CNR International

Statoil ASA/Revus Energy ASA

COMPOSITE WELL LOG

UK211/19a-M75, NOR33/9-20S

Depth Mode: MD
Scale: 1:500

LOCATION: Slot Number: 23

LATITUDE: 61° 23' 48.260"
LONGITUDE: 1° 44' 27.249"

UTM: 432 751.2 m Easting
6 807 790.24 m Northing

WELL CLASSIFICATION:
Exploration

TOTAL DEPTH:
18052ft MD

TVDBRT: 10547.1ft
TVDSS: 10362.1ft

SPUD DATE:
25/07/2006

TD DATE:
30/08/06

RIG:
Murchison Platform

BOTTOM HOLE FORMATION:
Etive Fm

COMP. DATE:
N/A

COMP. STATUS:
Plugged & Susp.

PERFORATIONS:
This well was not perforated.

WATER DEPTH:
512ft

COUNTRY:
UK/Norway

DRILLING CONTRACTOR:
KCA Deutag

COMPLETIONS CONTRACTOR:
N/A

ELEVATION RT:
185ft

REGION:
East Shetland Basin

CASING RECORD:

30"	@	797ft MD
20"	@	1595ft MD
13 3/8"	@	4548ft MD
9 5/8"	@	16082ft MD

DONOR WELL:
211/19-M31

FIELD:
UKCS

DRILLING SUPERVISORS:
P. Thomson, S. Peters, K. Brown, G Harrison

GEO LOGGING:
HRH Ltd

DRILLING ENGINEERS:
I. Adams (Norwell), S.Nicol (CNR)

MUD ENGINEERING:
MI

GEOLOGISTS:
R. Greenly, P. Mercer, R. Reynolds

WIRELINE LOGGING:
N/A

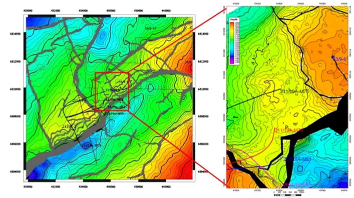
RESERVOIR GEOLOGY:
B Holstad (Revus), K Larsen (Statoil)

CEMENTING:
BJ

AUTHOR:
S Proudlock (CNR)

MWD:
Schlumberger D&M

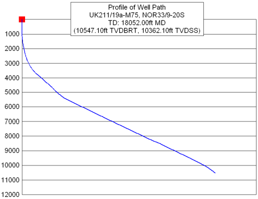
LOCATION MAP:



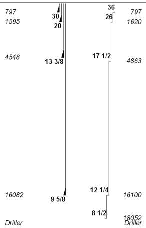
REMARKS:

* This well was drilled by CNR International on behalf of PL037D Licence Operators Statoil ASA and partners Revus Energy ASA.
* The rig was skidded to slot 23 on 14th July 2006 at 18:00hrs. After M31 abandonment operations, the rig was prepared for the drilling phase of M75 / NOR33/9-20S.
* On the 24th July 2006, a Trackmaster whipstock assemply was run to 4584ft and the whipstock oriented and set to 66deg right of highside. A window was milled in the 13 3/8" casing of M31, from 4550ft to 4571ft, followed by a further 21ft of formation milled to 4592ft.
* An FIT was attempted but leaked off before reaching intended pressure, however minimum requirement was met at 13.5ppg EMW.
* A 12 1/4" Powerdrive assembly with GR, RES and MWD was picked up and RIH. Drilling commenced from 4592ft on 26th July 2006.
* The well was then drilled ahead in 12 1/4" hole, with intermittent power problems with rig floor electrics effecting pumps and topdrive.
* Rig crew commenced catching 100ft interval geological samples from 10,600ft as per Norwegian Petroleum Directorate requirements in lieu of arrival of HRH Ltd geologging crew which was delayed by adverse weather.
* Drilling continued with frequent power outages on rig floor. Heavy cavings volumes seen at surface with abundant large (120mm wide) flat (10mm thick) platy cavings.
* Geologgers arrived on platform 2nd August 2006. Commenced catching 30ft interval samples from 12330ft.
* The mud weight was raised from 12.9ppg to 13.0ppg on 3rd August 2006. Cavings later observed to decrease in both size and volume.
* Drilling continued with frequent power shutdowns, mainly at connections. Noise was seen on the LWD and Survey signal required recharging of pump pulsation dampener on 6th August 2006.
* Drilled to 16100ft at 02:30hrs, 8th August 2006, 12 1/4" section TD. Circulated 7 bottoms-ups to clear well of cavings. POOH to 11980ft attempted to circulate, lost circulation, hole packed off.
* POOH, attempted to circulate every 1000ft. Hole packing off, heavy drag and overpulls. 131bbls mud losses attributed to ballooning of formation after pack off. Low rate of circulation established, pulled above Balder into 'build section'.
* Hole packed off, and restricted movement of drillstring. Worked free, likely cuttings beds in high dogleg (4deg/100) in build section around BHA. Mostly fines at shakers during circulation.
* Circulated casing clean from inside shoe on 10th August 2006, slipped and cut drill line, POOH. Picked up 12 14" cleanup BHA for wiper trip. Ran in hole to shoe, performed repairs to drawworks clutch, pump 2 and IBOP.
* Circulate hole clean and perform wiper trips in order to remedy possible cavings from the Balder section of 12.25inch well.
* 15th to 16th August Clear rig floor and rig up and run 9 5/8" casing., washing through build section in the Balder from 6095ft to 7295ft.
* Make up hanger and land out casing string on 18th August at 16063ft MDRT, rig up for cement job. Complete cement operations 19th August.
* Pressure test BOP. P/U BHA RIH drill out cement/float collar to 16050ft MD 14bbl loss occur.
* POOH with clean out BHA 22nd to 23rd August, M/U cement stinger to perform sqeeze job to remedy losses.
* Perform cement sqeeze job 14.5bbls cmt, POOH with stinger/lay out stinger 23rd to 24th August.
* 24th to 25th August M/U Powerdrive LWD BHA carry out surface tests and RIH.
* 25th to 26th August RIH wash down and tag TOC at 15618ft MDRT, Remedy flow line blockage, curculate clean, pressure test casing to 3500psi slip and cut, drill out cement, clean out rat hole and drill ahead 8 1/2" hole section.
* Drilling of the 8 1/2" hole section commenced from 16100ft on 26/08/06 at 05:15 with a PowerDrive rotary steerable BHA.
* Drilling stops at 16317 ft on 26/08/06 due to excessive torque and drag on drill string resulting from water contamination of the mud system. The well is circulated until the mud system has been brought back to specification.
* Drilling resumes from 16317 ft at 10:45 on 27/08/06.
* 8 1/2" Hole is drilled to 18052 ft on 30/08/06, where the well takes losses of 100bph. The well is TD'd at this depth for geological reasons, and hole problems.
* On the 1st September a cement stinger was RIH to set abandoment plugs at 18042ft - 17292ft, 16382ft - 16053ft and 16053ft - 15553ft. Second abandonment plug was 371ft lower than expected so set third plug.
* The well was plugged back and suspended on the 9th September 2006.

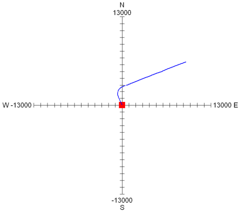
PROFILE VIEW OF WELL PATH



CASING/HOLE SIZE DIAGRAMS



PLAN VIEW OF WELL PATH



HOLE AND CASING DETAILS

Bit Size	Hole MD (TVDBRT)	Casing Size	Shoe MD (TVDBRT)	Hanger MD (TVDBRT)	Comments
36"	797 (612)	**30"**	797 (612)	64 (-121)	
26"	1620 (1433)	**20"**	1595 (1408)	63 (-122)	
17 1/2"	4863 (4137)	**13 3/8"**	4548 (3926)	62 (-123)	Window milled from 4550 to 4571ft MD. Drilled to 4592ft MD, FIT to 13.5ppg EMW.
12 1/4"	16100 (9379)	**9 5/8"**	16082 (9371)	61 (-124)	Casing Pressure test to 3500psi.
8 1/2"	18052 (10362)		-	-	No Liner was ran. Well Plugged back and suspended.

