

# Drilling Mechanics Log

## DML

Single Run Log, True Vertical Depth Sub Sea 1:200

# Schlumberger

Company: JAMSTEC

Well: C0002S

Field: C0002

Rig Name: D/V Chiky

Prefecture: Wakayama

Country: Japan

Latitude: 33° 18' 3.042" N

Longitude: 136° 38' 12.174" E

Block:

UWID:

Rig Name:

Rig Type:

D/V Chiky

Drill ship

FL: Pacific Ocean

FL1: X = 652,382.39 m

FL2: Y = 3685,843.62 m

Log Measured From: - Drill Floor: 28.50 m  
Permanent Datum: - Mean Sea Level

Ground Level: 1939.00 m

Acquisition Dates: 05-Feb-2019 -- 09-Feb-2019

Log Interval: 4787.21(m)TVD - 4899.14(m)TVD

Index Types: SSTVD

Index Scales: 1:200

Depth Source: Driller's Depth

Depth Sensor: DES

Print Type: Final

Spud Date: 26-OCT-2018

Other Services:

Direction and Inclination

seismic/VISION

Vortex and Xceed

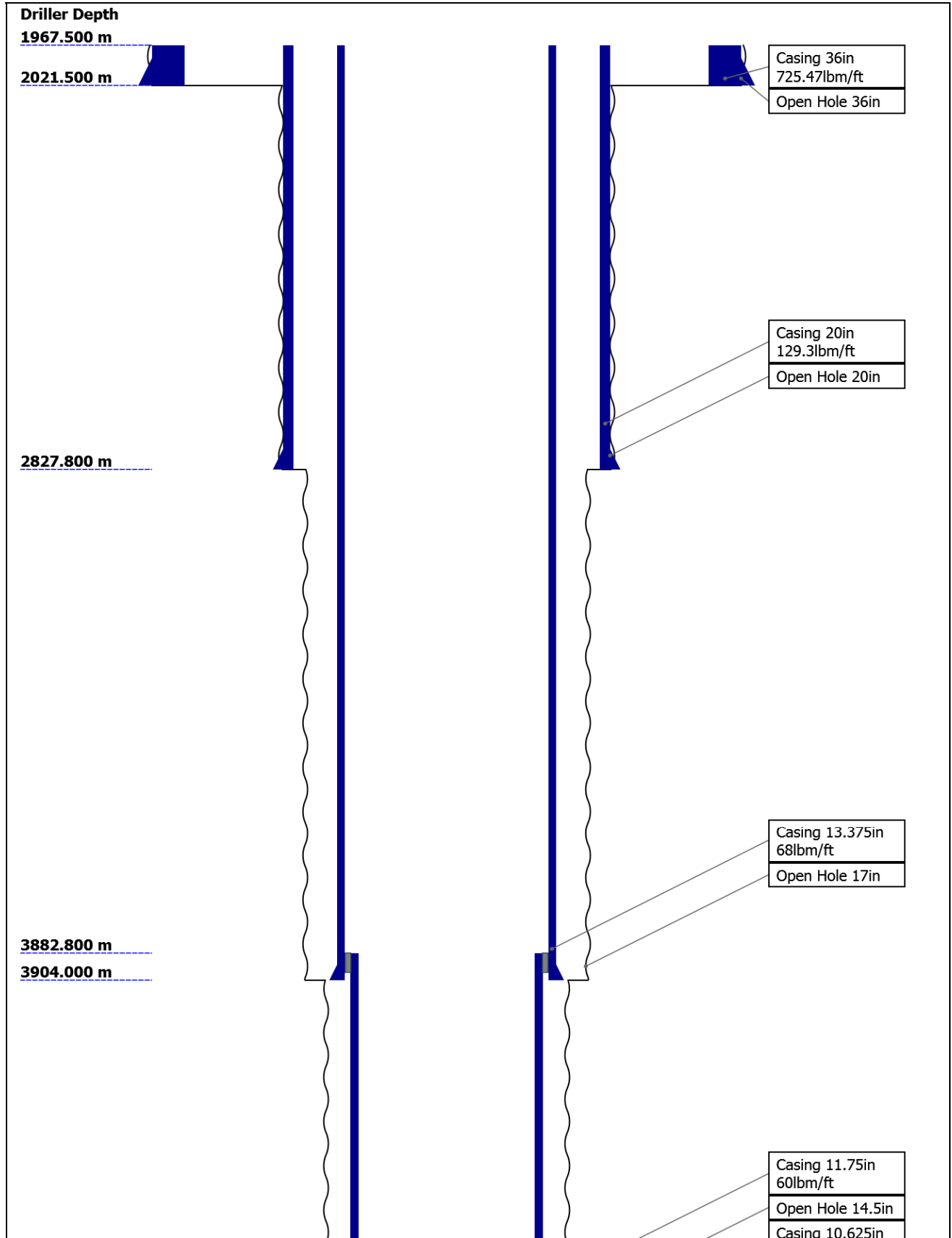
## Disclaimer

THE USE OF AND RELIANCE UPON THIS RECORDED-DATA BY THE HEREIN NAMED COMPANY (AND ANY OF ITS AFFILIATES, PARTNERS, REPRESENTATIVES, AGENTS, CONSULTANTS AND EMPLOYEES) IS SUBJECT TO THE TERMS AND CONDITIONS AGREED UPON BETWEEN SCHLUMBERGER AND THE COMPANY, INCLUDING: (a) RESTRICTIONS ON USE OF THE RECORDED-DATA; (b) DISCLAIMERS AND WAIVERS OF WARRANTIES AND REPRESENTATIONS REGARDING COMPANY'S USE AND RELIANCE UPON THE RECORDED-DATA; AND (c) CUSTOMER'S FULL AND SOLE RESPONSIBILITY FOR ANY INFERENCE DRAWN OR DECISION MADE IN CONNECTION WITH THE USE OF THIS RECORDED-DATA.

## Contents

1. Header
2. Disclaimer
3. Contents
4. Well Sketch
5. Borehole Size/Casing/Tubing Record
6. Operational Run Summary
7. Borehole Fluids
8. Remarks and Equipment Summary
9. Survey Record
10. UDComposite 2 Run2\_Log
  - 10.1 Integration Summary
  - 10.2 Software Version
  - 10.3 Composite Summary
  - 10.4 Log ( Drilling Mechanics Log 675 RM MD )
  - 10.5 Parameter Listing
11. Calibration Report
12. Tail

# Well Sketch



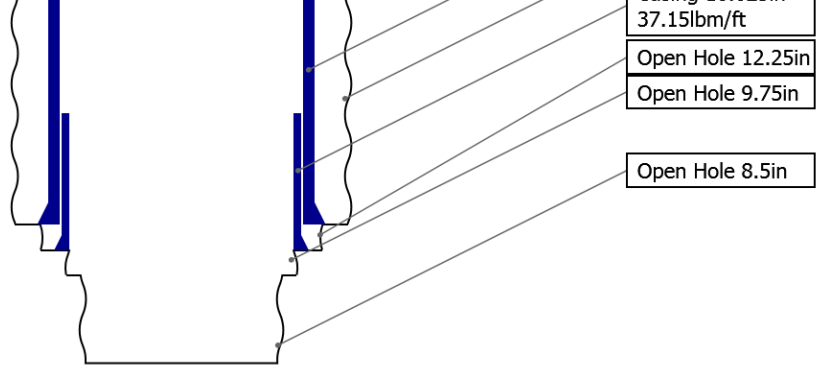
4603.500 m

4756.410 m

4770.220 m

4788.230 m

