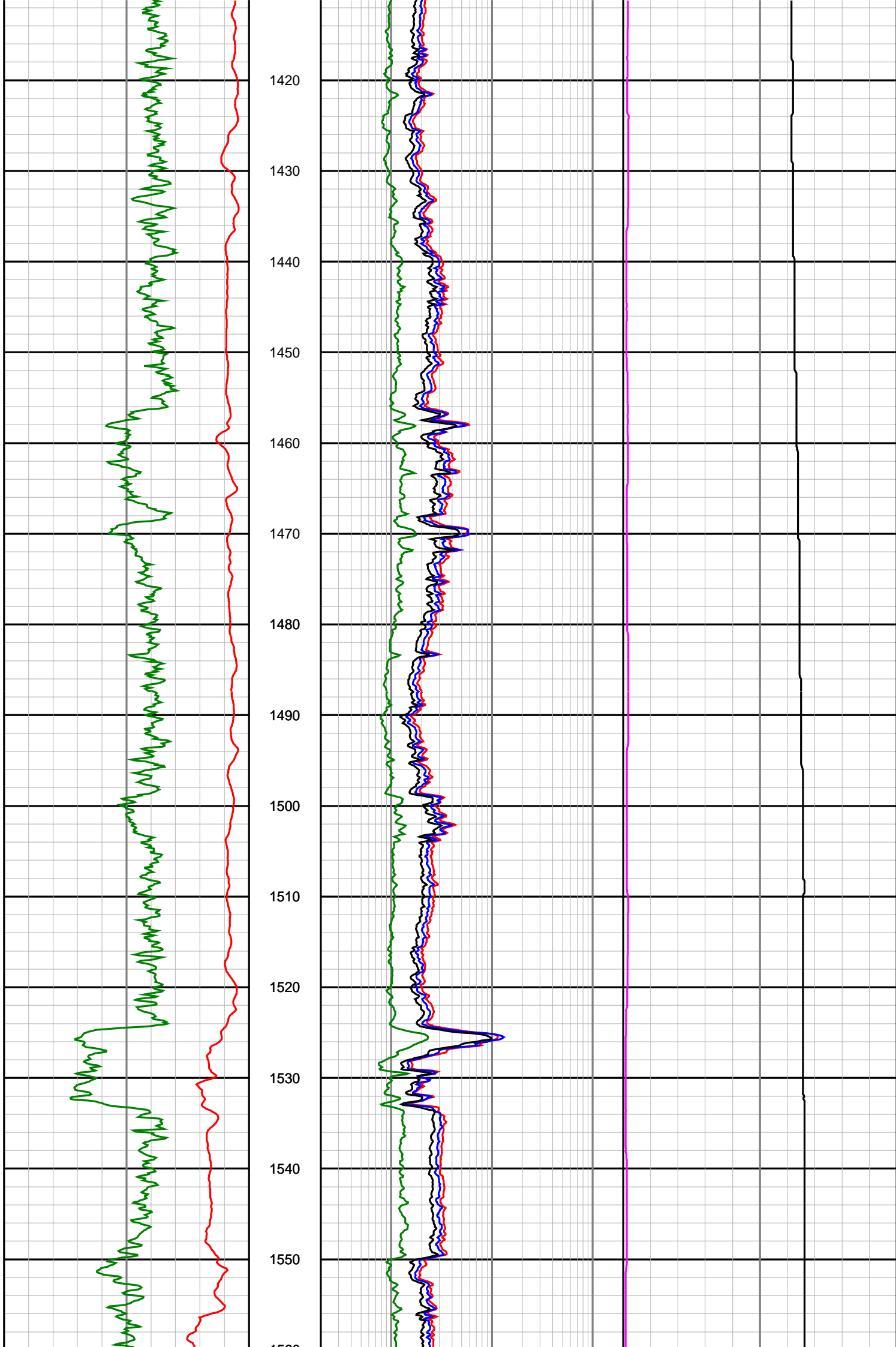
		Deep Phase Resistivity (SEDP) 0.2 200 ohmm			
		Medium Phase Resistivity (SEMP) 0.2 200 ohmm			
Rate of Penetration (SROP) 500 0 m/hr		Shallow Phase Resistivity (SESP) 0.2 200 ohmm		Temperature (STEM) 0 100 deg C	
Gamma Ray (SGRC) 0 200 api		X-Shallow Phase Resistivity (SEXP) 0.2 200 ohmm		Formation Exposure Time (SFXE) 0 50 hrs	
Depth TVD 1:500					

