HALLIBURTON
Sperry Drilling Services

RIG MONITORING
DRILLING LOG 1:1000

Company	:	**Woodside Energy Ltd**
Rig	:	**Ocean Patriot**
Well	:	**Halladale -1 DW1(L Black Watch)**
Field	:	**Black Watch**
Country	:	**Australia**
DOE Number	:	

Country : **Australia**
Field : **Black Watch**
Location : **Lat: 38° 34' 45.54" South**
Long: 142° 43' 50.95" East
Well : **Halladale -1 DW1(L Black Watch)**
Company : **Woodside Energy Ltd**
Rig : **Ocean Patriot**

LOCATION
Latitude : **38° 34' 45.54" South**
Longitude : **142° 43' 50.95" East**
UTM Easting = **650,763.20 m**
UTM Northing = **5,728,485.20 m**

Other Services
FEWD
Directional Drilling

Permanent Datum : **LAT** Elevation : **0.00 m**
Log Measured From : **Drill Floor** **21.50 m** Above Permanent Datum
Drilling Measured From : **Drill Floor**

MD LOG

Elev. KB **0.00 m**
DF **21.50 m**
GL **0.00 m**
WD **44.80 m**

Depth Logged : **66.30 m** To **1,918.00 m** Unit No. : **197** Job No. : **AU-FE-0003325470**
Date Logged : **22-Mar-05** To **10-Apr-05**
Total Depth MD : **1,918.00 m** TVD : **1,869.17 m** Plot Type : **Final**
Spud Date : **22-Mar-05** Plot Date : **28-Jun-05**

Borehole Record (MD)

Run No.	Size	From	To
1	914.400 mm	66.30 m	69.00 m
2	444.500 mm	69.00 m	101.00 m
3	444.500 mm	101.00 m	427.00 m
4	311.150 mm	427.00 m	839.00 m
5	215.900 mm	839.00 m	1,791.00 m
6	215.900 mm	1,791.00 m	1,798.80 m
7	215.900 mm	1,798.80 m	1,918.00 m

Borehole Record (MD)

Run No.	Size	From	To

Casing Record (MD)

Size	Weight	From	To
762.000 mm	458.00 kgpm	SURFACE	99.50 m
340.000 mm	101.00 kgpm	SURFACE	421.00 m
244.000 mm	70.00 kgpm	SURFACE	834.00 m

LEGEND

Abbreviations and Symbols

Drilling Data

BG	Background Gas
BHT	Bottomhole Temp
C	Carbide Test
CB	Core Bit
CG	Connection Gas
CKF	Check For Flow
CO	Circulate Out
DB	Diamond Bit
DC	Depth Correction
DS	Direction Survey
DST	Drillstem Test
FLT	Flowline Temp.
LAT	Logged After Trip
NB	New Bit
NR	No Returns
PDC	Polycrystalline Diamond Compound Bit
PR	Partial Returns
RPM	Revs Per Minute
RRB	Rerun Bit
STG	Short Trip Gas
TB	Turbo Drill
TG	Trip Gas
U	Gas Units
WOB	Weight On Bit