4901.000 m



## Borehole Size/Casing Record

Bit						
Bit Size ( in )	36	20	17	14.5	12.25	9.75
Top Driller ( m )	1967.5	2021.5	2827.8	3904	4756.41	4770.22
Bottom Driller ( m )	2021.5	2827.8	3904	4756.41	4770.22	4788.23
Casing						
Size ( in )	36	20	13.375	11.75	10.625	
Weight ( lbm/ft )	725.47	129.3	68	60	37.15	
Inner Diameter ( in )	32	18.75	12.415	10.772	9.95	
Grade	X56	X56	N/A	N/A	N/A	
Top Driller ( m )	1967.5	1967.5	1967.5	3882.8	4603.5	
Bottom Driller ( m )	2021.5	2827.8	3904	4756.41	4770.22	
Bit						
Bit Size ( in )	8.5					
Top Driller ( m )	4788.23					
Bottom Driller ( m )	4901					
Casing						
Size						
Weight						
Inner Diameter						
Grade						
Top Driller						
Bottom Driller						

## Operational Run Summary


Parameter ( unit )	Run2				
Date Log Started	05-Feb-2019				
Time Log Started	13:04:23				
Date Log Finished	09-Feb-2019				
Time Log Finished	08:34:49				
Bit Size ( in )	8.500				
Bit Start Depth ( m )	4789.00				
Bit Stop Depth ( m )	4901.00				
Top Log Interval ( m )	4789.00				

Bottom Log Interval ( m )	4901.00					
Max Hole Deviation ( deg )	2.89					
Azimuth of Max Deviation ( deg )	257.63					
Logging Unit Number	OLU-MB8054					
Logging Unit Location	Zone2					
Recorded By	SMoriyama/Zhou Cai					
Witnessed By	Y.Sanada/Y.Kido					
Service Order Number	18JAP0007					

## Borehole Fluids

Parameter( unit )	Run2				
Fluid Type	Water				
Max Recorded Temperatures ( degC )	37				
Source of Sample	Active Tank				
Salinity ( ppm )	119037.2				
Density ( g/cm3 )	1.38				
Funnel Viscosity ( s )	59				
Fluid Loss ( cm3 )	6.7				
PH	10.8				
Source RMF	Pressed				
RMC	Pressed				
RM @ Meas Temp ( ohm.m@degC )	0.07 @ 21.2				
RMF @ Meas Temp ( ohm.m@degC )	0.05 @ 21.5				
RMC @ Meas Temp ( ohm.m@degC )	0.07 @ 21.4				
RM @ BHT ( ohm.m@degC )	0.06 @ 30				
RMF @ BHT ( ohm.m@degC )	0.04 @ 30				
RMC @ BHT ( ohm.m@degC )	0.06 @ 30				
Total Solid ( % )	18				
High Gravity Solids ( % )					