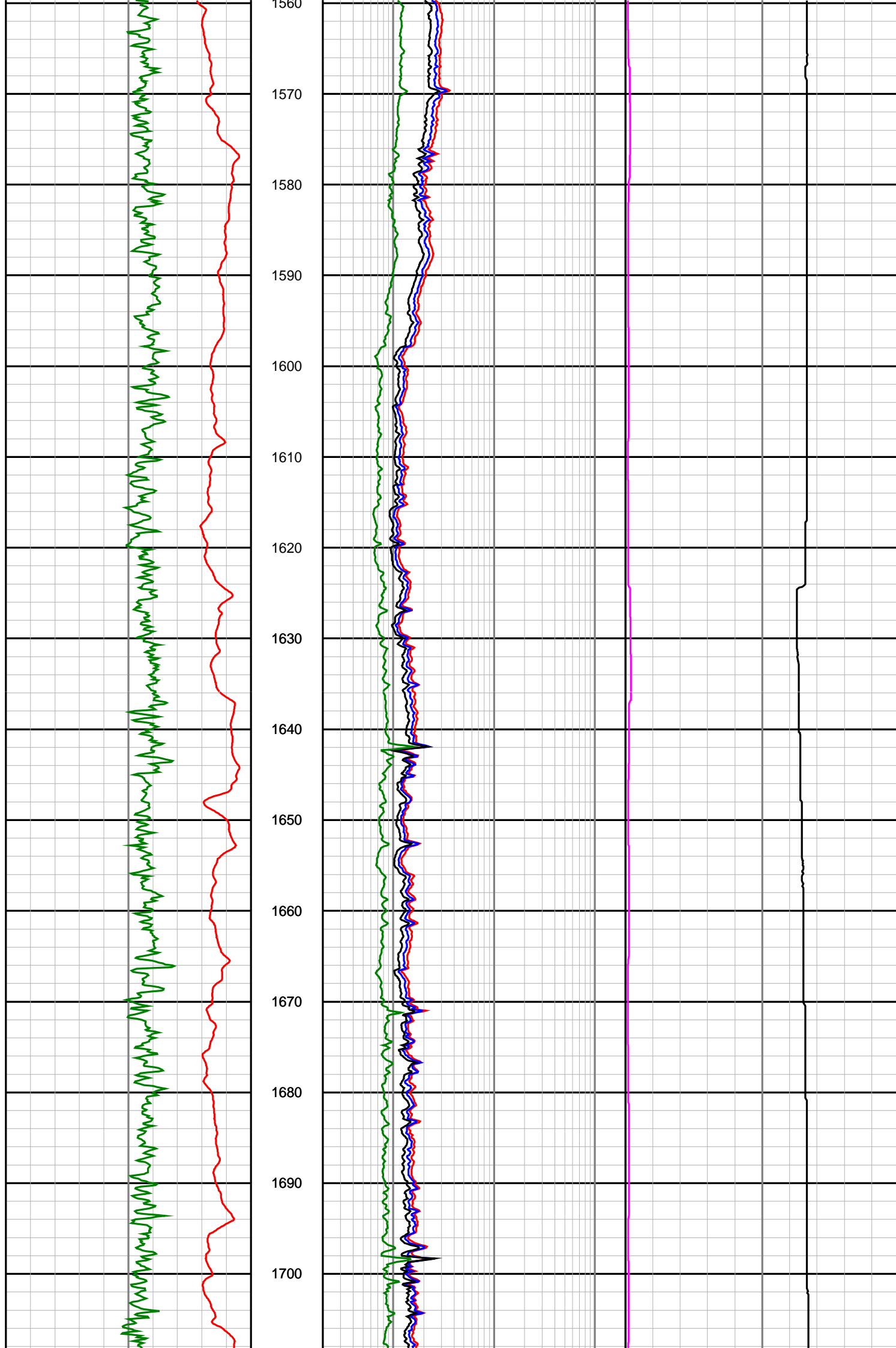


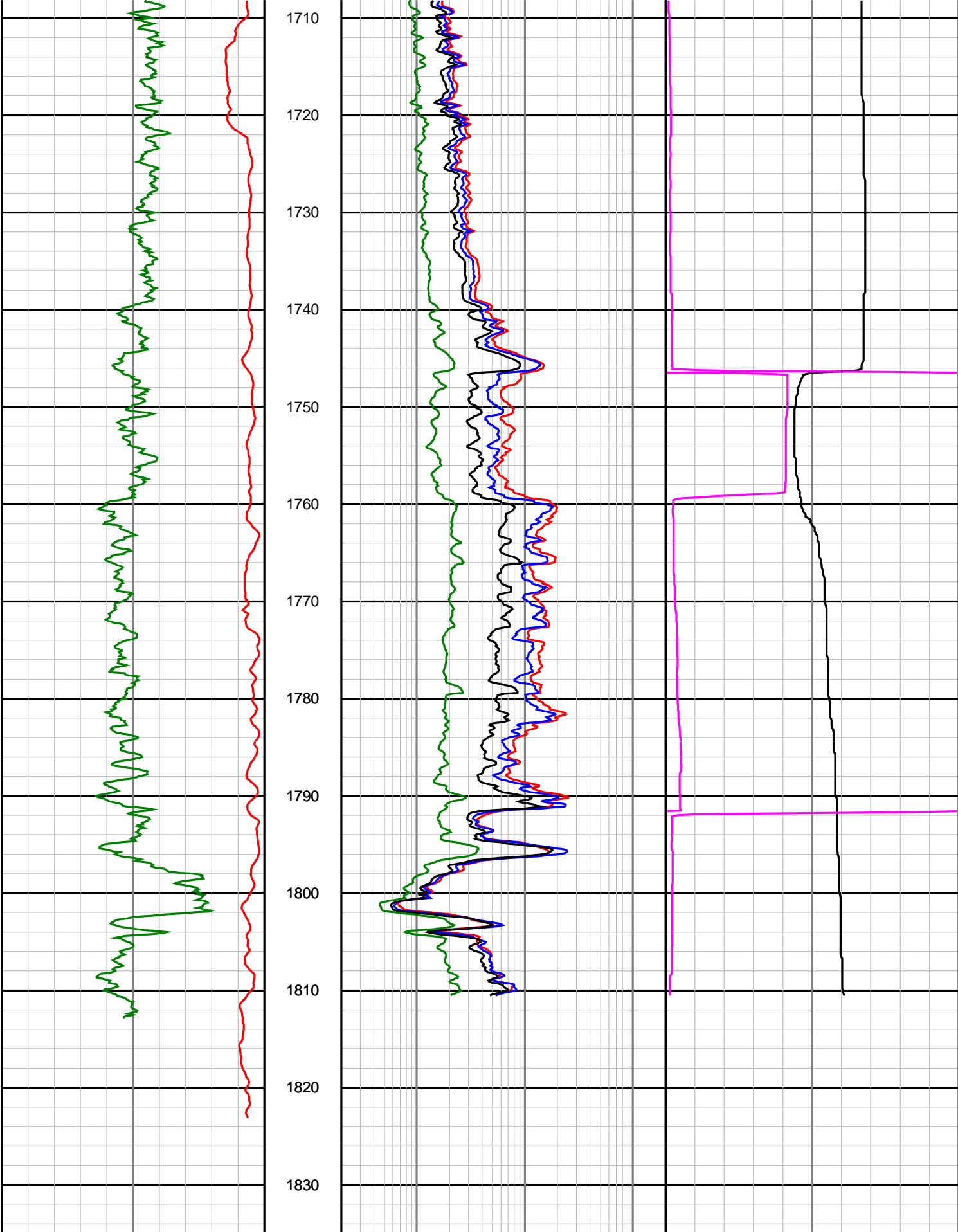












Gamma Ray (SGRC)	Depth TVD	X-Shallow Phase Resistivity (SEXP)	Formation Exposure Time (SFXE)
0200	1:500	0.2200	050
api		ohmm	hrs
Rate of Penetration (SROP)		Shallow Phase Resistivity (SESP)	Temperature (STEM)
5000		0.2200	0100
m/hr		ohmm	deg C
		Medium Phase Resistivity	

0.2	(SEMP)	200
	ohmm	
	Deep Phase Resistivity	
0.2	(SEDP)	200
	ohmm	



HALLIBURTON

DIRECTIONAL SURVEY REPORT

Santos Ltd
Casino-4
Casino
Victoria
Australia

AU-FE-0003530535

RT to LAT = 22.0m. EMS Surveys to 734.4 mMDRT.

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
137.400	0.00	0.00	137.400	0.000 N	0.000 E	0.000	TIE-IN
155.270	0.85	0.00	155.269	0.133 N	0.000 E	0.133	1.43
183.080	1.00	0.00	183.076	0.582 N	0.000 E	0.582	0.16
210.810	1.06	0.00	210.801	1.080 N	0.000 E	1.080	0.06
238.200	0.99	0.00	238.187	1.570 N	0.000 E	1.570	0.08
265.670	0.64	0.00	265.654	1.961 N	0.000 E	1.961	0.38
294.940	0.63	0.00	294.922	2.285 N	0.000 E	2.285	0.01
323.720	0.81	0.00	323.700	2.647 N	0.000 E	2.647	0.19
