HALLIBURTON | Sperry Drilling

DGR Dual Gamma Ray
EWR-Phase 4
PWD

1 : 200

Country	: Japan
Field	: Nankai Trough
Location	: Lat: 33° 18' 3.04" North Long: 136° 38' 12.17" East
Well	: C0002N
Company	: JAMSTEC
Rig	: CHIKYU

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Rig : CHIKYU
Well : C0002N
Field : Nankai Trough
Country : Japan
DOE Number :

LOCATION
Latitude : 33° 18' 3.04" North
Longitude : 136° 38' 12.17" East
UTM Easting = 652382.4 m
UTM Northing = 3685834.6 m

Other Services
Directional Drilling
DDSr Drillstring Dynamics

Permanent Datum : Mean Sea Level Elevation : 0.00 m
Log Measured From : Drill Floor 28.50 m Above Permanent Datum
Drilling Measured From : Drill Floor

TVDss LOG

Elev. KB 0.00 m
DF 28.50 m
GL 0.00 m
WD 1939.00 m

Depth Logged : 2,798.50 m To 4,267.40 m
Date Logged : 04-Nov-13 To 15-Nov-13
Total Depth MD : 4,297.00 m TVD : 4,295.90 m
Spud Date : 11-Oct-13

Unit No. : 0003501 Job No. : JP-XX-0900526576
Plot Type : Final
Plot Date : 08-Jan-14

Borehole Record (TVDss)

Run No.	Size	From	To
1	17.000 in	2,798.50 m	3,946.40 m
2	17.000 in	3,946.40 m	4,267.40 m

Borehole Record (TVDss)

Run No.	Size	From	To

Casing Record (TVDss)

Size	Weight	From	To
36.000 in	822.35 kgpm	1,934.32 m	1,992.50 m
20.000 in	192.39 kgpm	1,934.32 m	2,799.30 m

WELL INFORMATION

MWD Run Number	100	200			
Date run completed	10-Nov-13	15-Nov-13			
Rig Bit Number	1	2			
Bit Size (in)	17.000	17.000			
Tool Nominal OD (in)	8.000	8.000			
Log Start Depth (TVD, m)	2,827.000	3,974.900			
Log End Depth (TVD, m)	3,974.900	4,295.897			
Drill or Wipe	Drill	Drill			
Drill/Wipe Start Date and Time	04-Nov-13 20:30	11-Nov-13 22:15			
Drill/Wipe End Date and Time	09-Nov-13 19:30	13-Nov-13 01:15			
Min Inc (deg) @ Depth (TVD, m)	.12 @ 3,351.949	.06 @ 3,957.113			
Max Inc (deg) @ Depth (TVD, m)	5.36 @ 3,083.428	.40 @ 4,276.657			
Bit TFA(cm2) / Bit Type	5.8 / PDC	5.8 / PDC			
Flow Rate (m3pm)	3.41	3.60			
Max AV (mps) / CV (mps) @ MWD	N/A / N/A	N/A / N/A			
Fluid Type	Polymer	Polymer			
Density (ppg) / Viscosity (spl)	9.18 / 82.45	9.18 / 49.15			
Filtrate CL (ppm)	77,000.00	81,700.00			
pH / Fluid Loss (m3pm)	12.23 / 0	12.30 / 0			
PV (mPsec) / YP (pa)	31 / 14.84	31 / 14.84			
% Solids / % Sand	8 / 0.4	8.00 / 0.4			
% Oil / Oil:Water Ratio	N/A / N/A	N/A / N/A			
Rm @ Measured Temp (degC)	.100 @ 24.00	.100 @ 24.00			
Rmf @ Measured Temp (degC)	.100 @ 24.00	.080 @ 24.00			
Rmc @ Measured Temp (degC)	.100 @ 24.00	.140 @ 24.00			
Max Tool Temp (degC) / Source	25.00 / PCM	37.00 / EWR			
Rm @ Max Tool Temp (degC)	.0979 @ 25.00	N/A @ 37.00			
Lead MWD Engineer	Joe Lyman	Joe Lyman			
Customer Representative	Dr Moe	Dr Moe			

