Supplementary Material

Table S1. Logging-while-drilling bottom depth measurement and geographic coordinates

No.	Hash symbol	Depth of base layer for each sedimentary layer (m)								Horizontal axis (km)	Vertical axis (km)
		Quaternary System	Huayong Group	Sibu Group, Second Section	Sibu Group, First Section	Aquitard of the Third Member of the Buxin Formation	Sandstone reservoir of the Third Member of the Buxin Formation	The Second Member of the Buxin formation	The First Member of the Buxin formation		
1	B1	17.5	110	388	603.5	/	810	/	/	95.7	73.4
2	B2	44	163.5	531	650.5	870	/	/	/	95.8	74.1
3	B3	23	66	386	525.5	794	969	1151	/	95.7	72.7
4	B4	20	151	476	595	735.5	806.5	/	/	95.2	73.3
5	B5	37	97.5	412	573.5	866	973	/	/	95.6	72.2
6	B7	23	82.5	389	559.5	830	899.5	/	/	95.4	72.5
7	B8	27	182	498	677.5	937	1088	/	/	96.6	72.7
8	B12	31	200	547	685	981	1142.5	1389	/	96.7	73.5
9	B16	18	65	383	579	893.5	1036	1181.5	/	96	73.4
10	B19	21	103.5	458	520.5	772	781.5	1036.5	1190	95.3	73.2
11	B21	20	58	338	516	693	784	1012	/	95.2	73.6
12	B22	14	222	579	696.5	956	1042.5	/	/	96.2	73.8
13	B23	17	168	494.5	571	771.5	849	1090	/	95.2	74
14	N1	15	79	409	554.5	667	837.5	1042	/	95.6	73.7
15	N2	16.5	510	868.5	1001.5	1218	1362	1585.5	/	97	69.5
16	N3	33	613.5	1078	1224	1420	1491.5	/	/	98	68.5
17	N4	27	456	839	902.5	992.5	998.5	1245	/	109	66
18	N5	16.5	431.5	850.5	1059	1436.5	1624	/	/	98.1	77.5
19	N6	12	462	781	922.5	1186	1281	/	/	96.3	69.6

20	N7	41	377	703	888.5	1107	1231.5	/	/	99.5	71.1
21	N8	22	439.5	774	917.5	1073	1119	1321	/	95.8	69.3
22	N9	16	578	923.5	1047.5	1286	1370	/	/	96.6	68.7
23	N10	8	562	919.5	1067.5	1320	1392	/	/	97.9	69.3
24	N11	20	406	713.5	853	1116	1226	/	/	95.8	70.2
25	N14	53	385	755.5	860.5	1182.5	1268.5	/	/	97	70.2
26	N16	22	418.5	780	842	914	920.5	1099.5	/	109.2	66.9
27	N19	42	367	722	890.5	1137	1304.5	/	/	98.4	71.2
28	N20	24	288	645.5	818.5	966	1118	/	/	97.7	72.9
29	N21	11	350.5	771.5	955	1186	1328	/	/	97.8	73.7
30	N30	32	324	637	815.5	/	/	/	/	97.8	72.2
31	N36	43	418.5	626.5	779.5	1103	1185	/	/	97.4	70.3
32	NS1	18	665	1061.5	1135	1318	1463	1712	1958	99.5	69.5
33	NQ2	6	132	487	551	615.5	622.5	924		110.8	62.2
34	SS1	2.5	83.5	416	474	667	817	1045	1315	95.6	73.7
35	SS2	3	1280	/	/	1418.5	1594	1994	2085	100	66.1
36	SS5	17	506	844	931.5	1170	1180	1470	1582	104.1	72.5
37	SS6	33.5	455	611.5	744	898.5	968.5	1231.8	1296	95.7	66.1
38	SS8	18	1203	1378	1508.8	1795.4	1883.4	/	/	99.3	61.7
39	SS9	37.5	791	1113.5	1170	1412	1426.5	/	/	103.5	69
40	SS10	40	468	818.5	1038.5	1247	1338	1554	/	99.8	72.1
41	SS11	9.2	775	1151	1222	1502	1514	/	/	104.6	66.8
42	SS12	35	409.5	716	851	1051	1165	1397	1614	96.7	70.8
43	SS13	30	337	631	746.5	1020.5	1177	1401	/	97.9	70.8
44	SS14	20	210	565.5	747	1006	1139	1385.5	/	97.3	72.5
45	SS15	20	365	672	802.5	1022	1172	1366	/	94.8	69.9
46	SS16	16	561.5	939	1025	1136	1145	1419	/	106.4	65.8
47	SS17	8	334	709.5	859	1088	1236.5	1472.5	/	98.2	73.5
48	SS19	4.3	182	638.5	791	1150	1210	/	/	95.6	75.6