Mud Data

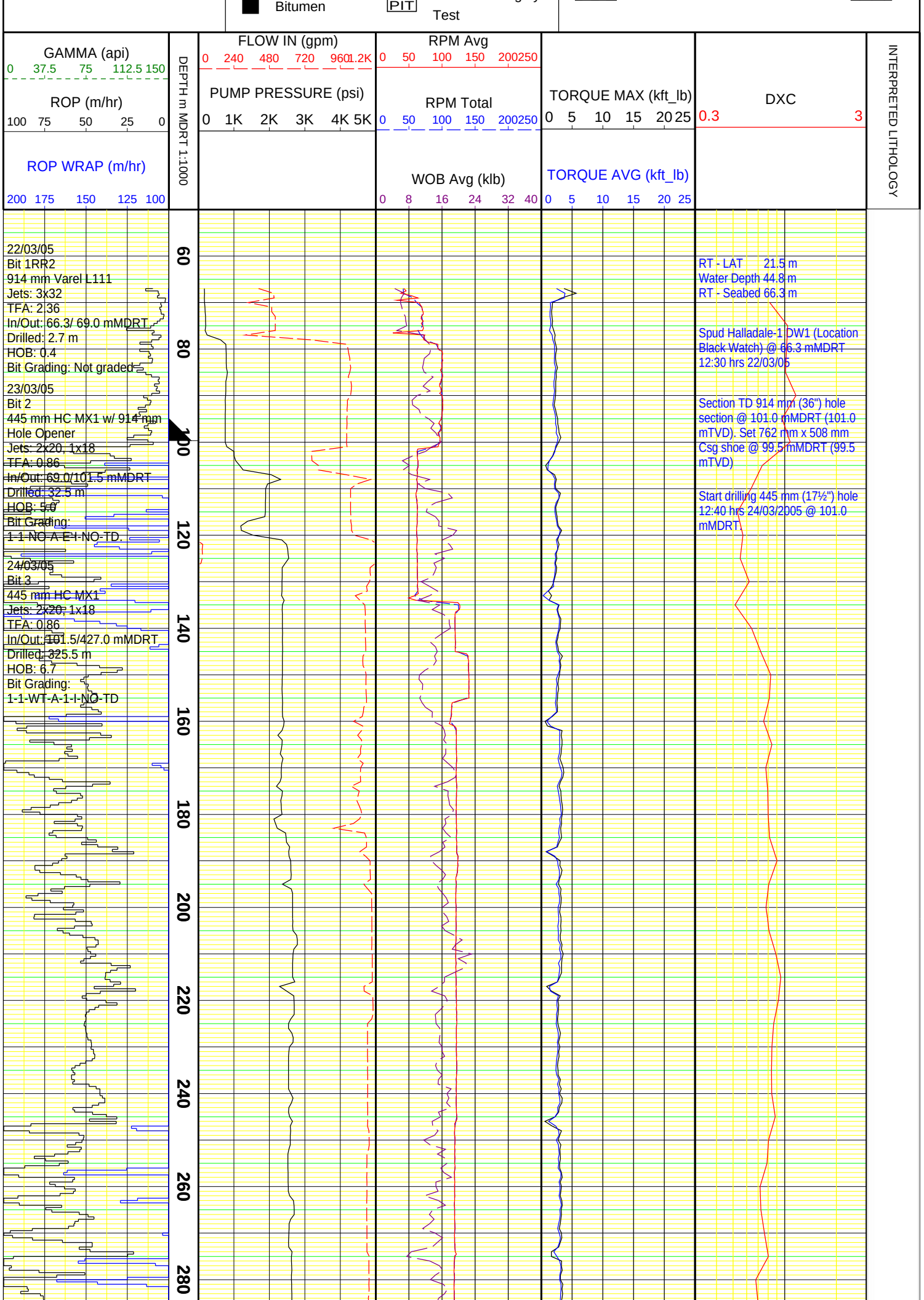
Cl-	Chloride Ion Conc
FC	Filter Cake
FL	Filtrate Loss
G	Gels
pH	Hydrogen Ion Content
PV	Plastic Viscosity
Rm	Mud Resistivity
Rmf	Filtrate Resistivity
S	Solids Content
Vis	Funnel Viscosity
MW	Mud Weight
YP	Yield Point