WIRELINE LOGGING SUMMARY

Run	Hole/Casing Size	Suite	Dates	Interval	Max Temp	Comments

MWD/ LWD LOGGING SUMMARY

Run	Hole/Casing Size	Suite	Dates	Interval	Max Temp (°C)	Comments
1	12 1/4	**PowerPulse**	24-Jul - 26-Jul	4550 - 4591	62	Window milling run.
2	12 1/4	**PowerPulse, ARC, PowerDrive**	26-Jul - 8-Aug	4591 - 16100	107	
3	8 1/2	**PowerPulse, ARC, ADN**	19-Aug - 31-Aug	16100 - 19825	118	

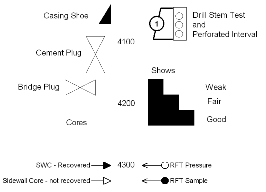
PRIMARY LITHOLOGICAL SYMBOLS

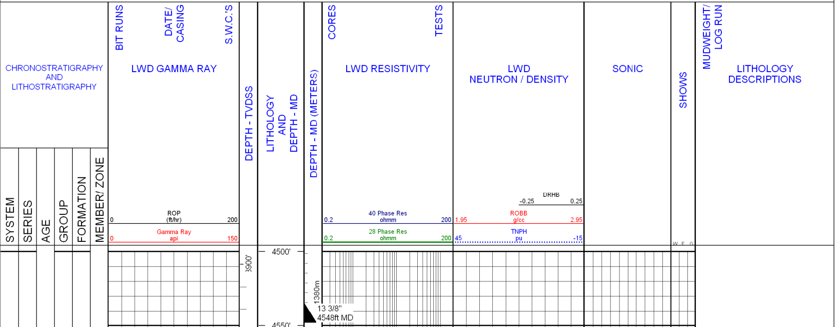
- ▨ SHALE MUDSTONE CLAYSTONE/ CLAY
- ▨ SILTSTONE/ SILT
- ▨ SANDSTONE/ SAND
- ▨ CONGLOMERATE LOOSE PEBBLES
- ▨ LIMESTONE
- ▨ DOLOMITE
- ▨ DOLOMITIC LIMESTONE
- ▨ MARL
- ■ COAL
- ▨ ANHYDRITE
- ⊞ HALITE
- S SYLVITE
- K POTASSIUM SALTS
- C CARNALLITE
- P POLYHALITE
- FOSSILIFEROUS
- LIMESTONE BED
- Fe FERRUGINOUS

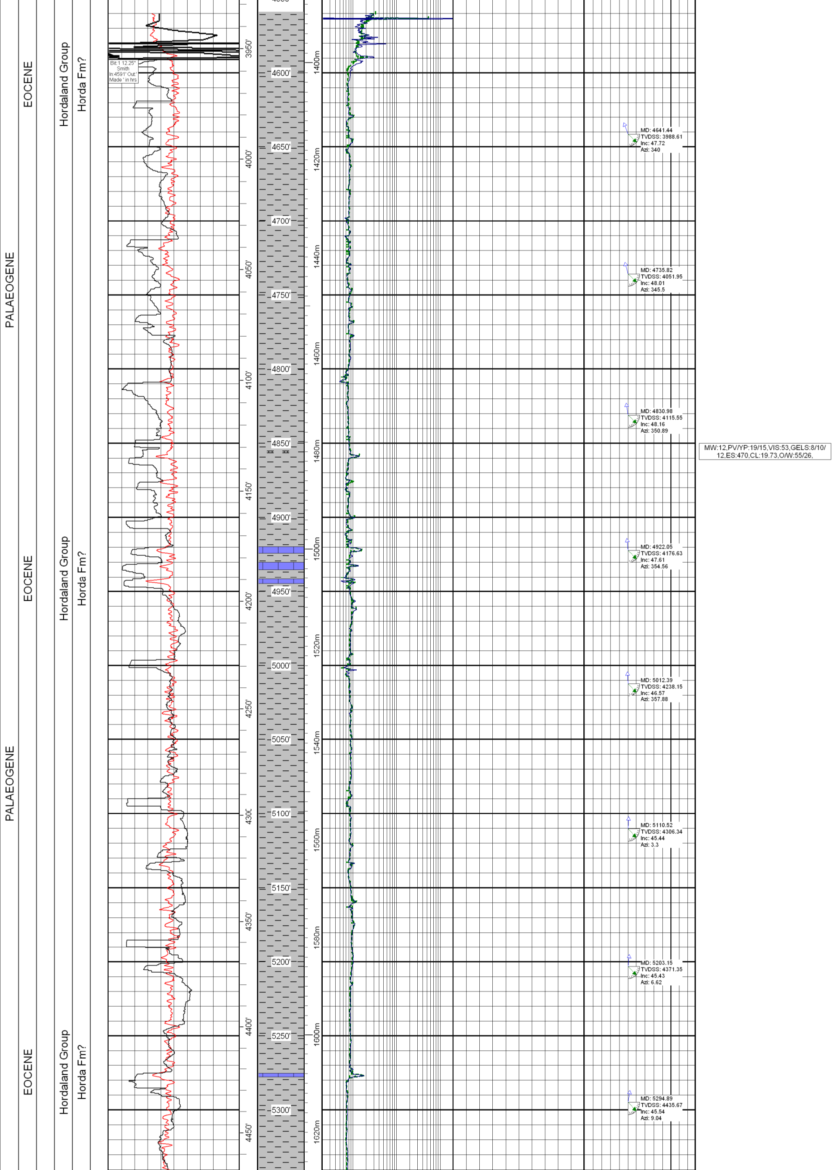
SECONDARY LITHOLOGICAL SYMBOLS

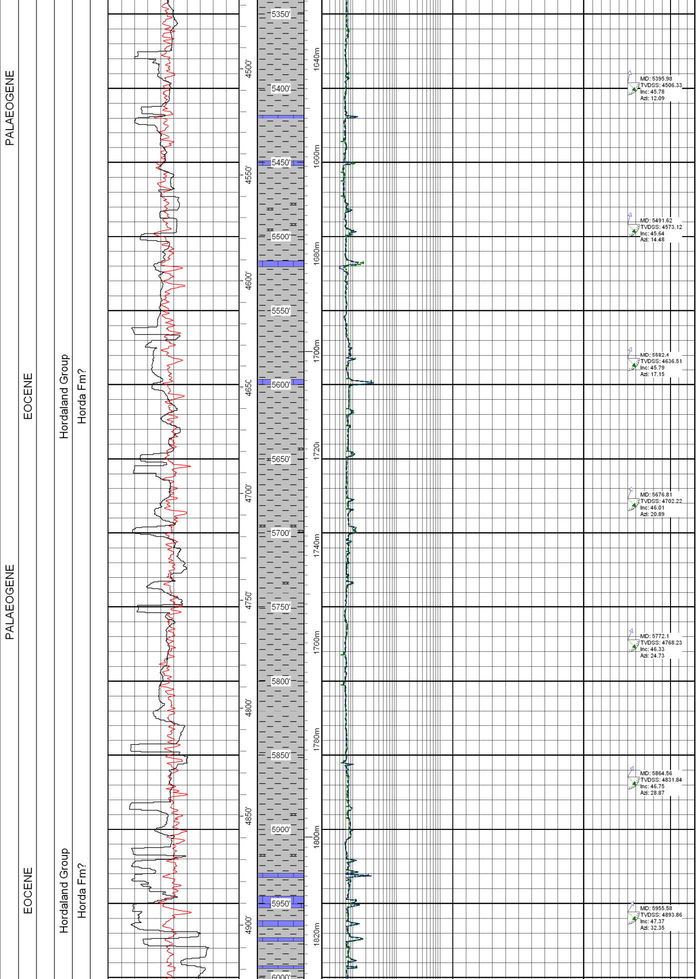
- — ARGILLACEOUS
- ⊥ CALCAREOUS
- ⊥ DOLOMITIC
- △ CHERT
- M MICA
- □ PYRITE
- ▰ CARBONACEOUS
- ▲ BITUMEN
- G GLAUCONITIC

ENGINEERING SYMBOLS









MD: 5395.98
TVDSS: 4506.33
Inc: 45.78
Azi: 12.09

MD: 5491.62
TVDSS: 4573.12
Inc: 45.64
Azi: 14.48

MD: 5582.4
TVDSS: 4636.51
Inc: 45.79
Azi: 17.15

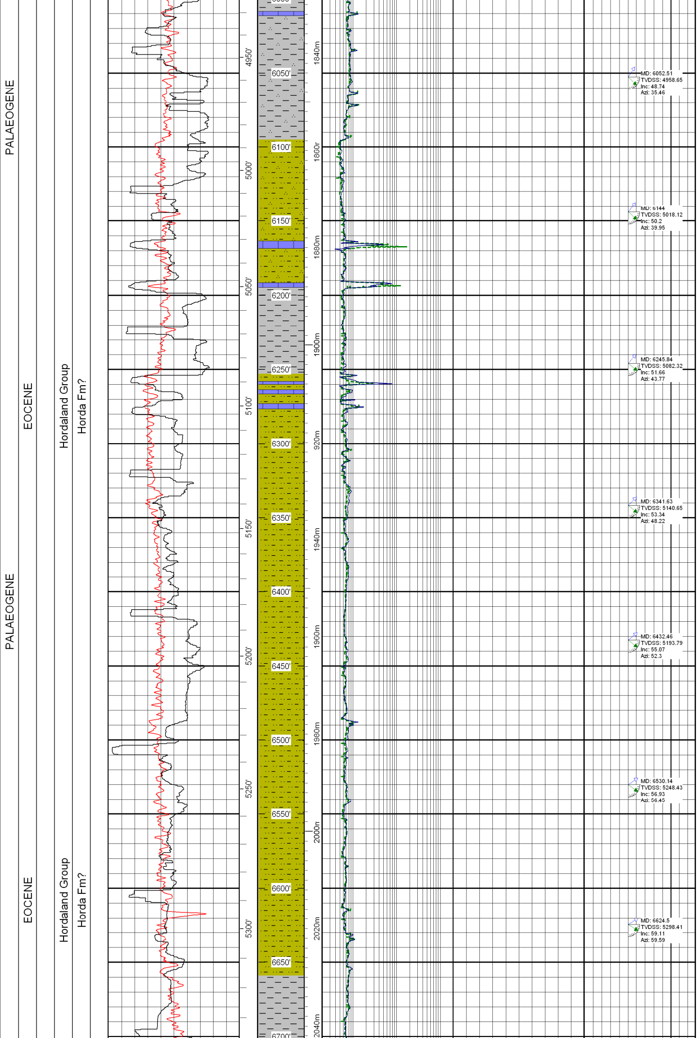
MD: 5676.81
TVDSS: 4702.22
Inc: 46.01
Azi: 20.89