SENSOR INFORMATION

Downhole Processor Information

Tool Type	HCIM	HCIM			
Software Version	88.48	88.48			
Sub Serial Number	12060986	12060986			
Insert Serial Number	11296577	11296577			
Date and Time Initialized	02-Nov-13 10:59	11-Nov-13 02:23			
Date and Time Read	10-Nov-13 18:23	15-Nov-13 09:54			
ECMB SW Version	N/A	N/A			

Directional Sensor Information

Tool Type	PCDC	PCDC			
Distance From Bit (m)	22.270	19.180			
Software Version	6.21	6.21			
Sub Serial Number	11025002	11025002			
Sonde Serial Number	10919528	10919473			
Sensor ID Number	N/A	N/A			
Toolface Offset (deg)	0	0			

Gamma Ray Sensor Information

Tool Type	DGR	DGR			
Distance From Bit (m)	12.750	10.190			
Recorded Sample Period (sec)	10	10			
Software Version	N/A	N/A			
Sub Serial Number	11199632	11199632			
Insert/Sonde Serial Number	11354963	11354963			

Resistivity Sensor Information

Tool Type	EWR-P4	EWR-P4			
Distance From Bit (m)	15.200	12.120			
Recorded Sample Period (sec)	10	10			
Software Version	1.50	1.50			
Sub Serial Number	12165429	12165429			
Receiver Insert Serial Number	12222544	12222544			
Transmitter Insert Serial Number	12207317	12207317			
Receiver Orientation	Down	Down			

Pressure Sensor Information

Tool Type	PWD	PWD			
Distance From Bit (m)	17.700	14.620			
Recorded Sample Period (sec)	2	2			
Software Version	4.12	4.12			
Collar Serial Number	0	12070384			
Insert Serial Number	0	11832609			

REMARKS

1. All depths are referenced to the driller's pipe tally and are measured from the drill floor.

2. Formation exposure time is presented for the resistivity sensor.

3. The following smoothing parameters have been applied to the data:

   Gamma, Resistivity,& Exposure Time

   0.1524m interval,0.60960m coercion distance

4. Environmental Information.

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Hole size         : 17 Inches
Mud weight        : 9.3-9.4 ppg
Mud Type          : Polymer
Mud Resistivity   : 0.1 Ohmm
KCL Concentration : 4.58-5.96 % wt
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5. Curve Identifiers:

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ROPA    : Smoothed Rate of Penetration.
DGRCC   : Smoothed Comb Gamma Ray BCorr (K+ and Borehole Corrected)
R09PC   : Smoothed Phase Resistivity BCorr(Extra Shallow Spacing).
R15PC   : Smoothed Phase Resistivity BCorr(Shallow Spacing).
R27PC   : Smoothed Phase Resistivity BCorr(Medium Spacing).
R39PC   : Smoothed Phase Resistivity BCorr(Deep Spacing).
EWXT    : Smoothed Formation Exposure Time.
EWTEMP  : Smoothed EWR Temperature
PWEA    : PWD Annular EMW
PWPA    : PWD Annular Pressure
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6. All data presented is recorded data unless otherwise noted.