352.060	0.45	0.00	352.038	2.958 N	0.000 E	2.958	0.38
381.120	0.39	0.00	381.097	3.171 N	0.000 E	3.171	0.06
410.010	0.74	0.00	409.986	3.456 N	0.000 E	3.456	0.36
438.380	0.53	0.00	438.354	3.771 N	0.000 E	3.771	0.22
466.930	0.61	0.00	466.903	4.055 N	0.000 E	4.055	0.08
496.110	0.63	0.00	496.081	4.370 N	0.000 E	4.370	0.02
524.800	0.45	0.00	524.770	4.641 N	0.000 E	4.641	0.19
553.280	0.34	0.00	553.249	4.837 N	0.000 E	4.837	0.12
581.980	0.46	0.00	581.948	5.038 N	0.000 E	5.038	0.13
610.680	0.25	0.00	610.648	5.215 N	0.000 E	5.215	0.22
639.310	0.09	0.00	639.278	5.300 N	0.000 E	5.300	0.17
668.160	0.40	0.00	668.127	5.424 N	0.000 E	5.424	0.32
696.880	0.31	0.00	696.847	5.602 N	0.000 E	5.602	0.09
725.800	0.27	0.00	725.766	5.748 N	0.000 E	5.748	0.04
734.400	0.26	0.00	734.366	5.788 N	0.000 E	5.788	0.03
813.650	1.10	353.23	813.610	6.722 N	0.090 W	6.722	0.32
842.320	0.53	18.03	842.277	7.121 N	0.081 W	7.121	0.69
870.890	0.83	88.47	870.846	7.252 N	0.167 E	7.252	0.86
899.570	1.86	98.30	899.517	7.190 N	0.835 E	7.190	1.10