MD: 5772.1
TVDSS: 4768.23
Inc: 46.33
Azi: 24.73

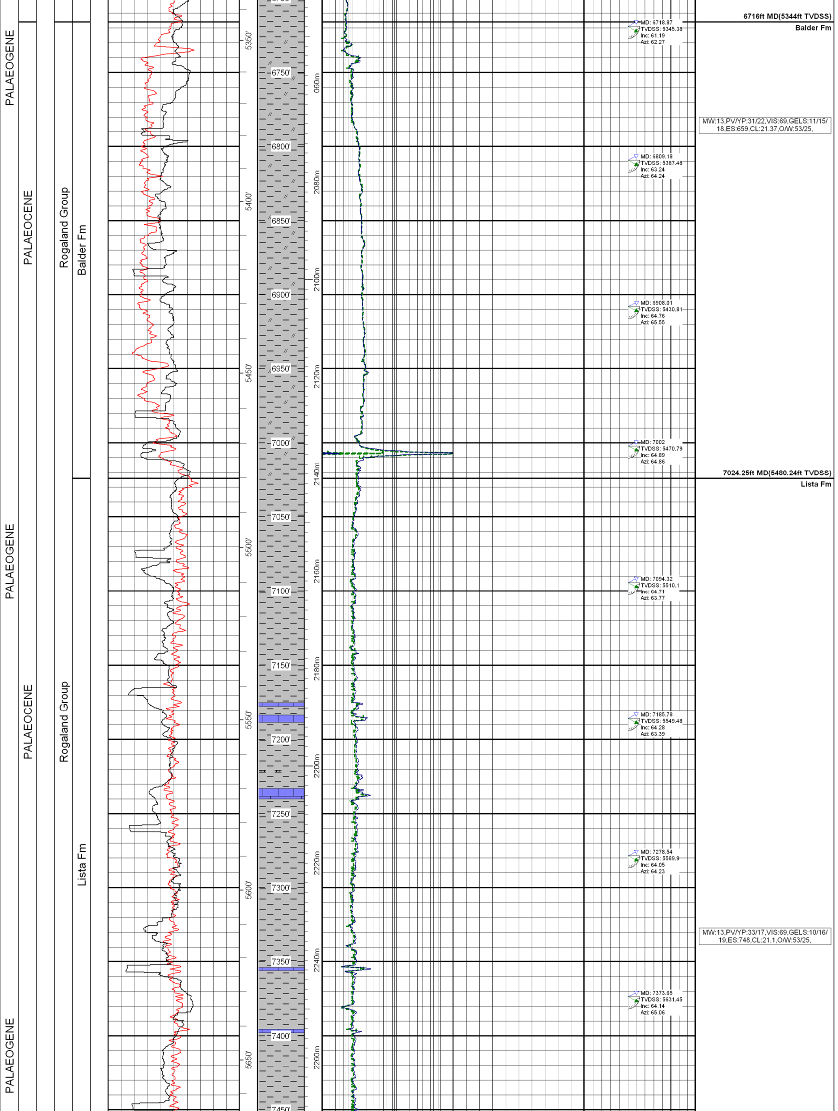
MD: 5864.56
TVDSS: 4831.84
Inc: 46.75
Azi: 28.87

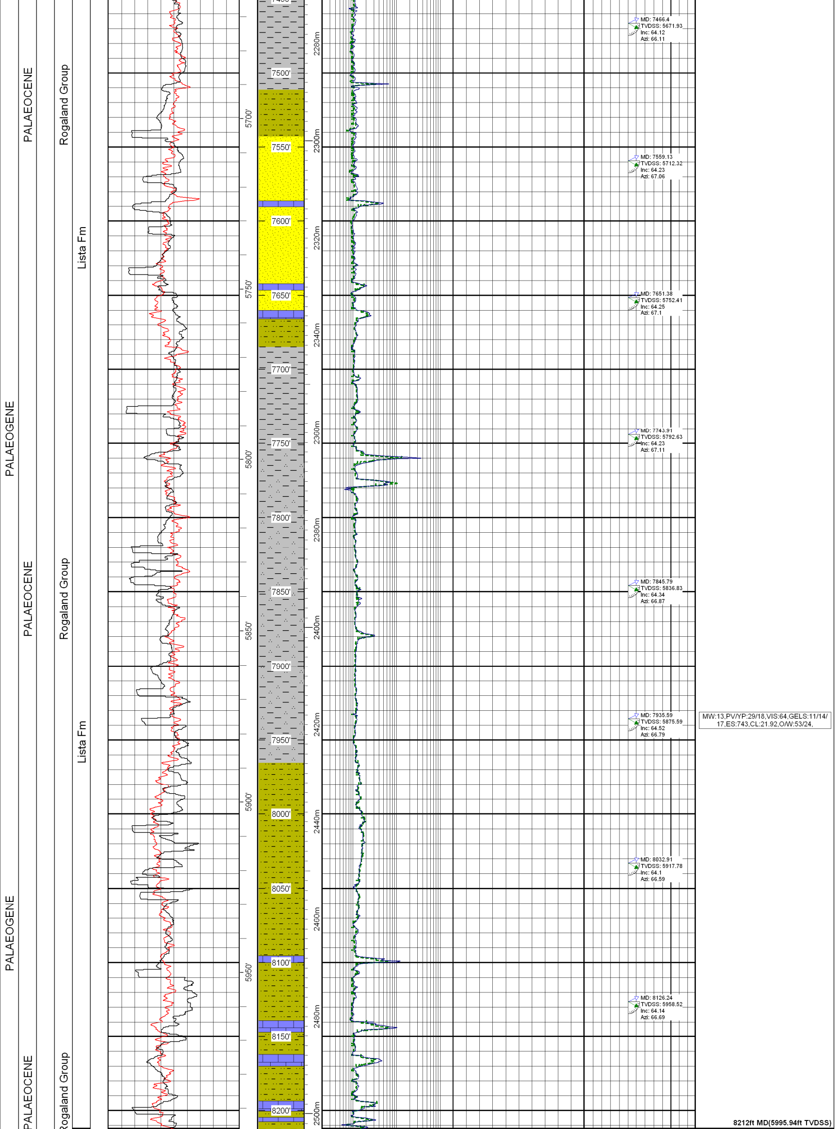
MD: 5955.58
TVDSS: 4893.86
Inc: 47.37
Azi: 32.35