## Remarks and Equipment Summary

Run2: Toolstring		Run2: Remarks	
<b>Equip name</b> X/O: 6 3/4"[2]:74 ET002-6/02	<b>Length</b> 58.69	<b>MP name</b> Schlumberger	<b>Offset</b>
<b>seismicVISION675</b> :42835	58.2	Schlumberger	
		Depth Reference is driller's depth measured from Rotary Table.	
		Data presented is Recorded Mode data which was acquired while drilling.	
		MicroScope record rate is depending on RPM. APWD record rate is 10s.	
		arcVISION GR is environmentally corrected for bit size, mud weight, and potassium content in the mud (1.47% in Run3).	
		Reason of POOH: BHA failure	
		Drilling Time: 47.40 hrs	
		Pumping Time: 57.34 hrs	
		Connection in Lower CLink was twisted off and the lower part than this was left in hole.	

SONICSCOPE6:H03 53.74  
42

Schlumberger



— ROP 50.84

— Delta-T 49.63



TELE675-IWOB:B1 43.79  
755

Schlumberger

— D&I 39.44

• — ROP 37.09

• — IWOB 36.07

ARC6:1805 35.24 Schlumberger

ROP 33.03

GR 31.96  
Resistivity 31.91

Pressure 31.2

MI6:708 29.57 Schlumberger

ROP 27.65

Resistivity 26.71

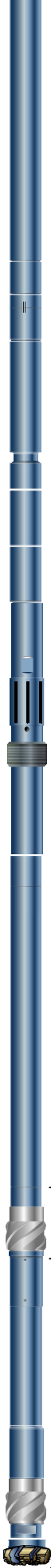
UHRI\_Bt1 25.82  
UHRI\_Bt2 25.81  
UHRI\_Bt3 25.8  
UHRI\_Bt4 25.79  
NBI 25.79  
UHRI 25.79  
UHRI\_Bt5 25.78  
UHRI\_Bt6 25.77  
UHRI\_Bt7 25.77  
UHRI\_Bt8 25.76  
Bit Res, OBM 0.00  
Bit Res, WBM 12.81

CLNK675:30228 24.41

Fit Sub: 6 3/4":TH0 21.87 Schlumberger  
915936-1

Motor: 6 3/4":6150 21.16 Schlumberger  
778





**Filtr Sub: 6 3/4":US** 12.8  
**KW867307-1**

Schlumberger

**X/O: 6 3/4"[1]:LT** 11.59  
**GP622**

Schlumberger

**CLNKL675:33751** 10.97

Schlumberger

**PDXCEED\_675:314** 8.03  
**36**

Schlumberger

**D&I** 4.16

**ROP** 3.37

**Bit: 8 1/2"** 0.26

Smith

TOOL\_ZERO

Lengths are in m  
Maximum Outer Diameter = 8.500 in  
Line: Sensor Location, Value: Gating Offset  
All measurements are relative to TOOL\_ZERO

# Survey Record

## Survey Calculation

Method :	Minimum Radius of Curvature	DLS Method :	Lubinski
North Reference :	Grid North	Total Correction Formula :	Magnetic Dec - Grid Convergence
Grid Convergence :	0.90 deg		

## Rig Location

Latitude :	33° 18' 3.042" N	Longitude :	136° 38' 12.174" E
------------	------------------	-------------	--------------------

## Tie In Point

Measured Depth:	4772.00 m	Inclination:	1.23 deg	Azimuth:	122.08 deg
True Vertical Depth:	4770.21 m	North Displacement:	3.67 m	East Displacement:	47.20 m
N-S VSec Origin:	3.67 m	E-W VSec Origin:	47.20 m	Vertical Section Azimuth:	160.00 deg

## D&I Inits Computed and Values Used - Run2

Geomagnetic Model :	HDGM 2018	Geomagnetic Date :	01-Feb-2019
Computed Location B :	46172.13 nT +/- 300.00nT	Used Location B :	46172.13 nT +/- 300.00nT
Computed Location G :	998.92 mgn +/- 2.50mgn	Used Location G :	998.92 mgn +/- 2.50mgn
Computed Magnetic Dip :	47.02 deg +/- 0.45deg	Used Magnetic Dip :	47.02 deg +/- 0.45deg
Computed Magnetic Dec :	-7.17 deg	Used Magnetic Dec :	-7.17 deg
Computed Total Correction :	-8.07 deg	Used Total Correction :	-8.07 deg

## D&I Inits Computed and Values Used - Run 4

Geomagnetic Model :	HDGM 2018	Geomagnetic Date :	01-Feb-2019
Computed Location B :	46172.13 nT +/- 300.00nT	Used Location B :	46172.13 nT +/- 300.00nT
Computed Location G :	998.92 mgn +/- 2.50mgn	Used Location G :	998.92 mgn +/- 2.50mgn
Computed Magnetic Dip :	47.02 deg +/- 0.45deg	Used Magnetic Dip :	47.02 deg +/- 0.45deg
Computed Magnetic Dec :	-7.17 deg	Used Magnetic Dec :	-7.17 deg
Computed Total Correction :	-8.07 deg	Used Total Correction :	-8.07 deg