49	SS21	15	638	1014	1091	1359	1377	1675	/	103.2	67.7
50	SS23	/	/	891.5	/	/	/	1039	/	107.1	66.8
51	SS33	37	393.5	740	897.5	1141.5	1302	/	/	98.7	72.9
52	SS34	30	/	703	877	1128.5	1300	/	/	97.5	73.4
53	S8	5.5	38	405	557.5	720	883.5	/	/	95.7	73.2
54	S12	20	104.5	420	582	894.5	1014.5	/	/	96.3	73.2
55	S13	10.34	/	386.5	452.5	509	513	834	/	111.4	63.9
56	S16	18	41.5	375	544.5	716.5	887.5	/	/	95.6	73.1
57	S18	15	174	521	656.5	812	890	/	/	94.9	73.5
58	S20	29	96	400	541	811	941	/	/	95.9	72.4
59	S21	0	/	/	145.7	224	234.7	464.4	708.6	92.5	76.1
60	S25	6	276	675	780.5	1051	1121	/	/	96.1	75
61	S26	41.87	162.22	246.61	/	565	595.18	807.62	833.53	94.2	66
62	S27	28	97	436.5	606.5	889	1039	/	/	95.6	72.1
63	S28	5.3	354.7	736.4	912.1	/	/	/	/	93.5	72.7
64	S34	7.2	55	378	428	643	651	/	/	104.7	76.2
65	S35	39	541.8	713.9	835.7	/	/	/	/	95.8	65.1
66	S37	13.4	150	502.5	555.5	743	750	/	/	106	73.8
67	S39	27.9	431.2	533	623.7	681	737.2	797.3	825.2	95.1	63.2
68	S40	29.9	/	416.7	655.4	914	924.9	/	/	98.7	80.7
69	S41	6.5	272.5	491.8	586	575.8	675.8	761.7	849.3	92.5	67.8
70	S43	35.2	380.5	556.8	651.6	676.5	764.5	868.7	/	93.3	68.2
71	S52	22.1	471.3	750	809.5	/	/	/	/	92.3	70.8
72	S53	41.3	83	/	253.7	285	336.7		383.7	93.3	61.8
73	S55	10.4	/	/	78.2	158	162.3	327.2	/	109.3	69
74	S60	4	256.4	531.6	669.4	728	733.6	/	/	109.4	67.5
75	S62	5.5	41.5	413	550	758	883.5	/	/	95.7	73.1
76	S63	39.3	520	696.4	869	887.6	967.6	1114.2	/	95.2	64.7
77	S64	33	383.3	567	677.8	695.5	787.7	903.3	/	93.3	68.4

78	S67	13.2	111.5	456.4	514.9	558	600.2	811	/	91.9	73.7
79	S69	12.5	391	684.5	771	/	/	918	/	92.9	72
80	Z11X	60	400	642	835	1197.77	1197.77	/	/	97.1	70.4
81	Z10X	60	389	639	893.5	1095.11	1185.11	1376.79	1454.74	96.8	70.8
82	Z8	30	456.5	/	804.5	1078	1164.5	/	/	96.9	71
83	S48	/	250	/	575	655	725	812	/	94.5	53.4
84	SS41	/	265	/	765	905	975	1120	/	97.7	43
85	SS46	/	615	/	1115	1285	1325	1445	/	99.8	41.7
86	S30	/	/	/	425	527	591	741	/	95.4	41.7
87	S38	/	255	/	555	720	740	860	/	111.3	42.6
88	S17	/	/	/	210	355	360	465	/	114.6	45.7
89	SS4	/	1104.2	/	1604.2	1848	1954.2	2096.2	/	104.5	50.6
90	S4	/	100	/	300	438	455	505	/	111.2	54.6
91	SS38	/	450	/	880	1110	1130	1270	/	109.6	59
92	S54	/	405	/	785	900	990	1110	/	95.5	57.7
93	SS20	/	1450	1925	2100	2382	2450	2650	2775	103.2	61.9
94	SS29	/	1370	1740	1870	2130	2270	2570	2720	102.9	57.9
95	SS24	/	1275	1505	1795	2093	2145	2380	2530	101.1	64.6