956.720	2.07	127.80	956.635	6.423 N	2.569 E	6.423	0.54
1014.200	2.43	162.77	1014.073	4.623 N	3.750 E	4.623	0.73
1100.390	3.68	204.01	1100.149	0.350 N	3.165 E	0.350	0.85
1129.190	4.46	205.68	1128.876	1.504 S	2.304 E	-1.504	0.82
1158.130	4.53	204.02	1157.727	3.562 S	1.351 E	-3.562	0.16
1187.370	4.39	203.45	1186.878	5.645 S	0.435 E	-5.645	0.15
1216.000	4.44	203.57	1215.423	7.667 S	0.445 W	-7.667	0.05
1244.280	4.48	206.57	1243.618	9.658 S	1.377 W	-9.658	0.25
1284.200	4.61	205.06	1283.412	12.506 S	2.754 W	-12.506	0.13
1300.980	4.65	203.38	1300.137	13.741 S	3.309 W	-13.741	0.25
1329.900	4.59	205.24	1328.963	15.863 S	4.267 W	-15.863	0.17
1416.800	4.27	202.81	1415.604	21.990 S	7.004 W	-21.990	0.13
1445.220	4.21	202.25	1443.946	23.932 S	7.810 W	-23.932	0.07
1472.150	4.21	200.09	1470.803	25.776 S	8.524 W	-25.776	0.18
1530.610	4.18	198.76	1529.106	29.811 S	9.948 W	-29.811	0.05
1588.180	4.19	198.08	1586.523	33.799 S	11.275 W	-33.799	0.03
1616.980	4.15	199.72	1615.246	35.780 S	11.953 W	-35.780	0.13
1645.860	4.17	198.78	1644.050	37.758 S	12.644 W	-37.758	0.07