## Survey Quality Index

2 : Long Survey failed mag criteria	9 : Manual	28 : Tie-In Point
-------------------------------------	------------	-------------------

## Survey Correction Index

0 : No correction
-------------------

## Survey Description Index

0 : Not Flagged Survey	7 : Projection to Bit
------------------------	-----------------------

Seq	MD (m)	Incl (deg)	Azim (deg)	Course (m)	TVD (m)	V Sec (m)	N/ -S (m)	E/ -W (m)	Closure (m)	at Azim (deg)	DLS deg/30m	Tool Type	QI	CI	DI
1	4772.00	1.23	122.08	----	4770.21	0.00	3.67	47.20	47.34	85.55	0.00	TIP	28	0	0
2	4786.06	1.13	256.75	14.06	4784.27	0.10	3.56	47.19	47.33	85.69	4.65	TeleScope	2	0	0
3	4794.51	0.80	37.26	8.44	4792.71	0.06	3.59	47.15	47.28	85.65	6.46	TeleScope	2	0	0
4	4804.29	0.81	29.65	9.79	4802.50	-0.02	3.70	47.22	47.37	85.52	0.33	TeleScope	2	0	0
5	4809.67	1.10	31.96	5.38	4807.88	-0.08	3.78	47.27	47.42	85.43	1.61	TeleScope	2	0	0
6	4820.42	1.32	52.44	10.75	4818.63	-0.18	3.94	47.42	47.58	85.25	1.35	TeleScope	2	0	0
7	4829.98	1.42	56.81	9.56	4828.18	-0.24	4.07	47.61	47.78	85.11	0.46	TeleScope	2	0	0
8	4839.14	0.58	348.19	9.16	4837.34	-0.31	4.18	47.69	47.88	84.99	4.35	TeleScope	2	0	0
9	4846.61	1.57	281.65	7.47	4844.81	-0.40	4.24	47.59	47.77	84.91	5.78	TeleScope	2	0	0
10	4859.59	2.89	257.63	12.98	4857.78	-0.54	4.20	47.09	47.28	84.90	3.67	TeleScope	2	0	0
11	4901.00	2.89	257.63	41.41	4899.14	-0.81	3.76	45.05	45.21	85.23	0.00	Other	9	0	7

## UDComposite 2

## Run2\_Log

## Software Version

Acquisition System	Version
Maxwell 2018 SP2	8.2.104493.3100

## Composite Summary

Run Name	Pass Objective	Direction	Top	Bottom	Start	Stop	Include Parallel Data
Run2	Ream Down 1	Down	4844.36 m	4850.23 m	07-Feb-2019	07-Feb-2019	No