7. Spike in ROPA over interval 3117 - 3118mBRT and 3158 - 3160mBRT due to short trip.

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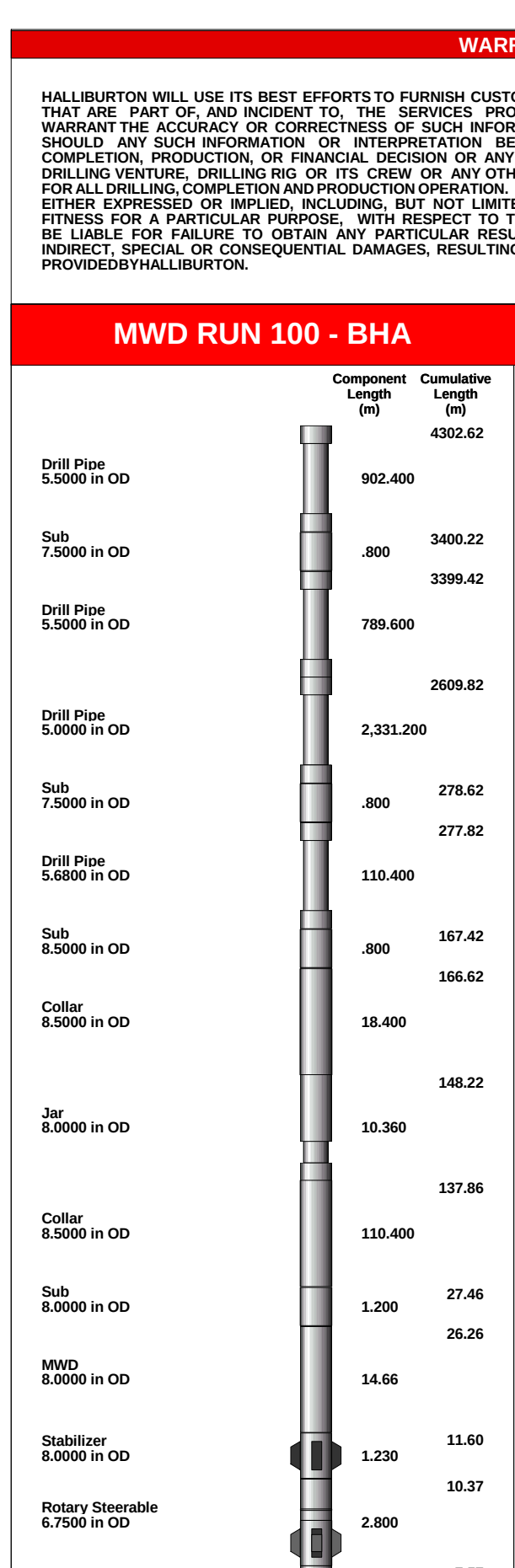
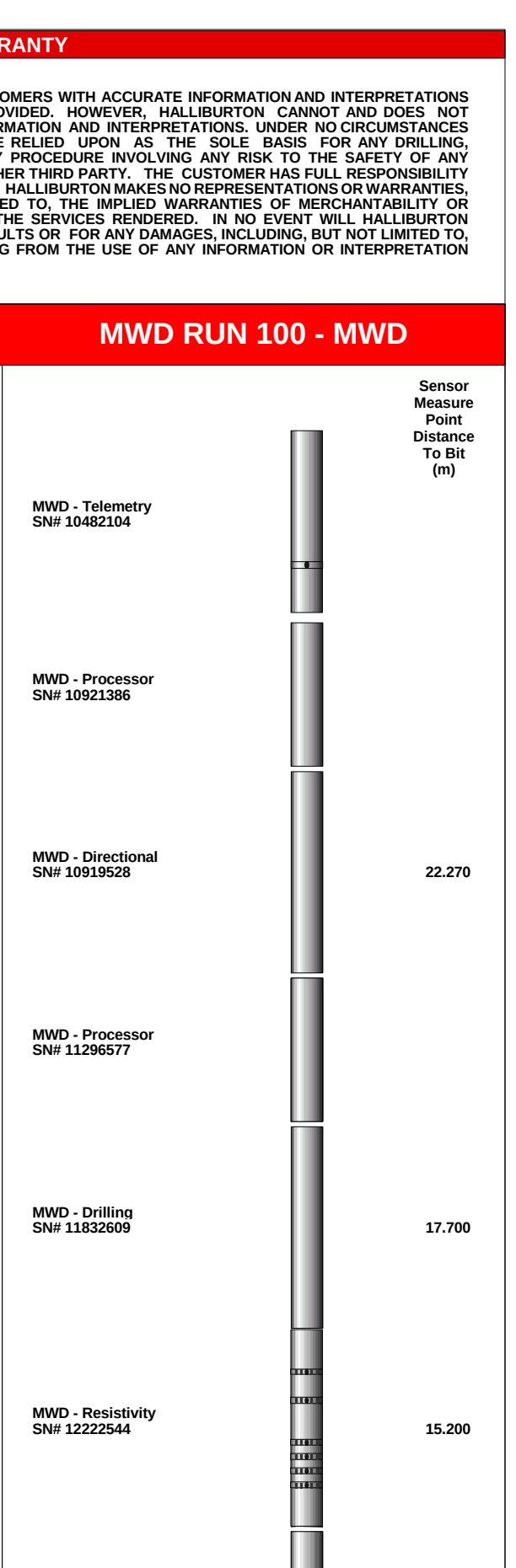
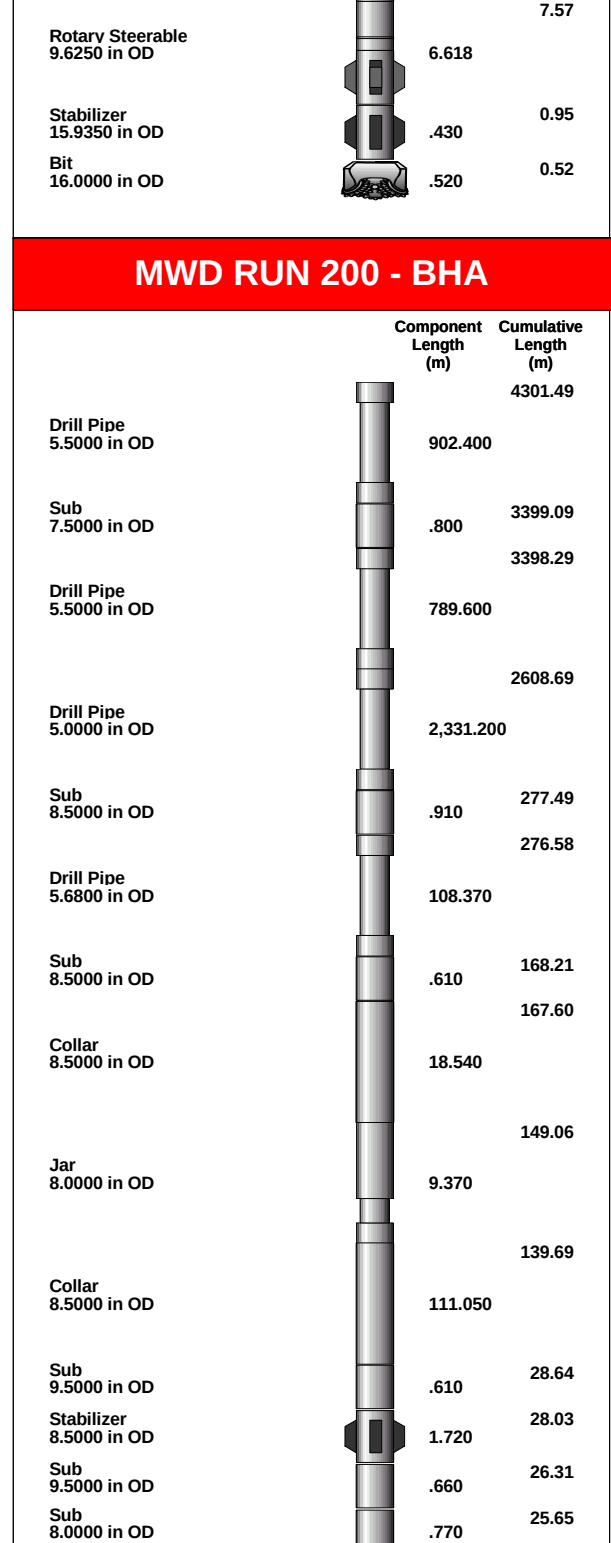
MWD RUN 100 - BHA