Casino-4

Measured Depth (metres)	Inclination (degrees)	Direction (degrees)	Vertical Depth (metres)	Latitude (metres)	Departure (metres)	Vertical Section (metres)	Dogleg (deg/30m)
1674.590	4.18	197.38	1672.704	39.745 S	13.293 W	-39.745	0.11
1732.100	4.45	198.68	1730.051	43.859 S	14.634 W	-43.859	0.15
1760.800	4.46	201.16	1758.664	45.954 S	15.393 W	-45.954	0.20
1805.200	4.28	201.27	1802.935	49.107 S	16.617 W	-49.107	0.12
1825.000	4.28	201.27	1822.680	50.484 S	17.153 W	-50.484	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 12.01 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 1825.000 METRES
IS 53.319 METRES ALONG 198.77 DEGREES (GRID)

MWD RUN 200 - BHA

MWD RUN 200 - MWD

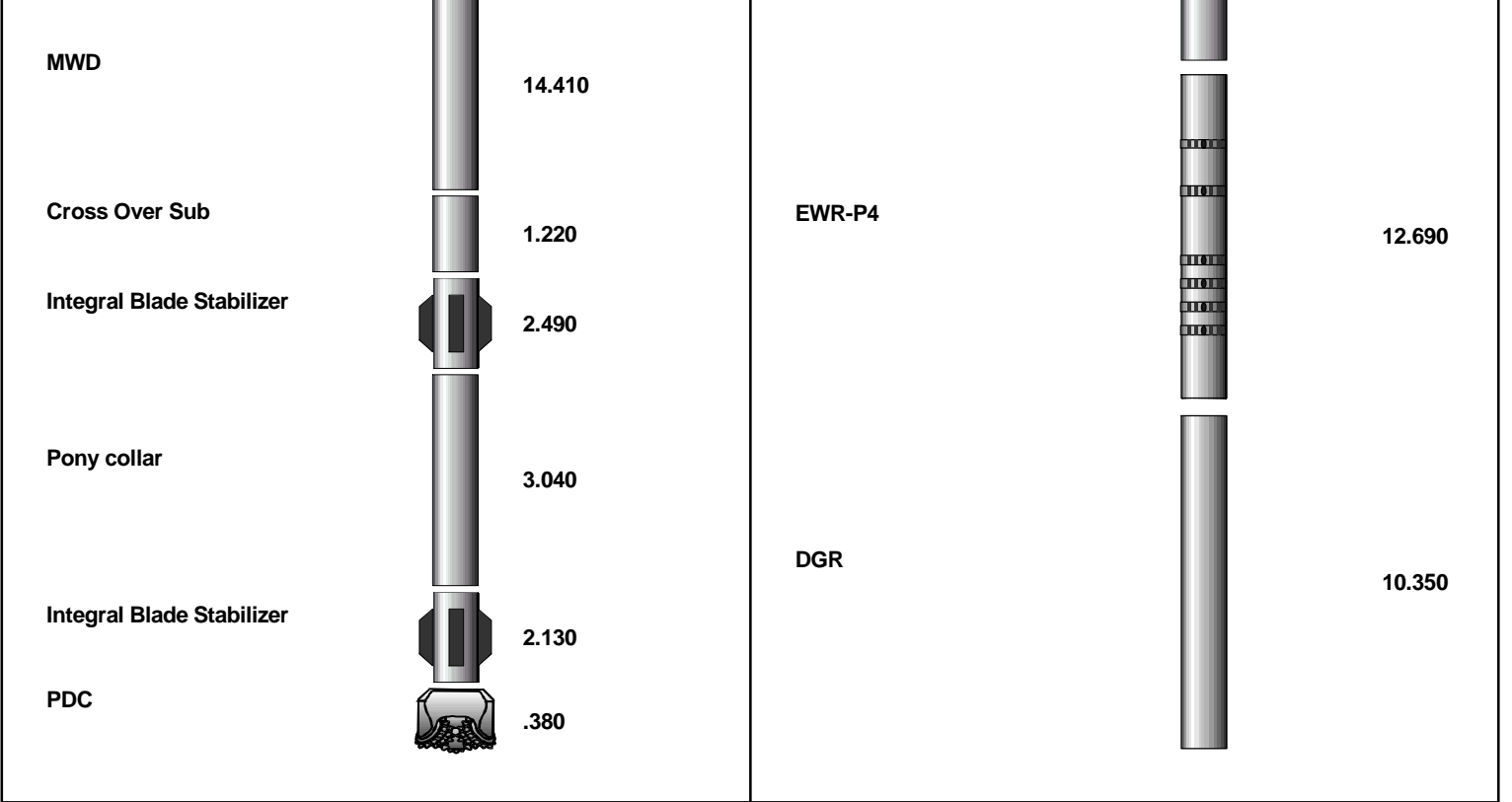
	Component Length (m)		Sensor Measure Point Distance To Bit (m)
HWDP	138.060	DM	19.180
Drill Collar	27.810		
Cross Over Sub	1.090	HCIM	
Drilling Jars	9.670		
Drill Collar	88.330	PWD	15.170
NMDC	2.930		

MWD		14.410	EWR-P4		12.650
Cross Over Sub		1.220			
Integral Blade Stabilizer		2.490			
Pony collar		3.040			
Integral Blade Stabilizer		2.130			
Tricone		.340			
			DGR		10.310