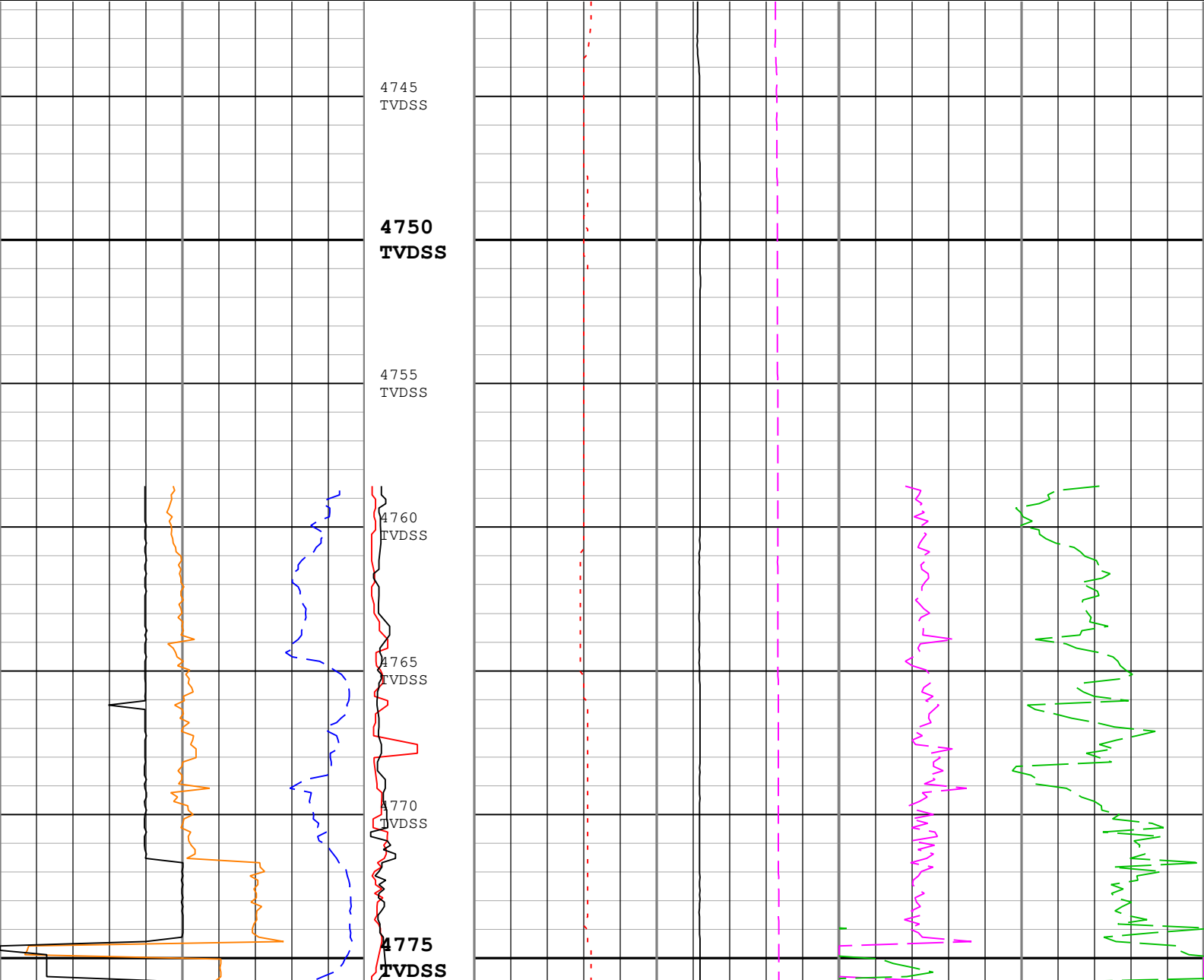


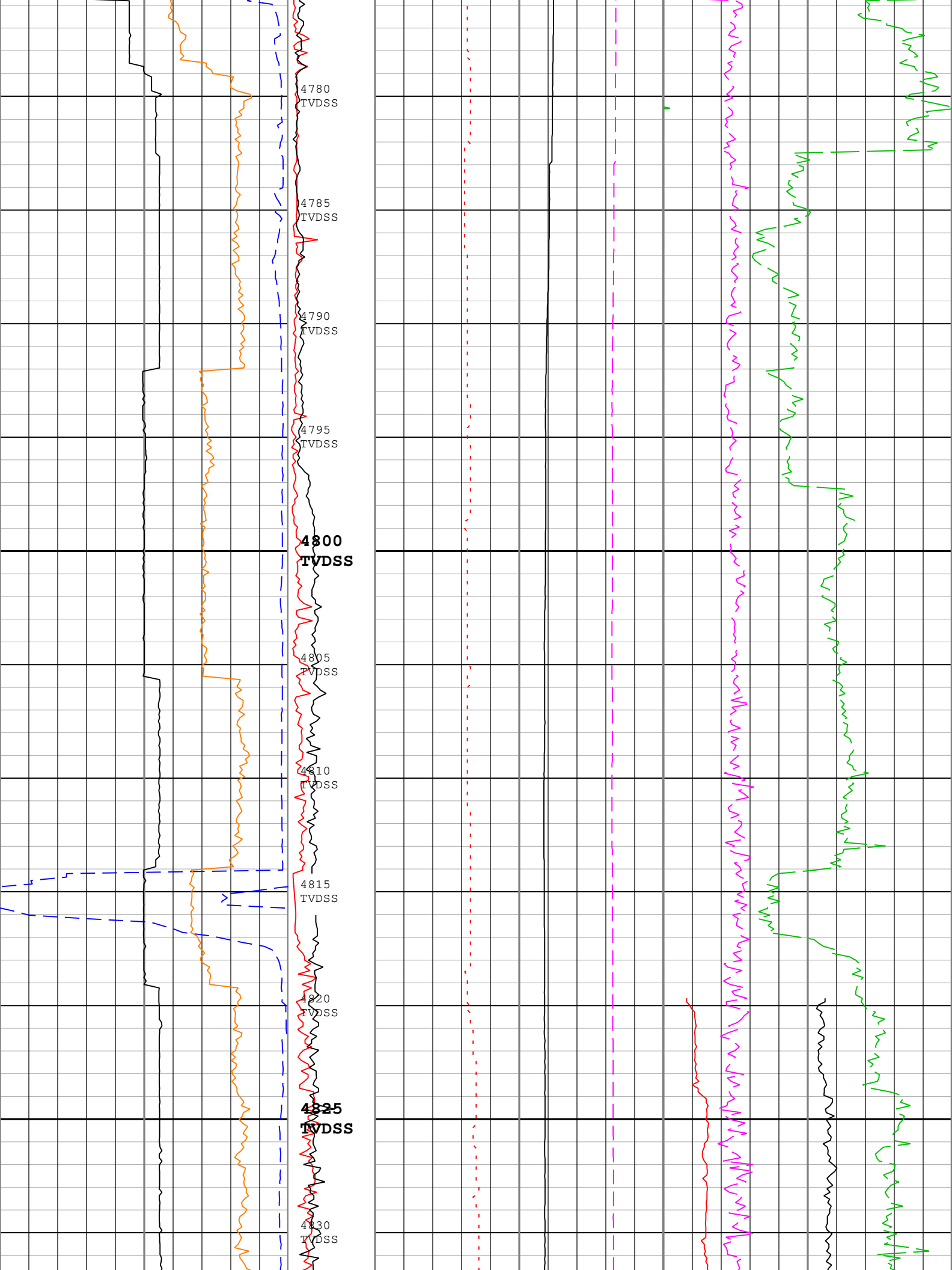
Run2	Drilling	Down	4788.92 m	4901.08 m	05-Feb-2019 1:04:23 PM	5:25:54 PM 09-Feb-2019 8:34:49 AM	No
------	----------	------	-----------	-----------	---------------------------	---	----