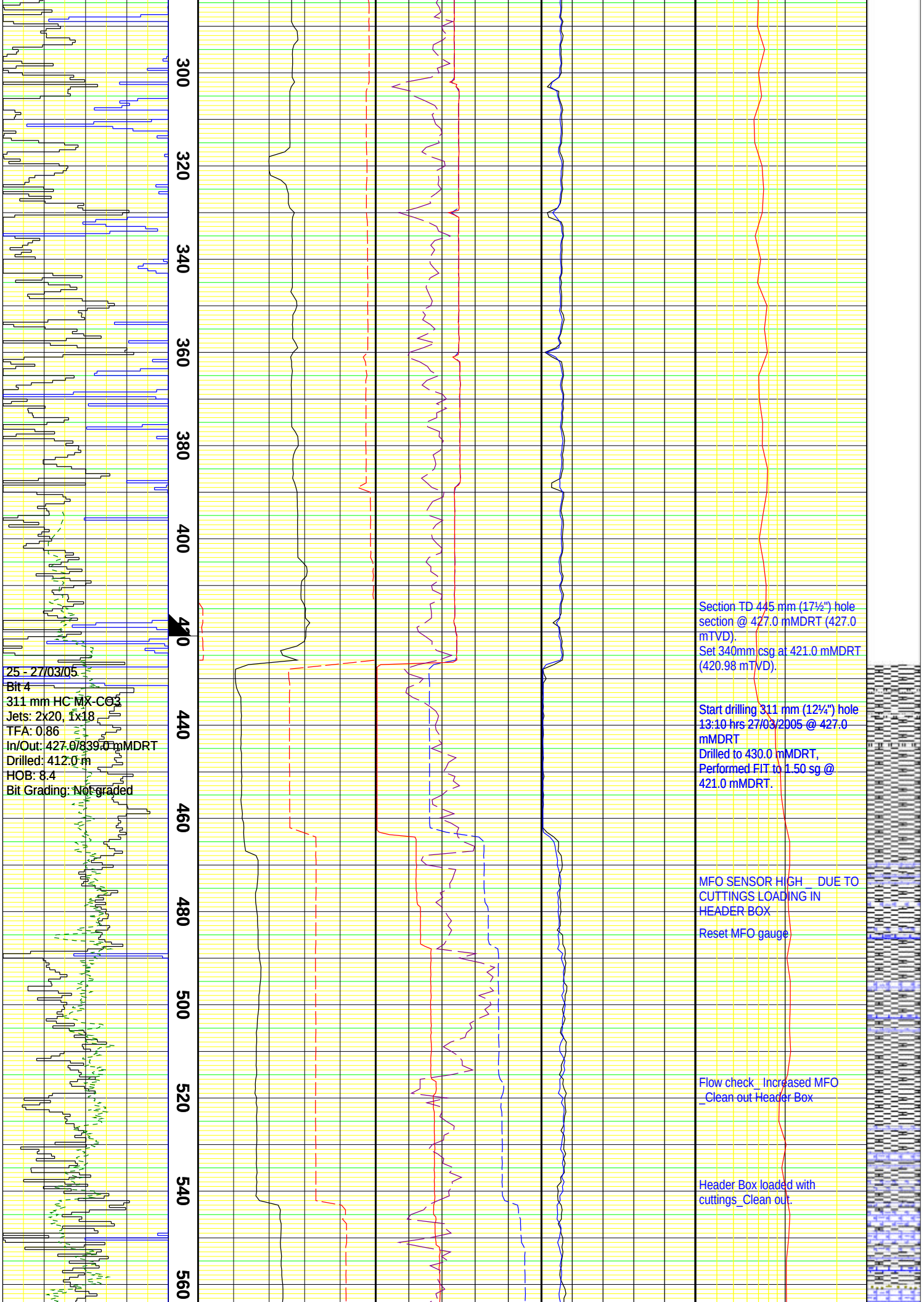
Engineering Data

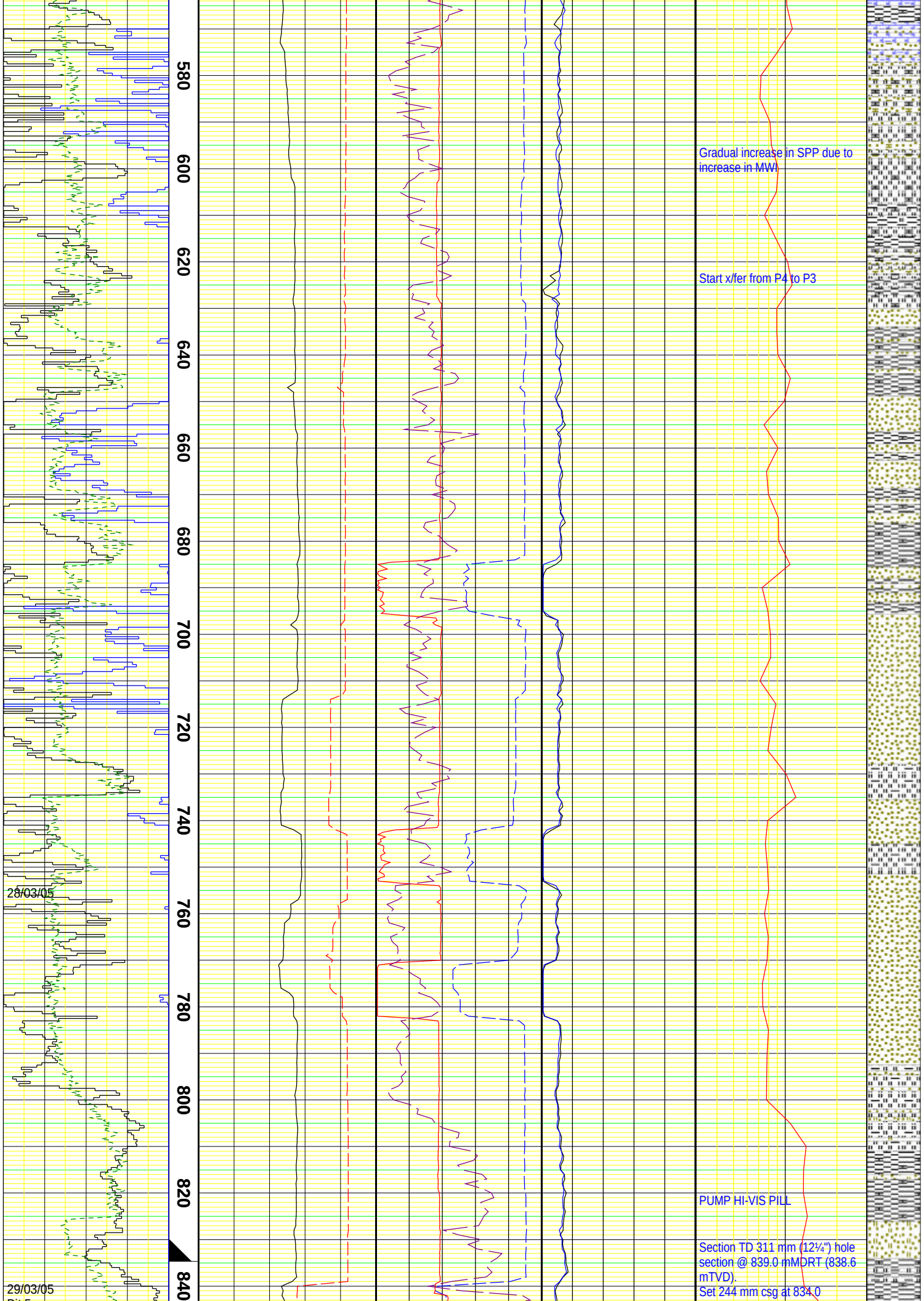
Core No. — Water
DST No. — Salt Water
Casing Seat — Fresh Water
Side Wall Core — Hydrocarbons Smell
Gas Traces — H2S Smell
Gas — RFT — Interval Tester
Oil Traces — E-LOG — Wireline Log Run
Oil — LOT — Leakoff Test
Pressure Integrity