Component Length (m)
Cumulative Length (m)
4302.62
Drill Pipe 5.5000 in OD
902.400
Sub 7.5000 in OD
.800
3400.22
3399.42
Drill Pipe 5.5000 in OD
789.600
2609.82
Drill Pipe 5.0000 in OD
2,331.200
Sub 7.5000 in OD
.800
278.62
277.82
Drill Pipe 5.6800 in OD
110.400
Sub 8.5000 in OD
.800
167.42
166.62
Collar 8.5000 in OD
18.400
148.22
Jar 8.0000 in OD
10.360
137.86
Collar 8.5000 in OD
110.400
Sub 8.0000 in OD
1.200
27.46
26.26
MWD 8.0000 in OD
14.66
Stabilizer 8.0000 in OD
1.230
11.60
10.37
Rotary Steerable 6.7500 in OD
2.800
7.57
Rotary Steerable 9.6250 in OD
6.618
Stabilizer 15.9350 in OD
.430
0.95
Bit 16.0000 in OD
.520
0.52

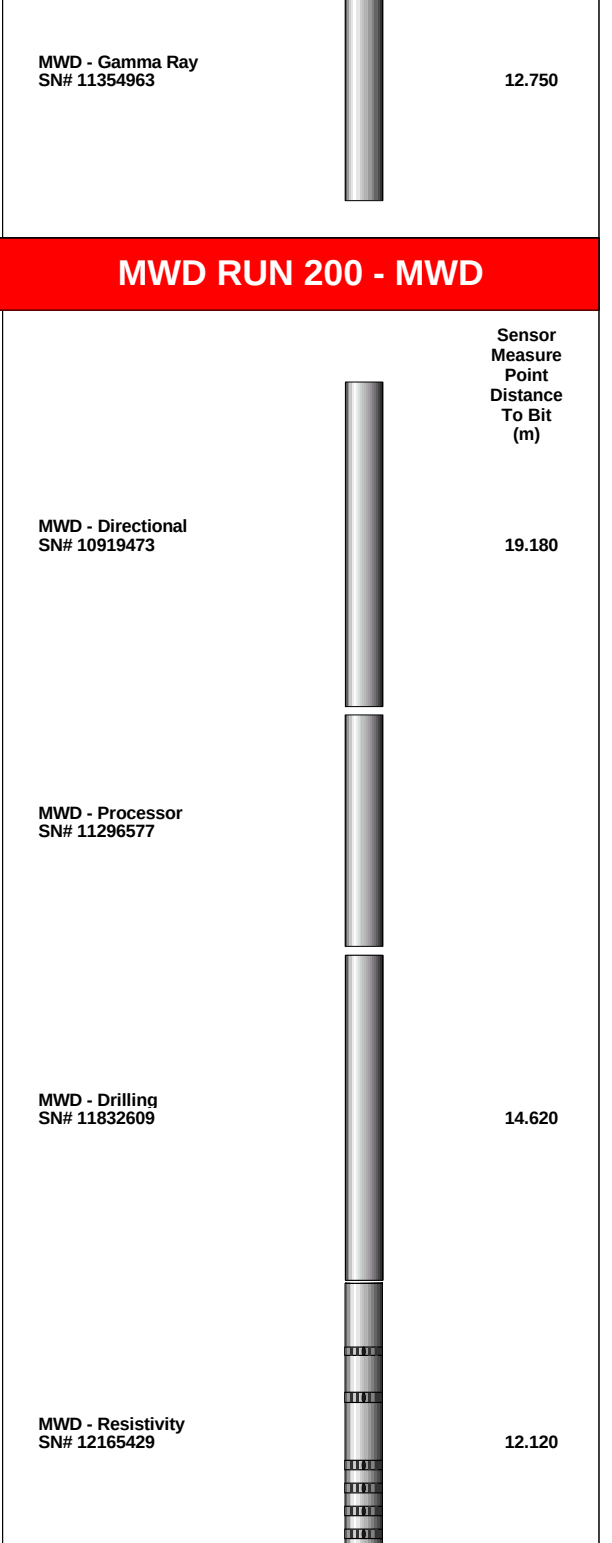
MWD RUN 100 - MWD


Sensor Measure Point Distance To Bit (m)
MWD - Telemetry SN# 10482104
MWD - Processor SN# 10921386
MWD - Directional SN# 10919528
22.270
MWD - Processor SN# 11296577
MWD - Drilling SN# 11832609
17.700
MWD - Resistivity SN# 12222544
15.200
MWD - Gamma Ray SN# 11354963
12.750