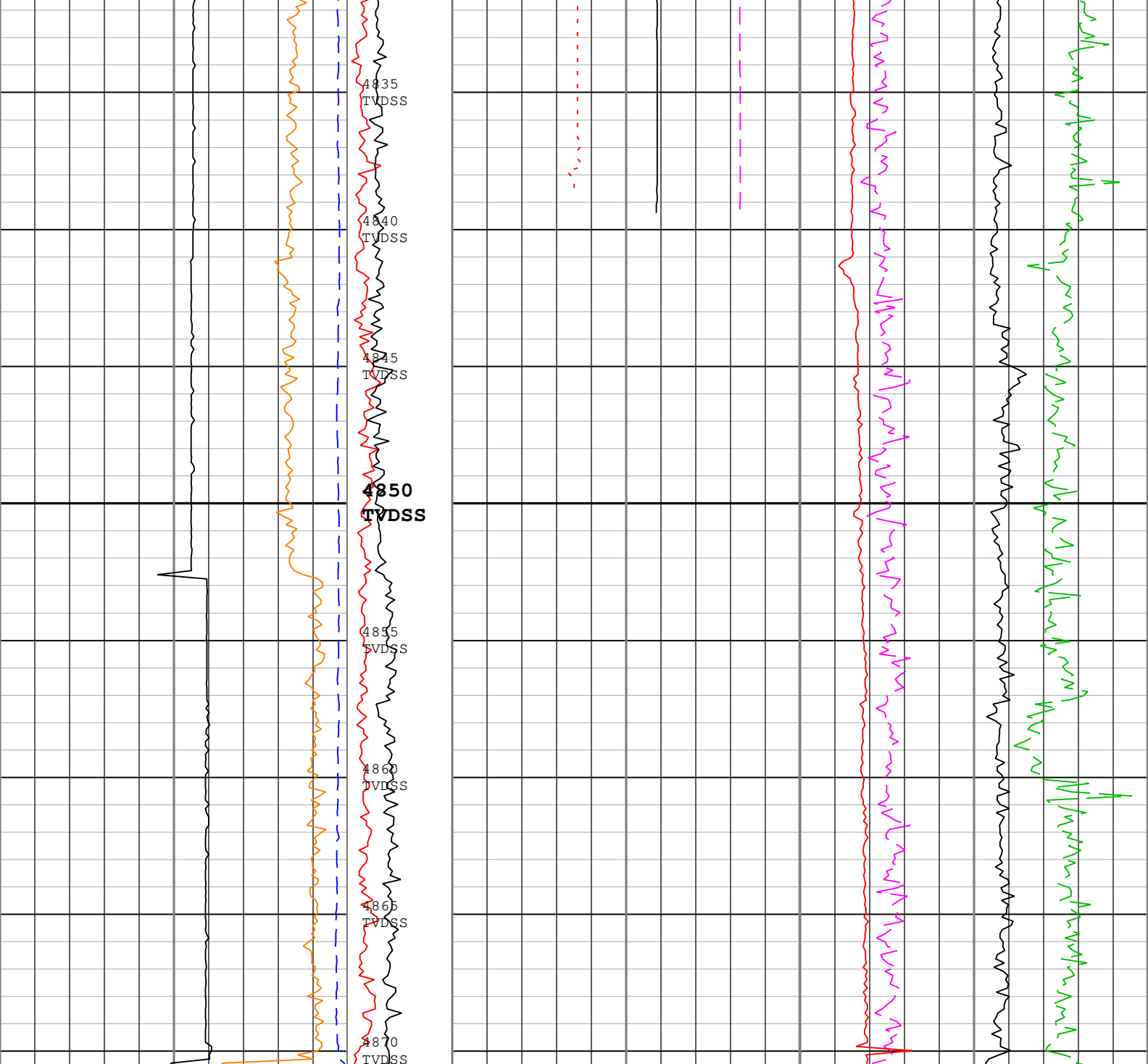
All depths are referenced to toolstring zero

Description: Format: Log ( Drilling Mechanics Log 675 RM MD ) Index Scale: 1:200 Index Unit: m Index Type: SSTVD Creation Date: 28-Feb-2019 16:33:07

Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT 0 100 c/min 400	Stick Slip Indicator (STICKNSLI) P TeleScope[1] RM	Downhole Annulus Pressure (APRS_ARC) ARC[1] RM 0 80000 kPa	Surface Torque (TQA) RT 0 50 kN.m
	Collar Rotational Speed (CRPM) TeleScope[1] RM	Downhole Annulus Temperature (ATMP) ARC[1] RM 0 100 degC	Downhole Weight on Bit (DWOB_RT) TeleScope[1] RT -300 300 kN
Standpipe Pressure (SPPA) RT 0 30000 kPa	Equivalent Circulating Density (ECD_ARC) ARC[1] RM 0.8 1.8 g/cm3	Downhole Torque (MWD) (DTOR_RT) TeleScope[1] RT 0 50 kN.m	Surface Weight On Bit (SWOB) RT -300 300 kN
Total flow rate of all active pumps (TFLO) RT 0 1000 gal/min			







<b>Rate of penetration averaged over the last 5 ft (1.5 m) (ROP5) RT</b> 100 m/h 0	<b>Stick Slip Indicator (STICKNSLIP) P</b> TeleScope[1] RM 0 c/min 400	<b>Downhole Annulus Pressure (APRS_ARC) ARC[1] RM</b> 0 kPa 80000	<b>Surface Torque (TQA) RT</b> 0 kN.m 50
<b>Standpipe Pressure (SPPA) RT</b> 0 kPa 30000	<b>Collar Rotational Speed (CRPM) TeleScope[1] RM</b> 0 c/min 200	<b>Downhole Annulus Temperature (ATMP) ARC[1] RM</b> 0 degC 100	<b>Downhole Weight on Bit (DWOB_RT) TeleScope[1] RT</b> -300 kN 300
<b>Total flow rate of all active pumps (TFLO) RT</b> 0 gal/min 1000		<b>Equivalent Circulating Density (ECD_ARC) ARC[1] RM</b> 0.8 g/cm3 1.8	<b>Surface Weight On Bit (SWOB) RT</b> -300 kN 300
			<b>Downhole Torque (MWD) (DTOR_RT) TeleScope[1] RT</b> 0 kN.m 50

Description: Format: Log ( Drilling Mechanics Log 675 RM MD ) Index Scale: 1:200 Index Unit: m Index Type: SSTVD Creation Date: 28-Feb-2019 16:33:07

### Channel Processing Parameters

## Parameter Processing Parameters

### Run2: Parameters

Parameter	Description	Tool	Value	Unit
DEPTH_SEL	Depth Selection Parameter	DNMSESSION	Driller's Depth	
DFD	Drilling Fluid Density	Borehole	1.38	g/cm3
FLEV	Depth of Drilling Fluid Level to LMF (Log Measured From)	Borehole	3	m
RHO_SEAWATER	Density of the Sea Water	Borehole	1.022	g/cm3
SF_FLAG	Mud Return to Sea Floor (No Riser)?	Borehole	No	

### Tool Control Parameters

### Run2: Parameters

Parameter	Description	Tool	Value	Unit
DTOF	DTOR Offset	TELE675-IWOB	Time Zoned	kN.m
DWOB_BETA	DWOB Beta Pressure Correction Factor	TELE675-IWOB	Time Zoned	
DWOF	DWOB Offset	TELE675-IWOB	Time Zoned	kN
DWOB_ZEROTOOLP	DWOB Differential Pressure Drop at Zero Weight-on-Bit	TELE675-IWOB	Time Zoned	MPa
OFFBTM_TH	Threshold for deciding whether the bit is off bottom	DNMSESSION	Time Zoned	m

### Run2Time Zoned Parameters

### Pass Drilling

Parameter	Value	Start Time	Stop Time	Start Depth ( m )	Stop Depth ( m )
DTOF		05-Feb-2019 13:04:23	07-Feb-2019 16:41:28	4760.416	4821.732
DTOF	-22.82	07-Feb-2019 16:41:28	07-Feb-2019 21:58:26	4821.732	4832.273
DTOF	-22.94	07-Feb-2019 21:58:26	09-Feb-2019 08:34:49	4832.273	4872.582
DWOB_BETA		05-Feb-2019 13:04:23	07-Feb-2019 16:48:21	4760.416	4821.732
DWOB_BETA	4.48	07-Feb-2019 16:48:21	07-Feb-2019 22:01:47	4821.732	4832.273
DWOB_BETA	4.4	07-Feb-2019 22:01:47	07-Feb-2019 22:02:51	4832.273	4832.273
DWOB_BETA	4.39	07-Feb-2019 22:02:51	08-Feb-2019 05:53:13	4832.273	4852.161
DWOB_BETA	4.35	08-Feb-2019 05:53:13	09-Feb-2019 08:34:49	4852.161	4872.582
DWOF		05-Feb-2019 13:04:23	07-Feb-2019 16:48:21	4760.416	4821.732
DWOF	-449.27	07-Feb-2019 16:48:21	07-Feb-2019 22:01:47	4821.732	4832.273
DWOF	-444.82	07-Feb-2019 22:01:47	08-Feb-2019 05:53:13	4832.273	4852.161
DWOF	-453.72	08-Feb-2019 05:53:13	09-Feb-2019 08:34:49	4852.161	4872.582
DWOB_ZEROTOOLP		05-Feb-2019 13:04:23	07-Feb-2019 16:48:21	4760.416	4821.732
DWOB_ZEROTOOLP	4.23	07-Feb-2019 16:48:21	07-Feb-2019 22:01:47	4821.732	4832.273
DWOB_ZEROTOOLP	4.33	07-Feb-2019 22:01:47	07-Feb-2019 22:02:51	4832.273	4832.273
DWOB_ZEROTOOLP	4.34	07-Feb-2019 22:02:51	08-Feb-2019 05:53:13	4832.273	4852.161
DWOB_ZEROTOOLP	4.24	08-Feb-2019 05:53:13	09-Feb-2019 08:34:49	4852.161	4872.582
OFFBTM_TH	0.4	05-Feb-2019 13:04:23	06-Feb-2019 18:44:31	4760.416	4777.586
OFFBTM_TH	0.6	06-Feb-2019 18:44:31	09-Feb-2019 08:34:49	4777.586	4872.582