Lithology Symbols

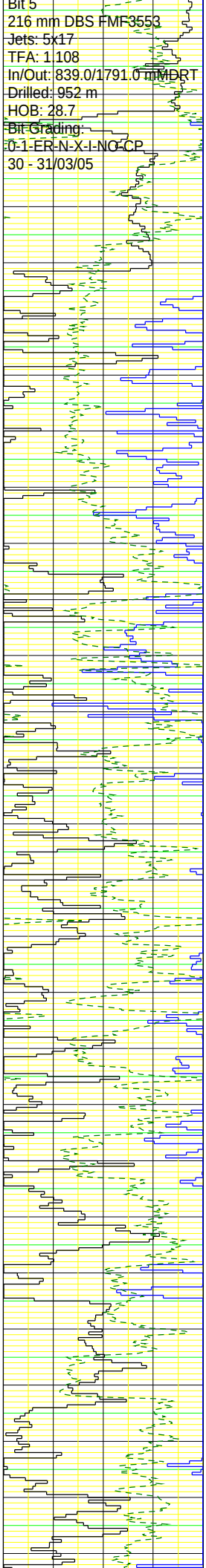
Sandstone
Sandy Claystone
Calcareous Sandstone
Silty Claystone
Glauconitic Sandstone
Calcarenite
Silty Sandstone
Argillaceous Calcarenite
Argillaceous Sandstone
Sandy Calcarenite
Siltstone
Calcisiltite
Sandy Siltstone
Calcilutite
Argillaceous Siltstone
Argillaceous Calcilutite
Claystone
Limestone
Clacareous Claystone
Dolomite