MW:12,PV/YP:27/17,VIS:68,GELS:10/14/16,ES:689,CL:21.37,O/W:56/25,



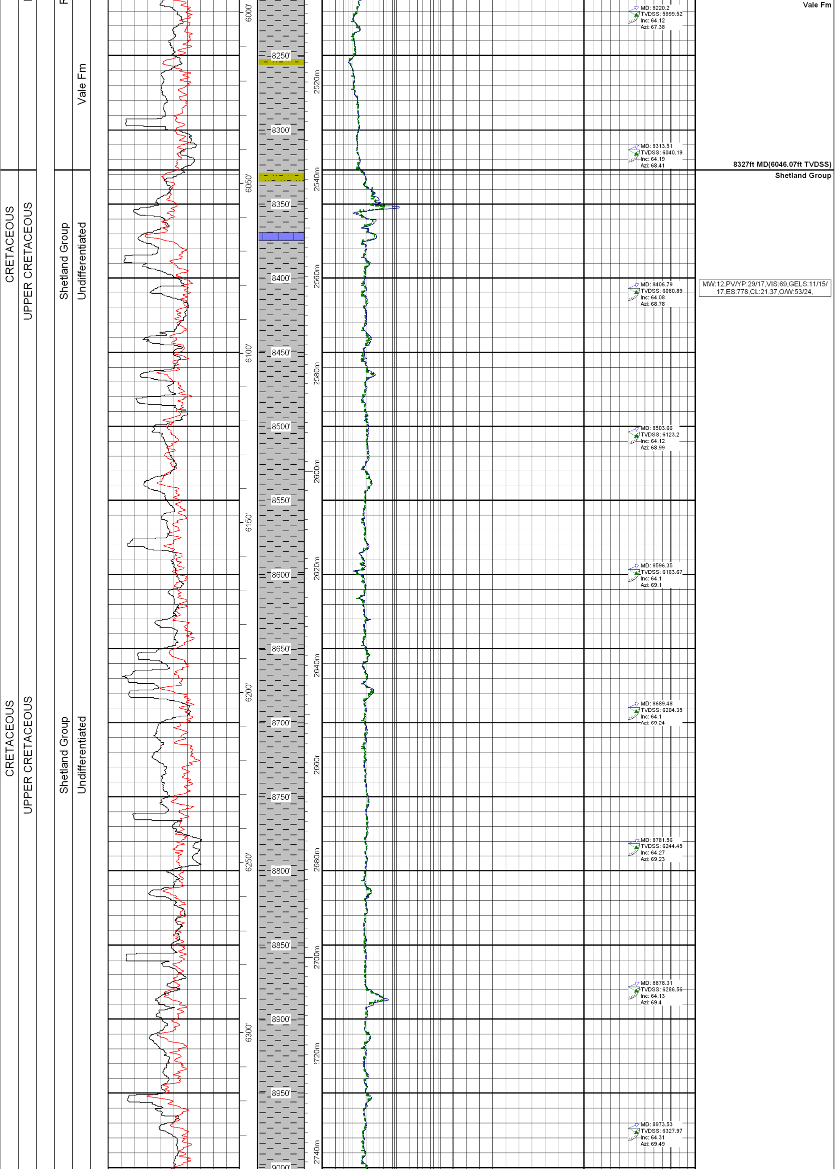
MW:13,PV/YP:31/17,VIS:70,GELS:10/13/15,ES:685,CL:20.82,O/W:54/25,

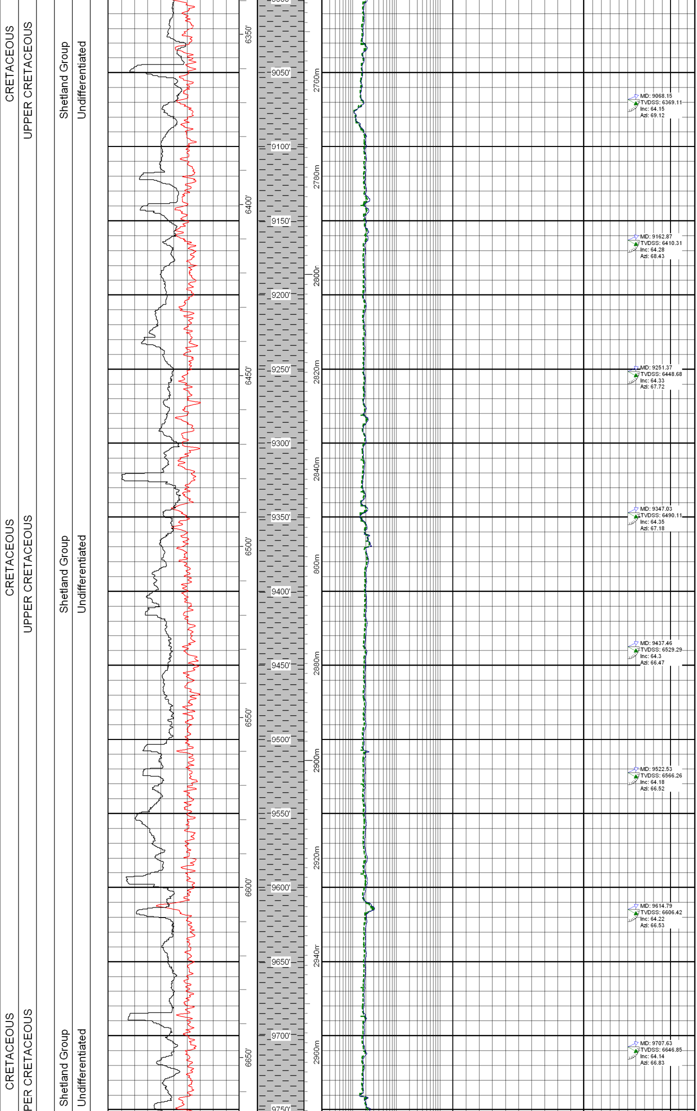




MW:13,PV/YP:29/18,VIS:64,GELS:11/14/17,ES:743,CL:21.92,O/W:53/24,

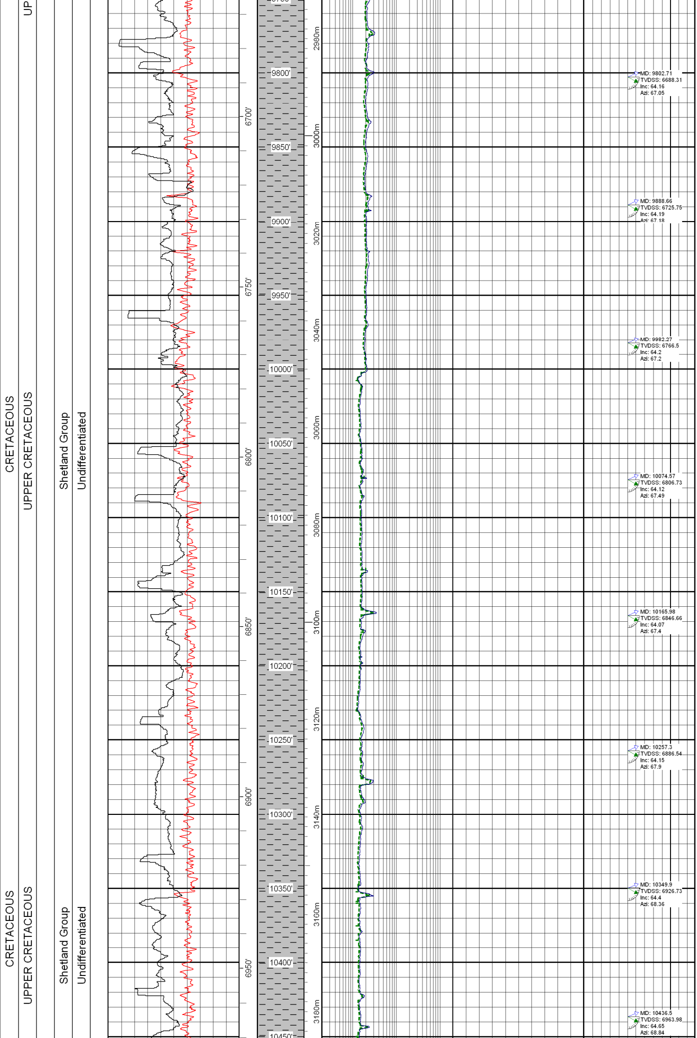
8212ft MD(5995.94ft TVDSS)