### Pass Ream Down 1

DTOF		07-Feb-2019 15:05:21	07-Feb-2019 16:41:28	4815.864	4821.706
DTOF	-22.82	07-Feb-2019 16:41:28	07-Feb-2019 17:25:54	4821.706	4821.732
DWOB_BETA		07-Feb-2019 15:05:21	07-Feb-2019 16:48:21	4815.864	4821.706
DWOB_BETA	4.48	07-Feb-2019 16:48:21	07-Feb-2019 17:25:54	4821.706	4821.732
DWOF		07-Feb-2019 15:05:21	07-Feb-2019 16:48:21	4815.864	4821.706
DWOF	-449.27	07-Feb-2019 16:48:21	07-Feb-2019 17:25:54	4821.706	4821.732

DWOB_ZEROTOOLP		07-Feb-2019 15:05:21	07-Feb-2019 16:48:21	4815.864	4821.706
DWOB_ZEROTOOLP	4.23	07-Feb-2019 16:48:21	07-Feb-2019 17:25:54	4821.706	4821.732
OFFBTM_TH	0.6	07-Feb-2019 15:05:24	07-Feb-2019 17:25:54	4815.864	4821.732

All depth are at tool zero.

## Calibration Report

### ARC6 (Array Resistivity Compensated 675) Calibration - Run Run2

**Primary Equipment :**

Elec. Chassis HP with AIM Receiver

AREA

126

### RESAIRCAL - Resistivity: Air

Master (Time Frame File): 18:57:26 15-Nov-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Attenuation T1 at 2 MHz	dB	Master	8.500	6.500	8.275	10.500	
Attenuation T2 at 2 MHz	dB	Master	6.500	4.500	6.730	8.500	
Attenuation T3 at 2 MHz	dB	Master	4.500	2.500	4.874	6.500	
Attenuation T4 at 2 MHz	dB	Master	4.600	2.600	4.625	6.600	
Attenuation T5 at 2 MHz	dB	Master	3.600	1.600	3.419	5.600	
Phase Shift T1 at 2 MHz	deg	Master	0.100	-3.900	1.048	4.100	
Phase Shift T2 at 2 MHz	deg	Master	0.100	-3.900	-1.065	4.100	
Phase Shift T3 at 2 MHz	deg	Master	0.100	-3.900	0.993	4.100	
Phase Shift T4 at 2 MHz	deg	Master	0.100	-3.900	-1.095	4.100	
Phase Shift T5 at 2 MHz	deg	Master	0.100	-3.900	1.001	4.100	
Attenuation T1 at 400 KHz	dB	Master	8.500	6.500	8.324	10.500	
Attenuation T2 at 400 KHz	dB	Master	6.500	4.500	6.691	8.500	
Attenuation T3 at 400 KHz	dB	Master	4.500	2.500	4.919	6.500	
Attenuation T4 at 400 KHz	dB	Master	4.600	2.600	4.580	6.600	
Attenuation T5 at 400 KHz	dB	Master	3.600	1.600	3.477	5.600	
Phase Shift T1 at 400 KHz	deg	Master	0.100	-3.900	0.501	4.100	
Phase Shift T2 at 400 KHz	deg	Master	0.100	-3.900	-0.470	4.100	
Phase Shift T3 at 400 KHz	deg	Master	0.100	-3.900	0.493	4.100	
Phase Shift T4 at 400 KHz	deg	Master	0.100	-3.900	-0.501	4.100	
Phase Shift T5 at 400 KHz	deg	Master	0.100	-3.900	0.480	4.100	

### GRGAIN - Gamma Ray: Blanket

Master (Time Frame File): 00:06:52 15-Nov-2018

Measurement	Unit	Phase	Nominal	Low Limit	Actual	High Limit	
Gamma Ray Calibration Gain		Master	1.000	0.580	1.081	1.250	

**Company:** JAMSTEC  
**Well:** C0002S  
**Field:** C0002  
**Rig Name:** D/V Chikyu  
**Prefecture:** Wakayama  
**Country:** Japan



**Drilling Mechanics Log**

**DML**

Single Run Log, True Vertical Depth Sub Sea 1:200