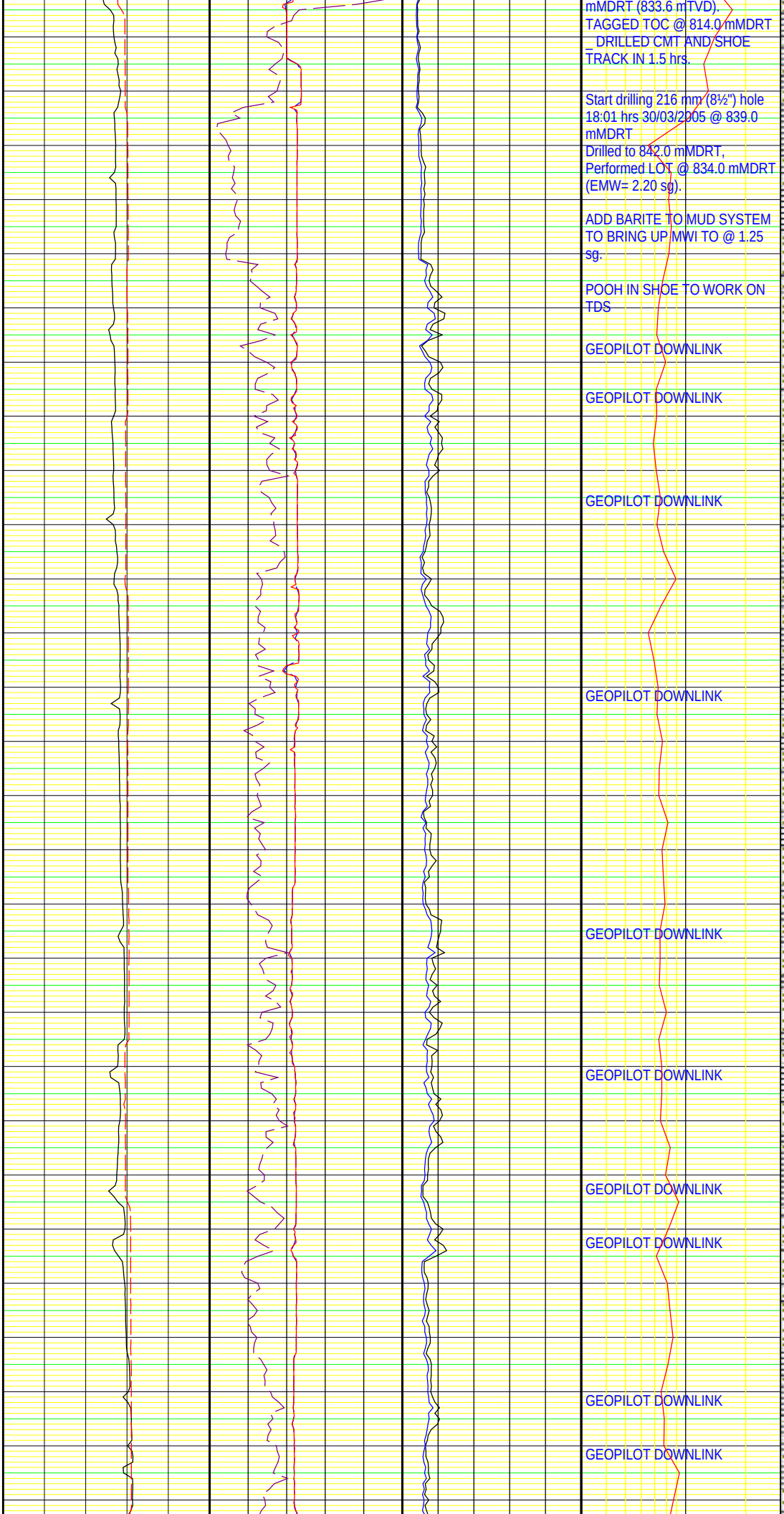

Bitumen
PIT
Test
GAMMA (api)
0 37.5 75 112.5 150
ROP (m/hr)
100 75 50 25 0
ROP WRAP (m/hr)
200 175 150 125 100
DEPTH m MDRT 1:1000
FLOW IN (gpm)
0 240 480 720 960 1.2K
PUMP PRESSURE (psi)
0 1K 2K 3K 4K 5K
RPM Avg
0 50 100 150 200 250
RPM Total
0 50 100 150 200 250
WOB Avg (klb)
0 8 16 24 32 40
TORQUE MAX (kft_lb)
0 5 10 15 20 25
TORQUE AVG (kft_lb)
0 5 10 15 20 25
DXC
0.3 3
INTERPRETED LITHOLOGY
60
80
100
120
140
160
180
200
220
240
260
280
22/03/05
Bit 1RR2
914 mm Varel L111
Jets: 3x32
TFA: 2.36
In/Out: 66.3/ 69.0 mMDRT
Drilled: 2.7 m
HOB: 0.4
Bit Grading: Not graded
23/03/05
Bit 2
445 mm HC MX1 w/ 914 mm
Hole Opener
Jets: 2x20, 1x18
TFA: 0.86
In/Out: 69.0/101.5 mMDRT
Drilled: 32.5 m
HOB: 5.0
Bit Grading:
1-1-NO-A-E-I-NO-TD.
24/03/05
Bit 3
445 mm HC MX1
Jets: 2x20, 1x18
TFA: 0.86
In/Out: 101.5/427.0 mMDRT
Drilled: 325.5 m
HOB: 6.7
Bit Grading:
1-1-WT-A-1-I-NO-TD
RT - LAT 21.5 m
Water Depth 44.8 m
RT - Seabed 66.3 m
Spud Halladale-1 DW1 (Location Black Watch) @ 66.3 mMDRT 12:30 hrs 22/03/05
Section TD 914 mm (36") hole section @ 101.0 mMDRT (101.0 mTVD). Set 762 mm x 508 mm Csg shoe @ 99.5 mMDRT (99.5 mTVD)
Start drilling 445 mm (17½") hole 12:40 hrs 24/03/2005 @ 101.0 mMDRT.


300
320
340
360
380
400
420
440
460
480
500
520
540
560
25 - 27/03/05
Bit 4
311 mm HC MX-C03
Jets: 2x20, 1x18
TFA: 0.86
In/Out: 427.0/839.0 mMDRT
Drilled: 412.0 m
HOB: 8.4
Bit Grading: Not graded
Section TD 445 mm (17½") hole section @ 427.0 mMDRT (427.0 mTVD).
Set 340mm csg at 421.0 mMDRT (420.98 mTVD).
Start drilling 311 mm (12¼") hole 13:10 hrs 27/03/2005 @ 427.0 mMDRT
Drilled to 430.0 mMDRT, Performed FIT to 1.50 sg @ 421.0 mMDRT.
MFO SENSOR HIGH _ DUE TO CUTTINGS LOADING IN HEADER BOX
Reset MFO gauge
Flow check _ Increased MFO _Clean out Header Box
Header Box loaded with cuttings_Clean out.


580
600
620
640
660
680
700
720
740
760
780
800
820
840
28/03/05
29/03/05
Gradual increase in SPP due to increase in MW)
Start x/fer from P4 to P3
PUMP HI-VIS PILL
Section TD 311 mm (12¼") hole section @ 839.0 mMDRT (838.6 mTVD).
Set 244 mm csg at 834.0

Bit 5
216 mm DBS FMF3553
Jets: 5x17
TFA: 1.108
In/Out: 839.0/1791.0 mMDRT
Drilled: 952 m
HOB: 28.7
Bit Grading:
0-1-ER-N-X-I-NO-CP
30 - 31/03/05





mMDRT (833.6 mTVD).
TAGGED TOC @ 814.0 mMDRT
_ DRILLED CMT AND SHOE TRACK IN 1.5 hrs.

Start drilling 216 mm (8½") hole 18:01 hrs 30/03/2005 @ 839.0 mMDRT
Drilled to 842.0 mMDRT, Performed LOT @ 834.0 mMDRT (EMW= 2.20 sg).

ADD BARITE TO MUD SYSTEM TO BRING UP MWI TO @ 1.25 sg.