MWD RUN 200 - BHA


Component Length (m)
Cumulative Length (m)
4301.49
Drill Pipe 5.5000 in OD
902.400
Sub 7.5000 in OD
.800
3399.09
3398.29
Drill Pipe 5.5000 in OD
789.600
2608.69
Drill Pipe 5.0000 in OD
2,331.200
Sub 8.5000 in OD
.910
277.49
276.58
Drill Pipe 5.6800 in OD
108.370
Sub 8.5000 in OD
.610
168.21
167.60
Collar 8.5000 in OD
18.540
149.06
Jar 8.0000 in OD
9.370
139.69
Collar 8.5000 in OD
111.050
Sub 9.5000 in OD
.610
28.64
Stabilizer 8.5000 in OD
1.720
28.03
Sub 9.5000 in OD
.660
26.31
Sub 8.0000 in OD
.770
25.65
24.88
MWD 8.0000 in OD
16.37
Stabilizer 8.0000 in OD
1.230
8.51
7.28
Collar 8.5000 in OD
6.020
Sub 9.4375 in OD
.910
1.26
Bit 16.0000 in OD
.350
0.35

MWD RUN 200 - MWD


Sensor Measure Point Distance To Bit (m)
MWD - Directional SN# 10919473
19.180
MWD - Processor SN# 11296577
MWD - Drilling SN# 11832609
14.620
MWD - Resistivity SN# 12165429
12.120
MWD - Gamma Ray SN# 11354963
10.190

EWR Formation Exp Time (EWXT) 0 hours 5
EWR Temperature (EWTEMP) 0 celsius 150
DGR Comb Gamma Ray BCorr (DGRCC) 0 api 200
Avg Rate of Penetration (ROPA) 100 metre per hr 0
TVDss m 1 : 200
9in Phase Resistivity BC (R09PC) 0.2 ohm-metre 200
15in Phase Resistivity BC (R15PC) 0.2 ohm-metre 200
27in Phase Resistivity BC (R27PC) 0.2 ohm-metre 200
39in Phase Resistivity BC (R39PC) 0.2 ohm-metre 200
PWD Annular EMW (PWEA) 10 lbs per gal 16
PWD Annular Pressure (PWPA) 0 lbs / in2 gauge 10K
Start Drilling @ 2798.5' mBRT / 2827.70mRT
See Remark 7
See Remark 7
2790
2805
2820
2835
2850
2865
2880
2895
2910
2925
2940
2955
2970
2985
3000
3015
3030
3045
3060
3075
3090
3105
3120
3135
3150
3165
3180
3195
3210
3225
3240
3255
3270
3285
3300
3315
3330
3345
3360
3375
3390
3405
3420
3435
3450
3465
3480
3495
3510

Avg Rate of Penetration **(ROPA)** 100 metre per hr 0	**TVDss** m **1 : 200**	**39in Phase Resistivity BC** **(R39PC)** 0.2 ohm-metre 200	**PWD Annular Pressure** **(PWPA)** 0 lbs / in2 gauge 10K
DGR Comb Gamma Ray BCorr **(DGRCC)** 0 api 200		**27in Phase Resistivity BC** **(R27PC)** 0.2 ohm-metre 200	**PWD Annular EMW** **(PWEA)** 10 lbs per gal 16
EWR Temperature **(EWTEMP)** 0 celsius 150		**15in Phase Resistivity BC** **(R15PC)** 0.2 ohm-metre 200	
EWR Formation Exp Time **(EWXT)** 0 hours 5		**9in Phase Resistivity BC** **(R09PC)** 0.2 ohm-metre 200	