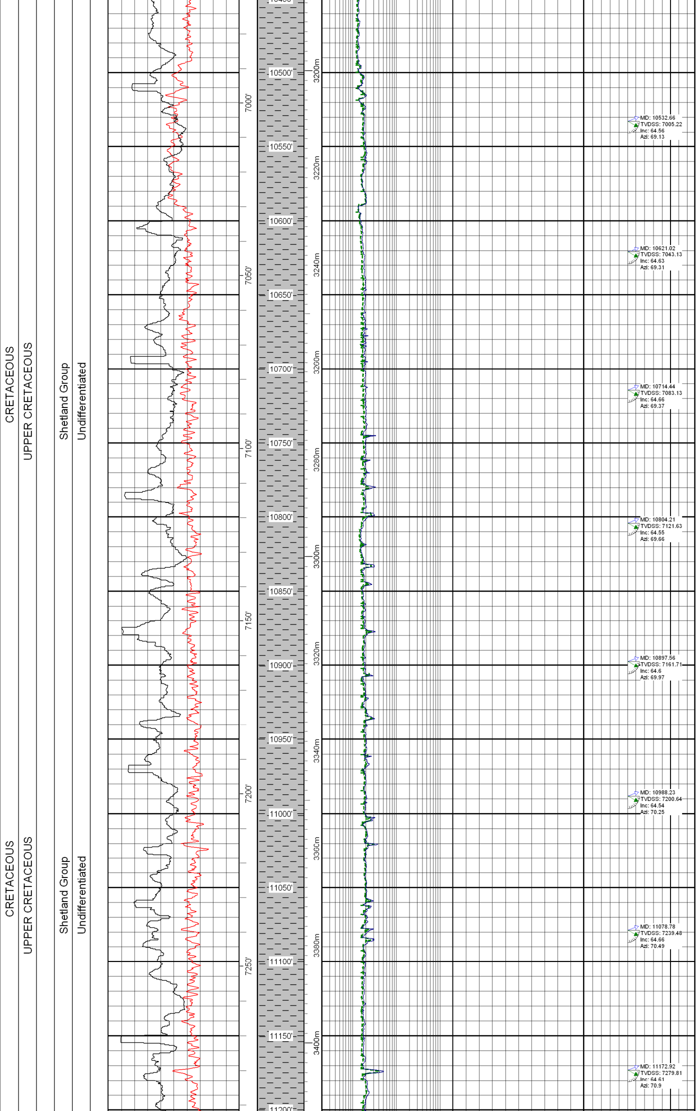


MW:13,PV/YP:27/19,VIS:64,GELS:11/18/
21,ES:736,CL:20.28,O/W:53/24,

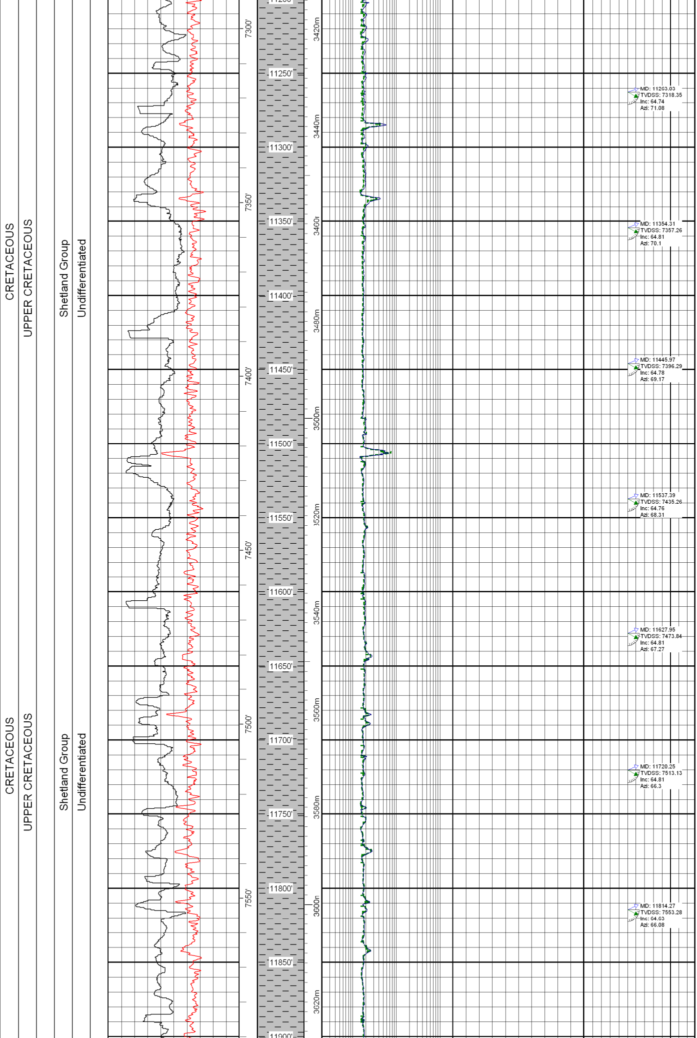
MW:13,PV/YP:30/19,VIS:67,GELS:11/18/
22,ES:732,CL:19.73,O/W:53/24,



MW:13,PV/YP:32/21,VIS:68,GELS:11/17/22,ES:749,CL:22.47,O/W:53/24,



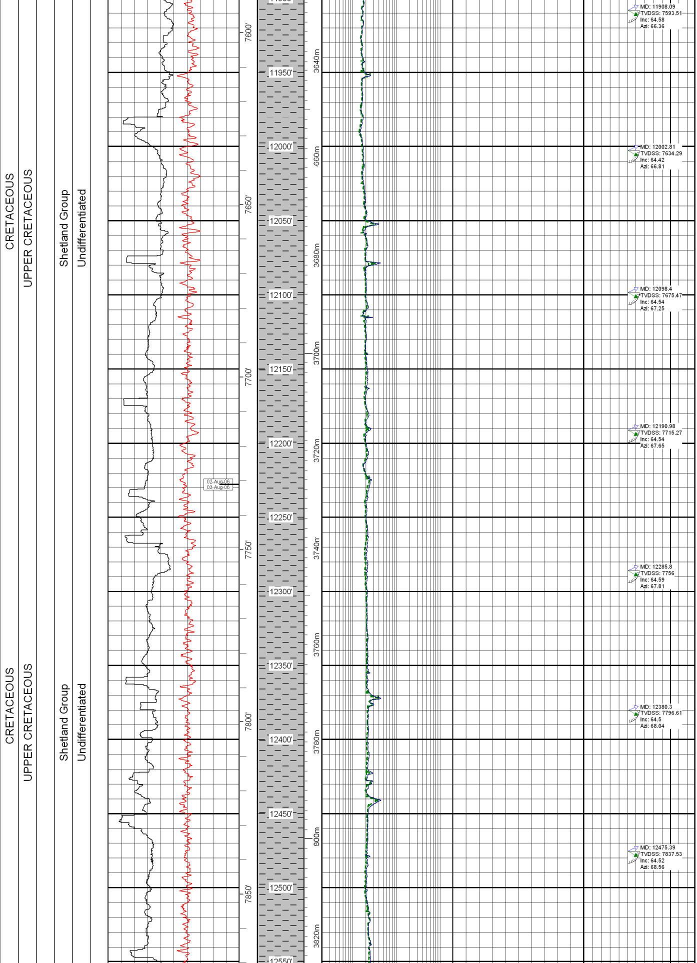
MW:13,PV/YP:32/20,VIS:68,GELS:10/17/21,ES:761,CL:22.47,O/W:53/24,



MW:13,PV/YP:34/19,VIS:69,GELS:11/17/21,ES:746,CL:21.92,O/W:53/24,

CLAYSTONE: medium to dark blueish grey, firm to moderately hard, blocky, crumbly to slightly waxy in parts, commonly as silty interbeds with black carbonaceous fragments/specks, finely disseminated micropyrite, slightly micromicaceous, non calcareous.
trace LIMESTONE: pale grey, white, firm to hard, blocky, brittle, slightly argillaceous, microcrystalline to crystalline, slightly dolomitic, no visible porosity.

CLAYSTONE: medium to dark blueish grey, greenish grey in places, firm to moderately hard, blocky, sub fissile, slightly waxy in places, commonly slighly to moderately silty, occasional pyrite-filled voids (burrows?), common black carbonaceous fragments/ specks.
trace LIMESTONE: pale grey, bright white, firm to hard, blocky, brittle, microcrystalline to crystalline, slightly dolomitic, no visible porosity.
Cavings include CLAYSTONE brownish grey, very hard, blocky angular. Tuffaceous CLAYSTONE red brown to purplish brown hard, angular, with black specks volcanic material.

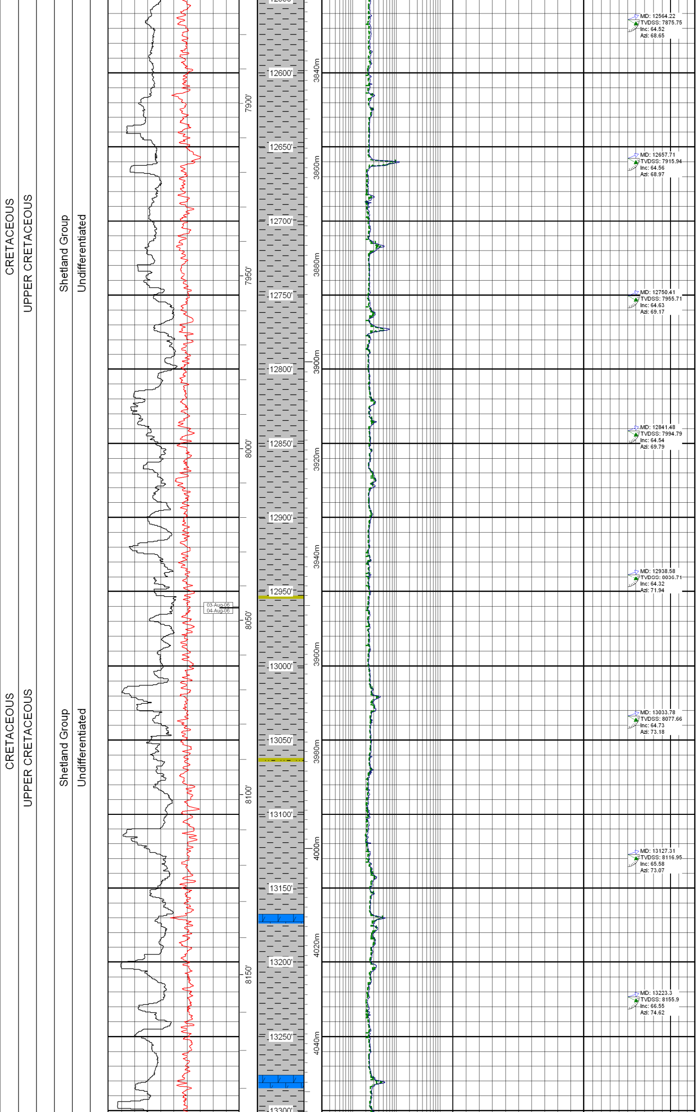


MW:13,PV/YP:41/20,VIS:72,GELS:11/19/22,ES:750,CL:23.56,O/W:53/22,

CLAYSTONE:Medium grey to medium light grey, blocky to splintery, firm to moderately hard

CLAYSTONE: Medium grey to medium light grey, blocky to sub blocky, soft to firm, amorphous

CLAYSTONE: Medium grey to medium light grey, blocky to sub blocky, soft to firm, amorphous



CLAYSTONE: Medium grey to medium light grey, blocky to sub blocky, soft to firm, amorphous
trace DOLOMITE: Off white to pale grey, occassionally pale yellow orange, blocky, soft to firm micro-crystalline

CLAYSTONE (1): Dark grey to medium grey, blocky to sub-blocky, firm, amorphous, occassionally brittle, trace disseminated pyrite.