POOH IN SHOE TO WORK ON TDS

GEOPILOT DOWNLINK

GEOPILOT DOWNLINK

GEOPILOT DOWNLINK

GEOPILOT DOWNLINK

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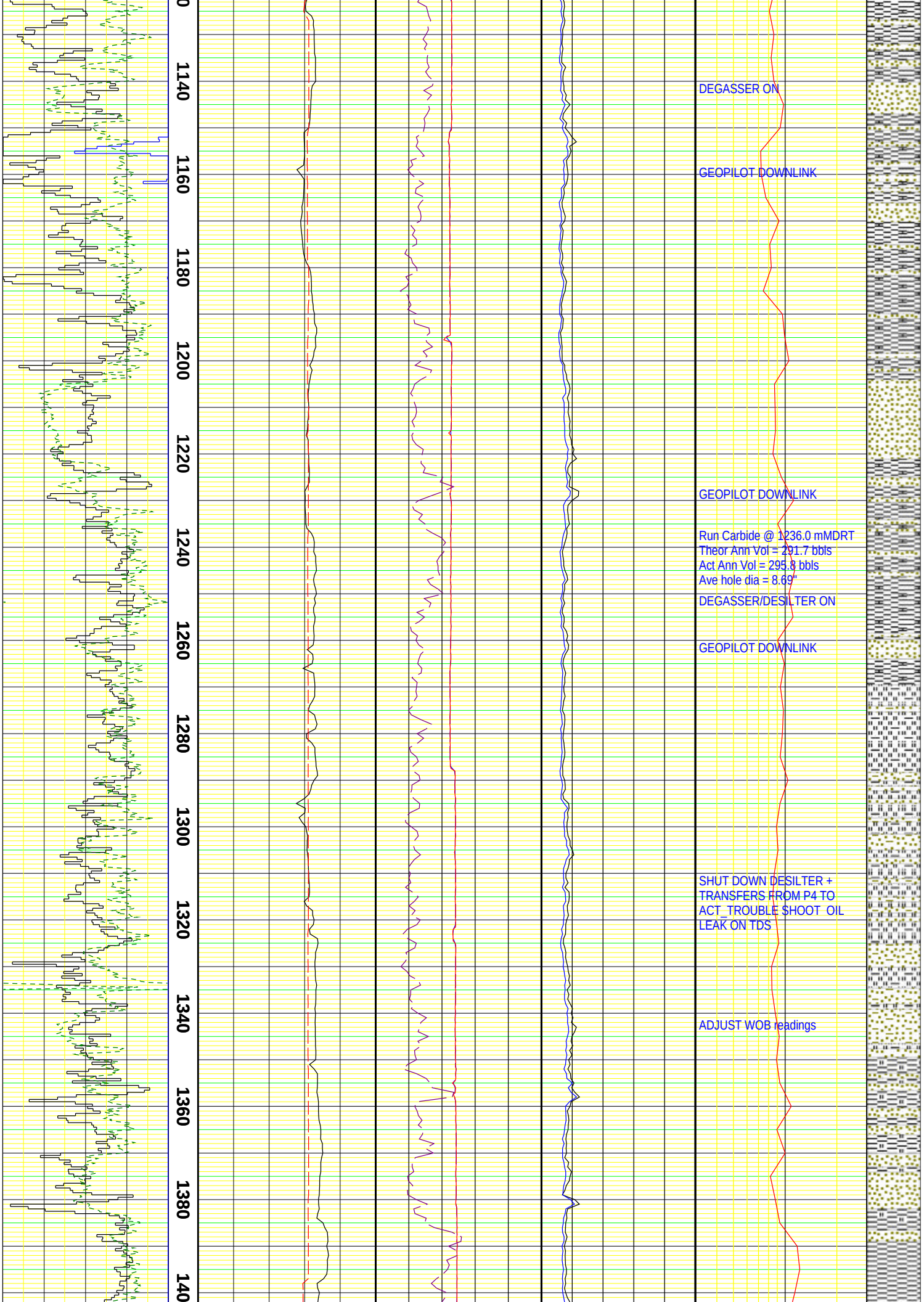
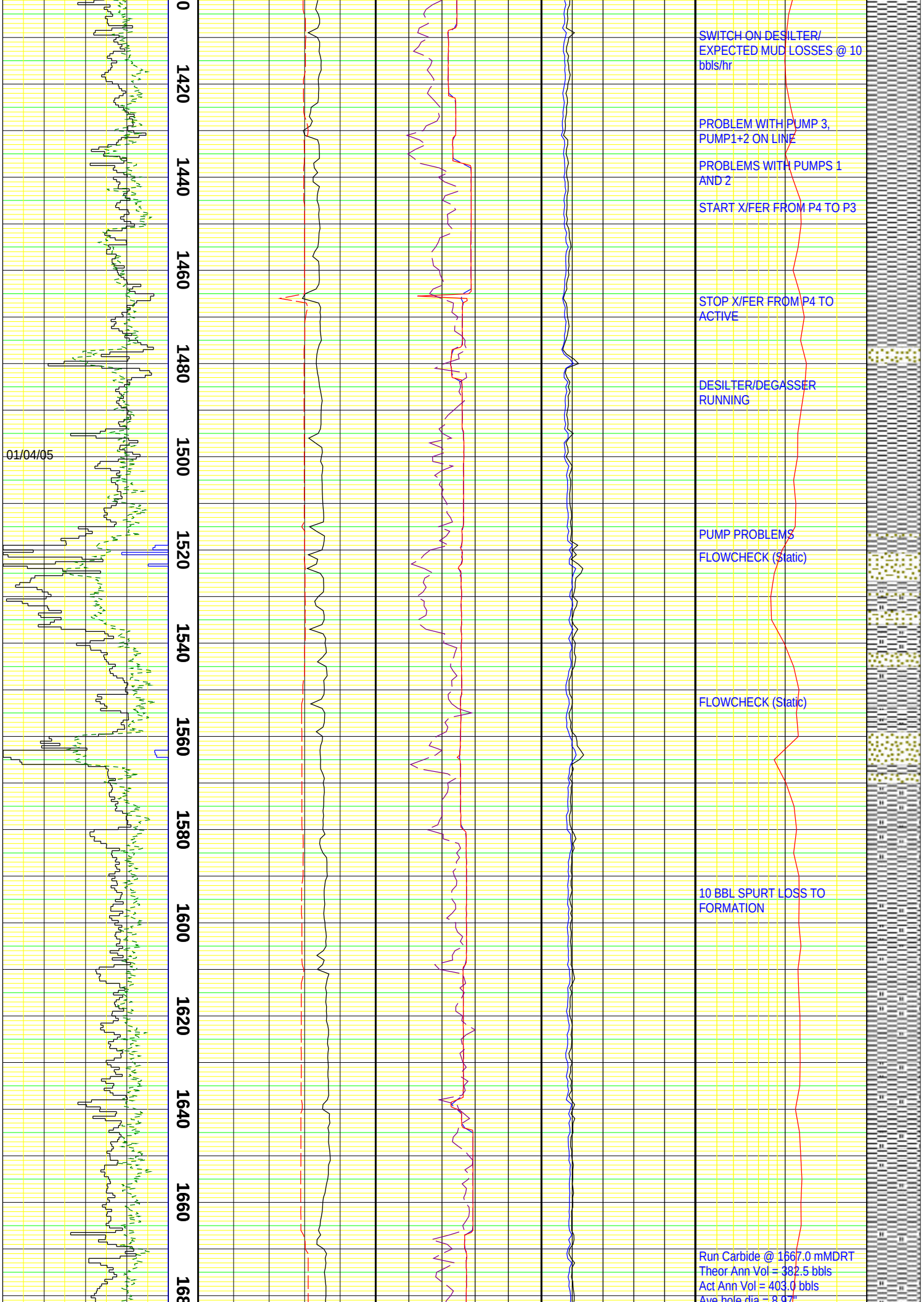
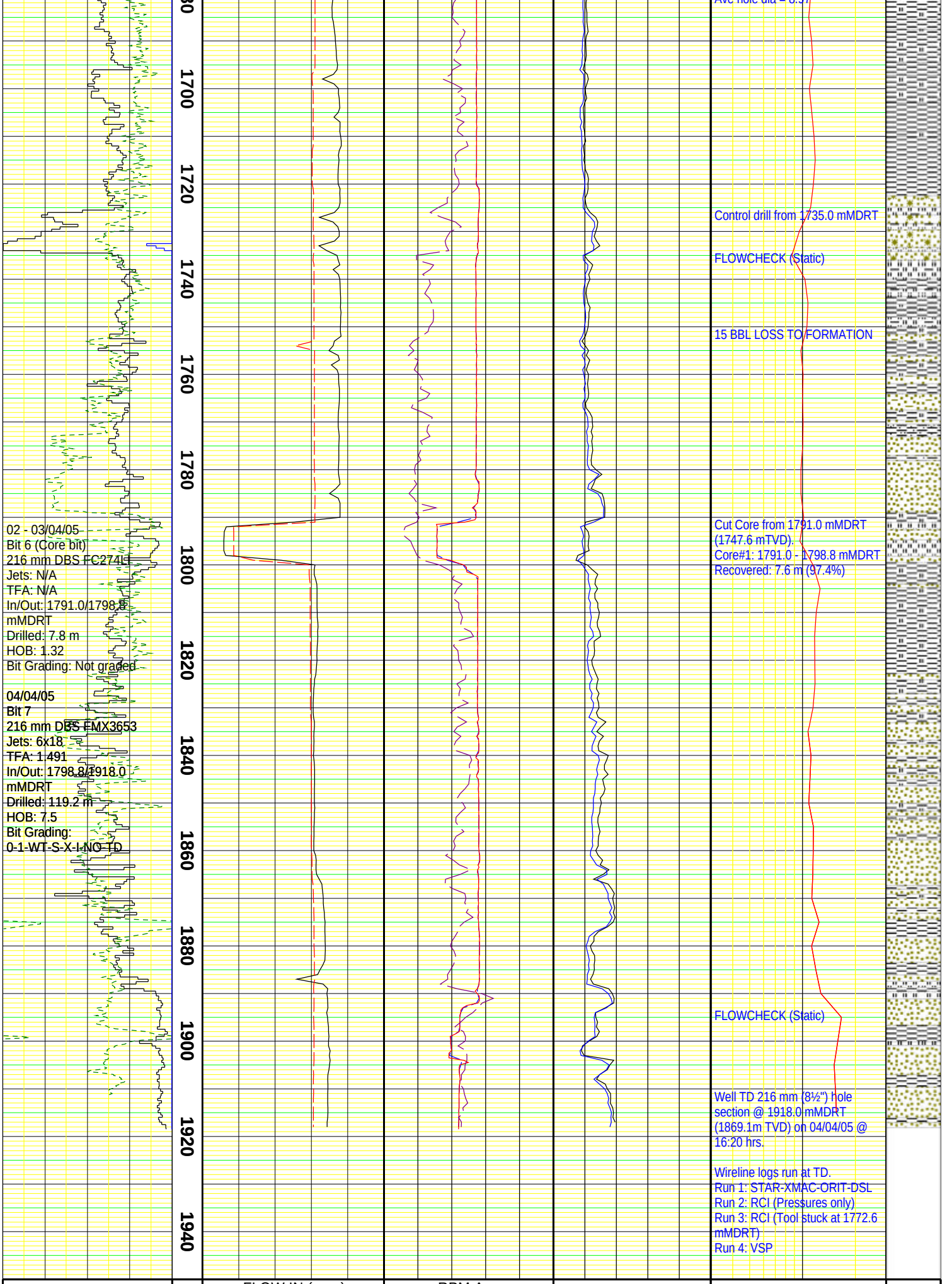