MWD RUN 300 - BHA

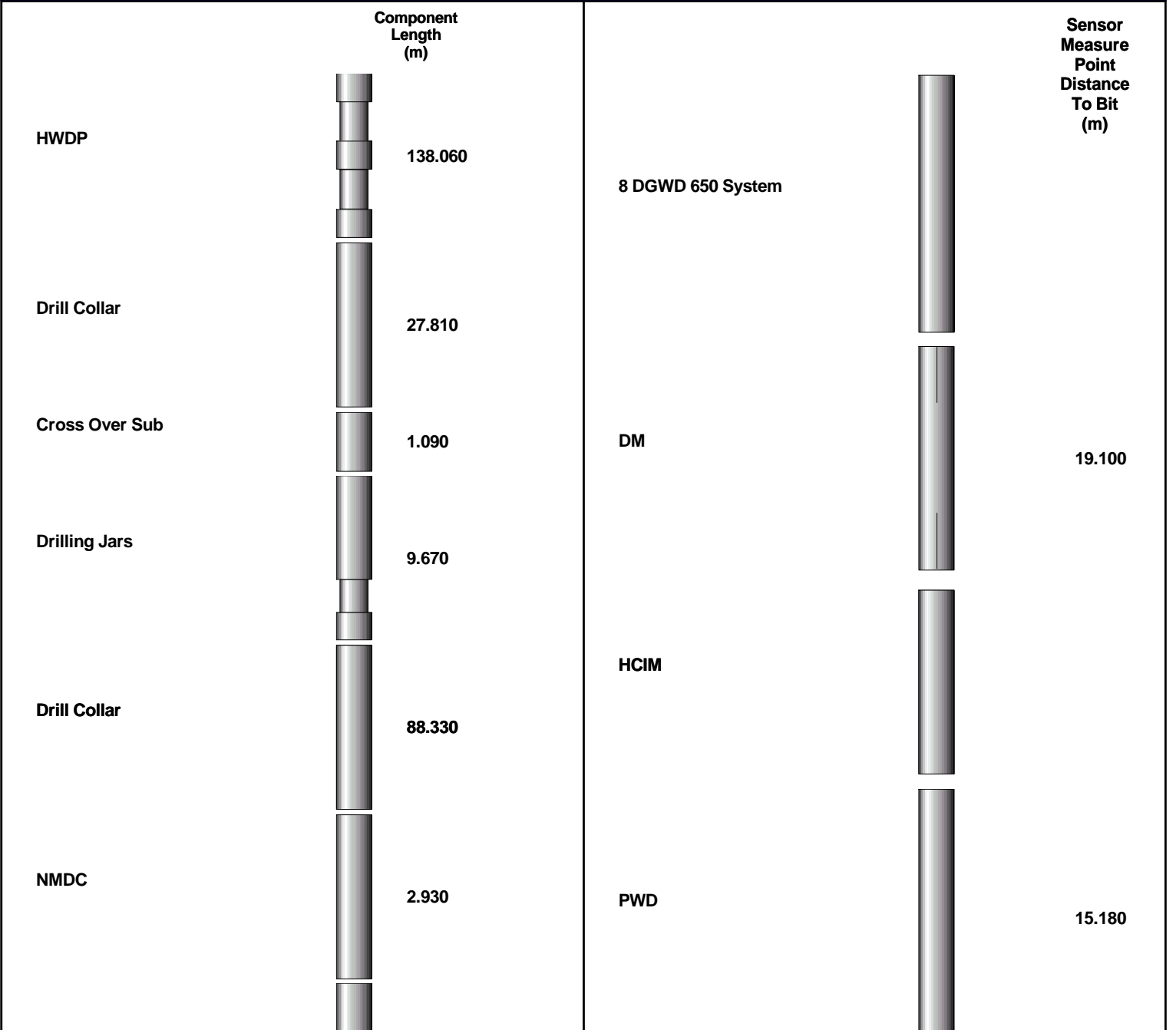
MWD RUN 300 - MWD









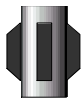


	Component Length (m)		Sensor Measure Point Distance To Bit (m)
HWDP	138.060	8 DGWD 650 System	
Drill Collar	27.810		
Cross Over Sub	1.090	DM	19.220
Drilling Jars	9.670		
Drill Collar	88.330	HCIM	
NMDC	2.930	PWD	15.210



MWD RUN 400 - BHA

MWD RUN 400 - MWD



MWD		14.250	EWR-P4		12.670
Cross Over Sub		1.220			
Integral Blade Stabilizer		2.490			
Pony collar		3.040			
Integral Blade Stabilizer		2.130	DGR		10.340
PDC		.380			