CLAYSTONE (2): Medium light grey to light grey, sub-blocky, firm to soft, very silty in places, rare glauconite.

CLAYSTONE (1): Dark grey to medium grey, blocky to sub-blocky, firm, occassionally brittle, trace disseminated pyrite.

CLAYSTONE (2): Medium light grey to light grey, sub-blocky, firm to soft, very silty in places, rare glauconite.

CLAYSTONE (1): Dark grey to brownish grey, blocky to sub-blocky, firm, amorphous.

CLAYSTONE (2): Brownish grey to greyish brown, sub-blocky, firm to soft, silty, earthy, grading to siltstone.

SILTSTONE: Light grey to very light grey, sub-rounded, firm to slightly hard, good calcareous cement, occassionally glauconitic, no visible porosity

MW:13,PV/YP:40/18,VIS:70,GELS:10/18/21,ES:708,CL:24.11,O/W:53/22,

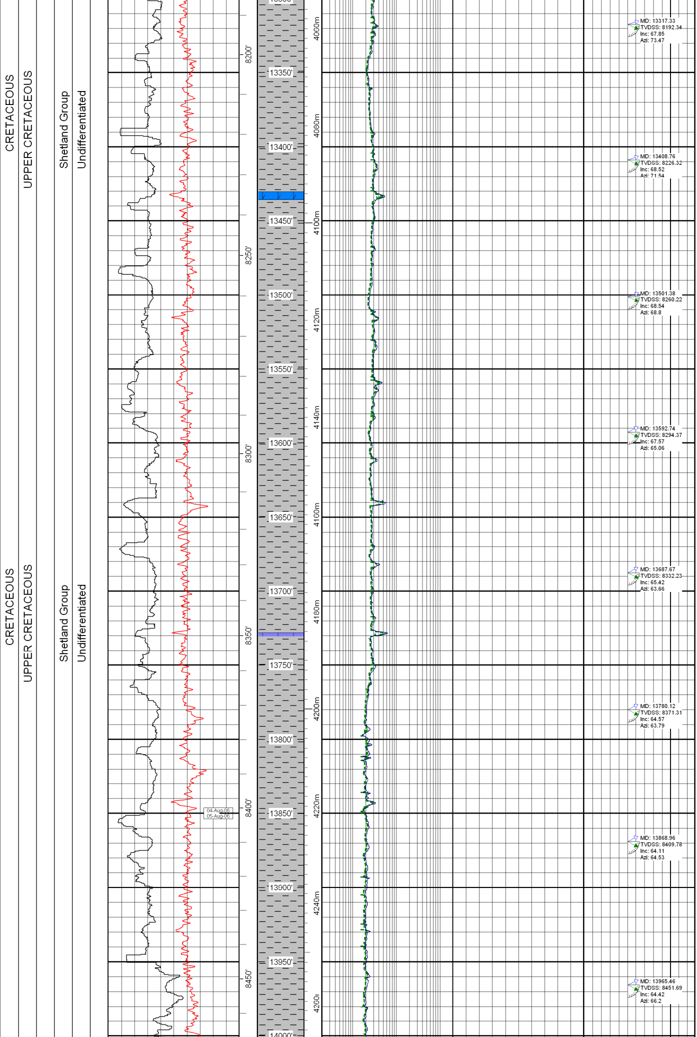
CLAYSTONE (1): Dark grey to medium grey, blocky, occassionally sub-blocky, firm, occassionally brittle and splintery.

CLAYSTONE (2): Light grey to medium grey, sub-blocky, soft, silty in places.

CLAYSTONE: (1) Dark grey to medium dark grey, sub blocky to blocky, firm to hard, splintery, occasionally brittle

CLAYSTONE: (2) Medium light grey to light grey, blocky, soft, silty in places

LIMESTONE: Off white to light grey, pale yellow orange, hard to firm, blocky to splintery, occasionally crumbly, micro to cryptocrystalline, DOLOMITIC in places



MW:13,PV/YP:42/20,VIS:72,GELS:11/18/21,ES:730,CL:23.29,O/W:53/21,

CLAYSTONE: Medium dark grey, brown grey, occasionally dark grey, medium light grey, soft to firm, blocky, crumbly in places, occasionally splintery, silty in places

LIMESTONE: White, off white, very light grey, pale yellow orange, hard to firm, blocky to splintery, crumbly in places, DOLOMITIC in places

CLAYSTONE: Medium dark grey, brownish grey, occasionally dark grey, medium light grey, soft to firm, blocky, crumbly in places, splintery, occasionally silty

LIMESTONE: White, off white, very light grey, pale yellow orange, hard to firm, blocky to splintery, crumbly in places, DOLOMITIC in places

CLAYSTONE: Medium grey to dark grey, rarely light grey, occasionally greyish green, blocky to sub-blocky, firm to slightly hard, occasionally soft and crumbly, silty in places.

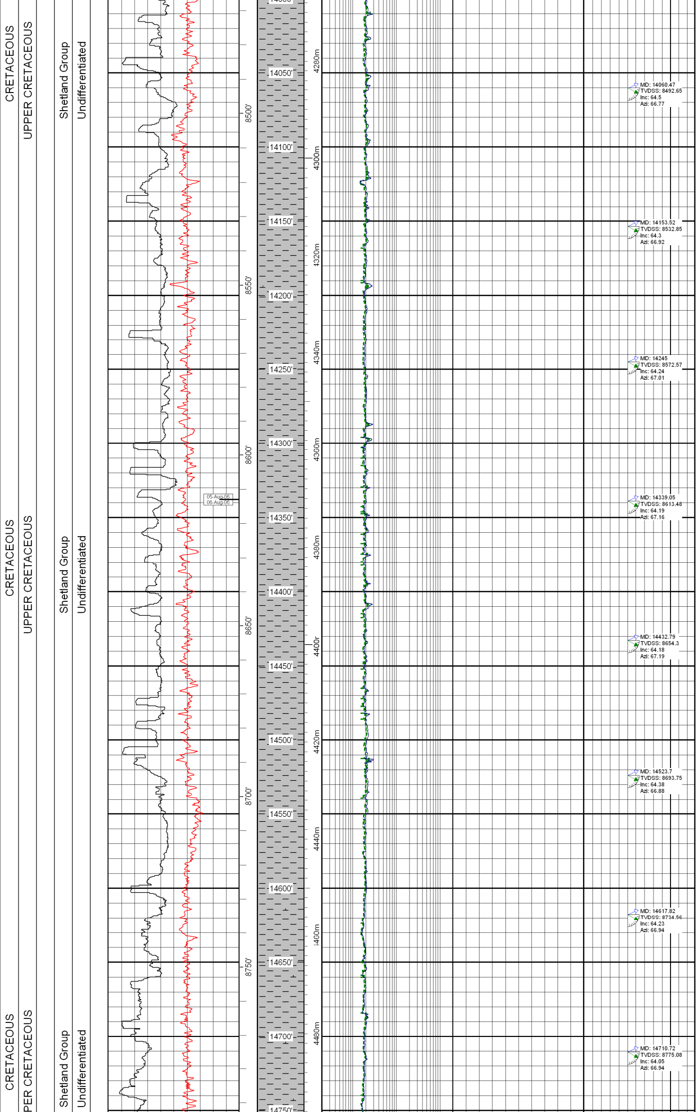
CLAYSTONE: Medium grey to dark grey, rarely light grey, occasionally greyish green, blocky to sub-blocky, firm to slightly hard, occasionally soft and crumbly, silty in places.

CLAYSTONE: Medium grey to dark grey, rarely light grey, occasionally greyish green, blocky to sub-blocky, firm to slightly hard, occasionally soft and crumbly, silty in places.

CLAYSTONE: Medium grey to dark grey, occasionally greyish green, blocky, firm to slightly hard, occasionally brittle, rarely silty.

MW:13,PV/YP:40/17,VIS:58,GELS:10/19/22,ES:665,CL:23.84,O/W:52.5/22,

CLAYSTONE: Medium grey to dark grey, occasionally greyish green, blocky, firm to slightly hard, occasionally brittle, rarely silty.