1140
1160
1180
1200
1220
1240
1260
1280
1300
1320
1340
1360
1380
DEGASSER ON
GEOPILOT DOWNLINK
GEOPILOT DOWNLINK
Run Carbide @ 1236.0 mMDRT
Theor Ann Vol = 291.7 bbls
Act Ann Vol = 295.8 bbls
Ave hole dia = 8.69"
DEGASSER/DESILTER ON
GEOPILOT DOWNLINK
SHUT DOWN DESILTER +
TRANSFERS FROM P4 TO
ACT_TROUBLE SHOOT OIL
LEAK ON TDS
ADJUST WOB readings


1420
1440
1460
1480
1500
1520
1540
1560
1580
1600
1620
1640
1660
01/04/05
SWITCH ON DESILTER/ EXPECTED MUD LOSSES @ 10 bbls/hr
PROBLEM WITH PUMP 3, PUMP1+2 ON LINE
PROBLEMS WITH PUMPS 1 AND 2
START X/FER FROM P4 TO P3
STOP X/FER FROM P4 TO ACTIVE
DESILTER/DEGASSER RUNNING
PUMP PROBLEMS
FLOWCHECK (Static)
FLOWCHECK (Static)
10 BBL SPURT LOSS TO FORMATION
Run Carbide @ 1667.0 mMDRT
Theor Ann Vol = 382.5 bbls
Act Ann Vol = 403.0 bbls


Ave hole dia = 8.31
Control drill from 1735.0 mMDRT
FLOWCHECK (Static)
15 BBL LOSS TO FORMATION
Cut Core from 1791.0 mMDRT (1747.6 mTVD).
Core#1: 1791.0 - 1798.8 mMDRT
Recovered: 7.6 m (97.4%)
FLOWCHECK (Static)
Well TD 216 mm (8½") hole section @ 1918.0 mMDRT (1869.1m TVD) on 04/04/05 @ 16:20 hrs.
Wireline logs run at TD.
Run 1: STAR-XMAC-ORIT-DSL
Run 2: RCI (Pressures only)
Run 3: RCI (Tool stuck at 1772.6 mMDRT)
Run 4: VSP
02 - 03/04/05
Bit 6 (Core bit)
216 mm DBS FC2741
Jets: N/A
TFA: N/A
In/Out: 1791.0/1798.8 mMDRT
Drilled: 7.8 m
HOB: 1.32
Bit Grading: Not graded
04/04/05
Bit 7
216 mm DBS FMX3653
Jets: 6x18
TFA: 1.491
In/Out: 1798.8/1918.0 mMDRT
Drilled: 119.2 m
HOB: 7.5
Bit Grading:
0-1-WT-S-X-I-NO-TD
1700
1720
1740
1760
1780
1800
1820
1840
1860
1880
1900
1920
1940
GAMMA (api)
0 37.5 75 112.5 150
FLOW IN (gpm)
0 240 480 720 960 1.2K
RPM Avg
0 50 100 150 200 250

ROP (m/hr)	TH m MDRT 1:1000	PUMP PRESSURE (psi)	RPM Total	TORQUE MAX (kft_lb)	DXC	PRETED LITHOLOGY
100 75 50 25 0		0 1K 2K 3K 4K 5K	0 50 100 150 200250	0 5 10 15 20 25	0.3 3	
ROP WRAP (m/hr)			WOB Avg (klb)	TORQUE AVG (kft_lb)		
200 175 150 125 100			0 8 16 24 32 40	0 5 10 15 20 25		