INSITE

HALLIBURTON

DIRECTIONAL SURVEY REPORT

JAMSTEC
C0002N
Nankai Trough
Japan
JP-XX-0900526576

Measured Depth (metres)	*Inclination (degrees)*	*Direction (degrees)*	*Vertical Depth (metres)*	*Latitude (metres)*	*Departure (metres)*	*Vertical Section (metres)*	*Dogleg (deg/30m)*
2827.800	0.00	0.00	2827.800	0.000 N	0.000 E	0.000	TIE-IN
2861.970	1.43	169.41	2861.966	0.420 S	0.078 E	-0.420	1.26
2890.590	3.40	159.39	2890.559	1.567 S	0.443 E	-1.567	2.11
2928.740	5.12	140.76	2928.604	3.945 S	1.919 E	-3.945	1.72
2966.900	5.18	106.59	2966.619	5.756 S	4.648 E	-5.756	2.38
3010.810	5.07	76.58	3010.361	5.872 S	8.436 E	-5.872	1.81
3043.630	5.11	51.56	3043.056	4.626 S	10.992 E	-4.626	2.01
3084.170	5.36	38.78	3083.428	2.026 S	13.594 E	-2.026	0.88
3123.580	4.98	25.39	3122.679	0.955 N	15.481 E	0.955	0.96
3162.077	4.18	4.38	3161.055	3.864 N	16.305 E	3.864	1.44
3199.713	2.00	1.06	3198.635	5.888 N	16.422 E	5.888	1.74
3238.190	0.31	209.19	3237.104	6.469 N	16.384 E	6.469	1.77
3276.890	0.44	239.16	3275.803	6.302 N	16.207 E	6.302	0.18
3314.845	0.41	269.76	3313.758	6.228 N	15.945 E	6.228	0.18
3353.037	0.12	310.15	3351.949	6.253 N	15.776 E	6.253	0.26
3391.259	0.50	336.21	3390.171	6.432 N	15.678 E	6.432	0.31
3429.137	0.50	334.26	3428.048	6.731 N	15.540 E	6.731	0.01
3468.361	0.62	352.84	3467.269	7.094 N	15.439 E	7.094	0.16
3505.565	0.31	333.27	3504.472	7.382 N	15.369 E	7.382	0.28
3544.482	0.19	98.24	3543.389	7.467 N	15.384 E	7.467	0.34
3581.982	0.25	209.19	3580.889	7.385 N	15.404 E	7.385	0.29
3620.055	0.31	210.19	3618.961	7.221 N	15.310 E	7.221	0.05
3657.981	0.84	245.28	3656.886	7.015 N	15.005 E	7.015	0.48
3691.657	0.36	224.61	3690.559	6.836 N	14.707 E	6.836	0.46
3729.632	0.25	132.00	3728.534	6.695 N	14.686 E	6.695	0.36
3767.900	0.44	166.60	3766.801	6.496 N	14.782 E	6.496	0.21
3887.578	0.31	300.87	3886.478	6.218 N	14.611 E	6.218	0.17
3958.213	0.06	111.53	3957.113	6.302 N	14.483 E	6.302	0.16
3996.520	0.22	133.05	3995.420	6.244 N	14.557 E	6.244	0.13
4035.150	0.12	133.34	4034.049	6.164 N	14.642 E	6.164	0.08
4073.329	0.20	202.74	4072.228	6.076 N	14.647 E	6.076	0.15
4111.480	0.19	233.67	4110.379	5.979 N	14.572 E	5.979	0.08
4144.580	0.14	244.78	4143.479	5.931 N	14.493 E	5.931	0.05
4187.910	0.22	244.60	4186.809	5.872 N	14.370 E	5.872	0.06
4235.245	0.31	274.39	4234.144	5.843 N	14.157 E	5.843	0.10
4277.760	0.40	240.57	4276.657	5.780 N	13.913 E	5.780	0.16
4297.500	0.40	240.57	4296.397	5.713 N	13.794 E	5.713	0.01

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 -7.66 DEG FROM MAGNETIC NORTH TO GRID NORTH HAS BEEN APPLIED

HORIZONTAL DISPLACEMENT IS RELATIVE TO THE WELL HEAD.
HORIZONTAL DISPLACEMENT(CLOSURE) AT 4297.500 METRES
IS 14.930 METRES ALONG 67.50 DEGREES (GRID)

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