CLAYSTONE: Dark grey to medium dark grey, brownish grey, firm to hard, occasionally soft, blocky to splintery, occasionally platy, silty in places, trace carbonaceous specks

LIMESTONE: Very light grey to pale yellow orange, firm, soft in places, crumbly to blocky, dark argillaceous laminations, microcrystalline, DOLOMITIC in places

CLAYSTONE: Medium dark grey to dark grey, brownish grey, occasional light grey, firm to hard, soft in places, blocky to splintery, occasionally platy, silty in places, trace black carbonaceous specks

CLAYSTONE: Medium dark grey to dark grey, brownish grey, occasional light grey, firm to hard, soft in places, blocky to splintery, occasionally platy, silty in places, trace black carbonaceous specks

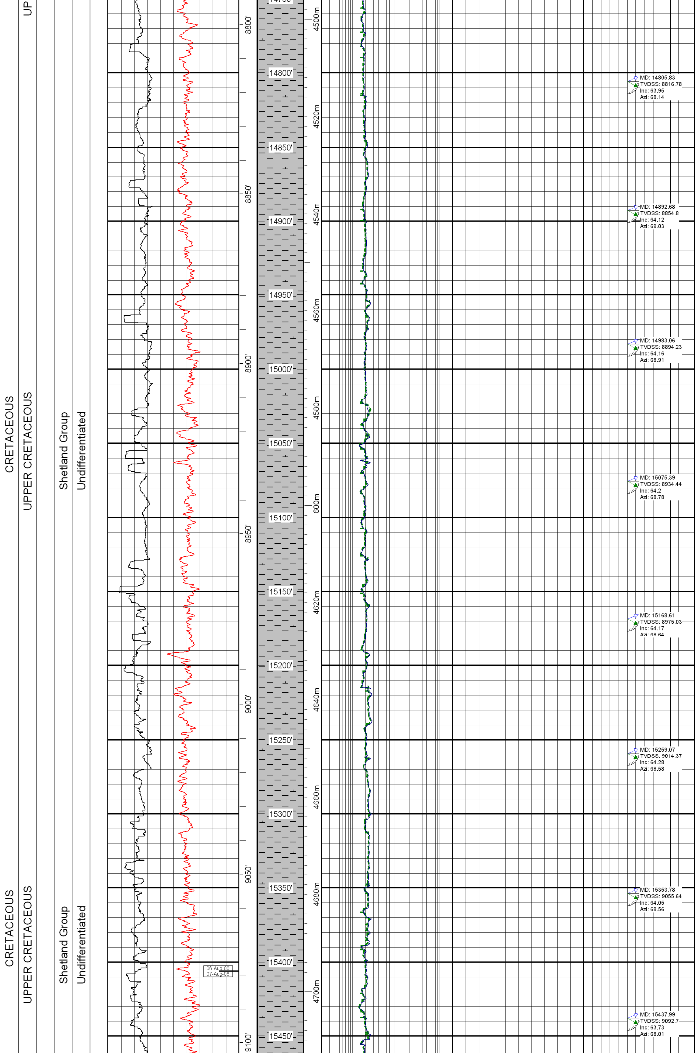
trace LIMESTONE: Pale grey to light grey pale yellow orange, firm to hard, soft in places, crumbly, blocky, microcrystalline, DOLOMITIC in places

CLAYSTONE: Medium dark grey to dark grey, brownish grey, occasional light grey, firm to hard, soft in places, blocky to splintery, occasionally platy, silty in places, trace black carbonaceous specks

CLAYSTONE: Medium dark grey to dark grey, firm to slightly hard, blocky and occasionally splintery, silty in places.

MW:13,PV/YP:43/19,VIS:57,GELS:11/19/20,ES:687,CL:25.21,O/W:53/21,

CLAYSTONE: Medium dark grey to dark grey, light grey, occasionally brownish grey, firm to hard, soft in places, blocky, calcareous in places



CLAYSTONE: Medium dark grey to dark grey, brownish grey, light grey, firm to hard, soft in places, blocky to splintery, silty in places, slightly calcareous in places

trace LIMESTONE: White to very light grey, pale yellow orange, firm, occasionally soft, microcrystalline, DOLOMITIC in places

CLAYSTONE: Medium dark grey to dark grey, brownish grey, light grey, firm to hard, soft in places, blocky to splintery, silty in places, slightly calcareous in places

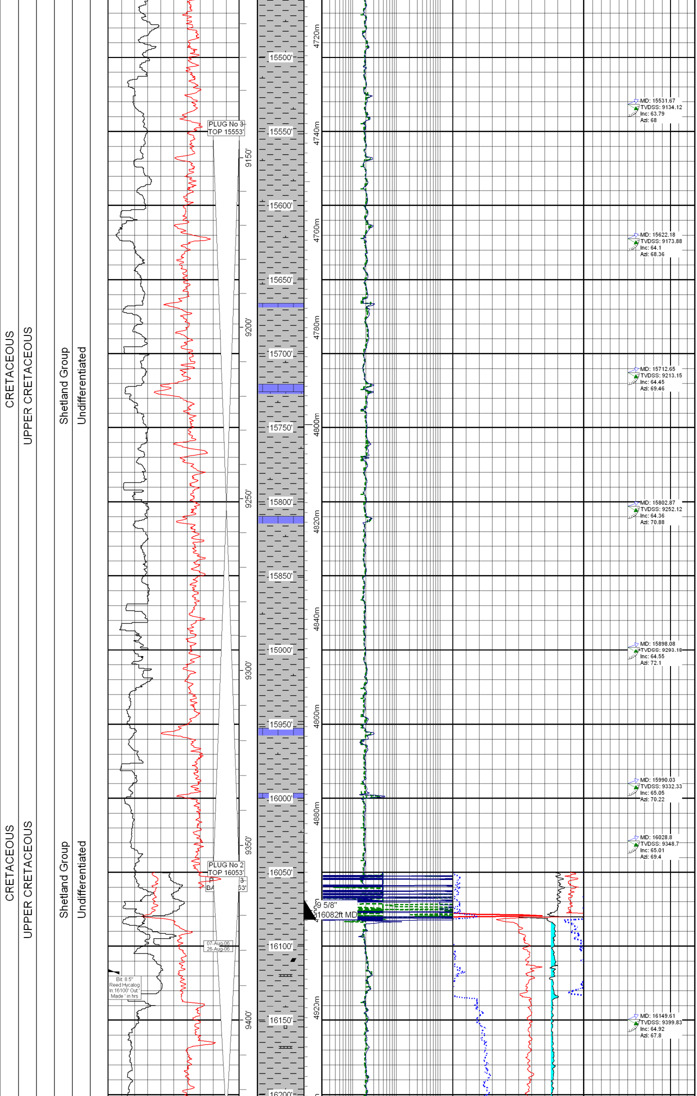
trace LIMESTONE: White to very light grey, pale yellow orange, firm, occasionally soft, microcrystalline, DOLOMITIC in places

CLAYSTONE: Medium dark grey to dark grey, brownish grey, light grey, firm to hard, soft in places, blocky to splintery, silty in places, slightly calcareous in places

trace LIMESTONE: White to very light grey, pale yellow orange, firm, occasionally soft, microcrystalline, DOLOMITIC in places

CLAYSTONE: Medium grey to dark grey, blocky to sub-blocky, firm to slightly hard, soft in places, brittle in places and occasionally splintery, calcareous.

trace LIMESTONE: White to very light grey, pale yellow orange, firm, occasionally soft, microcrystalline, DOLOMITIC in places



CLAYSTONE: Medium grey to dark grey, blocky to sub-blocky, firm to slightly hard, soft in places, brittle in places and occasionally splintery, calcareous.

trace LIMESTONE: White to very light grey, pale yellow orange, firm, occasionally soft, microcrystalline, DOLOMITIC in places

CLAYSTONE: Medium grey to dark grey, blocky to sub-blocky, firm to slightly hard, soft in places, brittle in places and occasionally splintery, calcareous.

trace LIMESTONE: White to very light grey, pale yellow orange, firm, occasionally soft, microcrystalline, DOLOMITIC in places

CLAYSTONE: Medium grey to dark grey, blocky to sub-blocky, firm to slightly hard, soft in places, brittle in places and occasionally splintery, calcareous.

Good trace LIMESTONE: White to very light grey, pale yellow orange, firm, occasionally soft, microcrystalline, DOLOMITIC in places

CLAYSTONE: Medium grey to dark grey, occasionally greyish green, firm to slightly hard, rarely soft, blocky to sub-blocky, brittle, occasionally splintery, calcareous.

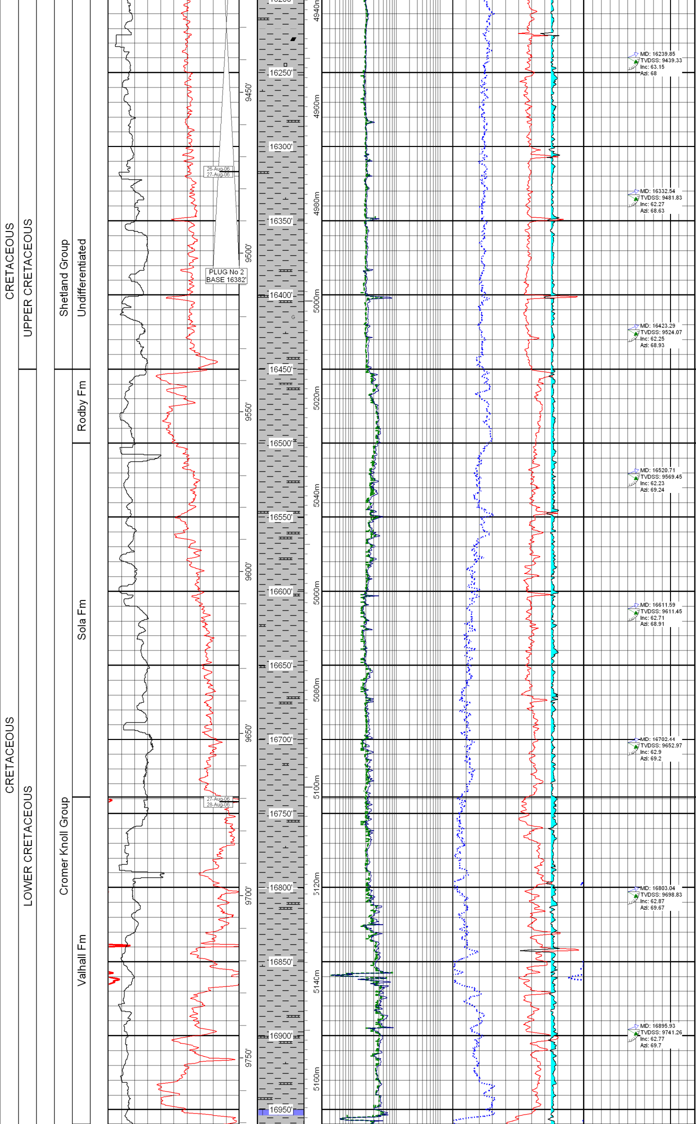
trace LIMESTONE: Off white to buff, firm, blocky and crumbly, micro-crystalline, DOLOMITIC in places.

CLAYSTONE: Medium grey to dark grey, occasionally greyish green, firm to slightly hard, rarely soft, blocky to sub-blocky, brittle, occasionally splintery, calcareous.

trace LIMESTONE: Off white to buff, firm, blocky and crumbly, micro-crystalline, DOLOMITIC in places.

CEMENT contamination.

CLAYSTONE: Dark grey to dark blue grey, becoming light grey to light blue grey, moderately firm, occasionall hard, sub blocky to angular, predominantly homogeneous, non to slightly swelling, non to moderately calcareous, trace carbonaceous material, trace pyrite. Trace LIMESTONE: (mudstone) very pale brown to orange brown, soft, amorphous occasionally friable, microcrystalline, no visible porosity.



CLAYSTONE: Dark grey to dark blue grey, becoming light grey to light blue grey, moderately firm, occasionall hard, sub blocky to angular, predominantly homogeneous, non to slightly swelling, non to moderatly calcareous, trace carbonaceous material, trace pyrite.
Trace LIMESTONE: (mudstone) very pale brown to orange brown, soft, amorphous occasionally friable, microcrystalline, no visible porosity.

16450ft MD(9536.51ft TVDSS)

Rodby Fm

CLAYSTONE: Predominantly 1) Red brown to pale red brown, moderately firm to hard, blocky, occasionally angular, predominantly homogeneous, grading to siltstone in places, very calcareous, trace glauconite.
2) Medium to light grey, occasionally blue grey, moderately firm to hard, blocky to angular, homogeneous, slightly swelling, slight to moderately calcareous, trace glauconite
Trace LIMESTONE: (mudstone), off white to grey white, very pale grey, rarely yellow brown, soft to firm, sub blocky to angular, amorphous, microcrystalline, slightly argillaceous

16500ft MD(9559.8ft TVDSS)

Sola Fm

MW:12.8,PV/YP:47/15,VIS:77,GELS:9/17/18,ES:465,CL:40k,O/W:70/33,

CLAYSTONE: Predominantly dark grey to grey black, occasional moderate grey, occasional red/brown to brown, firm to moderately hard, sub blocky to blocky, commonly grading to siltstone in places, earthy texture, generally fissile but locally crumbly.
LIMESTONE: yellow/brown, tan, off white, moderately hard to very hard, brittle, sub blocky to blocky, microcrystalline, very argillaceous in places
TUFF: light grey, light grey/green with grey to dark grey speckles, very soft, earthy, crumbly.

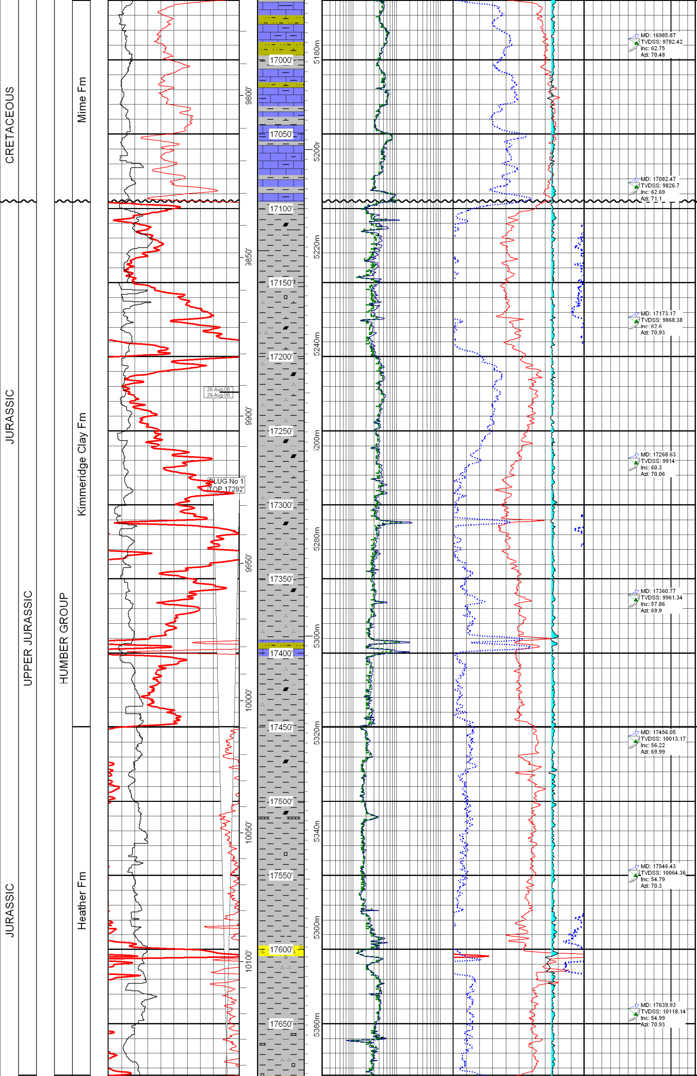
16739ft MD(9669.63ft TVDSS)

Valhall Fm

CLAYSTONE: red brown, brown, chestnut brown, dark grey, grey, grey blue, occasional grey black, predominantly firm to moderately hard, soft in places, sub blocky to blocky, commonly brittle, fissile in places, occasionally soft and crumbly, non to weakly calcareous, commonly grading to siltstone in places.
LIMESTONE: yellow/brown, tan, off white, moderately hard to very hard, brittle, sub blocky to blocky, microcrystalline, very argillaceous in places

CLAYSTONE: Dark grey to medium grey, red brown in places, moderately firm to moderately hard, sub blocky to blocky and angular, predominantly homogeneous, grading to siltstone in place, moderate to very calcareous, trace carbonaceous material.
LIMESTONE: (mudstone) very pale grey, grey brown, and occasionally pale blue grey, moderately firm to hard, sub blocky to angular, splintery in places, microcrystalline, very argillaceous, no visible porosity.

16960ft MD(9770.58ft TVDSS)



Mime Fm

LIMESTONE: (mudstone) very pale grey, grey brown, and occasionally pale blue grey, moderately firm to hard, sub blocky to angular, splintery in places, microcrystalline, very argillaceous, no visible porosity.
CLAYSTONE: red brown, medium brown, dark grey in places, firm to moderately hard, brittle, occasionally crumbly, sub blocky to blocky, silty, calcareous.

17094.99ft MD(9832.45ft TVDSS)

Kimmeridge Clay Fm

CLAYSTONE: predominantly grey brown to brown, grey to dark grey with occasional blue grey, soft to moderately firm, sub blocky to blocky, generally amorphous but commonly silty, argillaceous, carbonaceous, earthy texture, trace pyrite, weakly to moderately calcareous.
TRACE LIMESTONE: pale grey, off white, soft in places but predominantly firm to moderately hard, brittle, sub blocky to blocky, occasionally crumbly, argillaceous micro lamination.
TRACE SANDSTONE: translucent to transparent, opaque, pale grey, loose and uncemented, unconsolidated, very grained, well sorted, spherical.

MW:12.9,PV/YP:43/20,VIS:77,GELS:9/17/18,ES:507,CL:39k,O/W:72/28,

CLAYSTONE: Grey black to dark grey, firm to moderately hard, occasionally soft, amorphous to sub blocky, blocky, heterogeneous, non calcareous, non to slightly swelling, abundant calcareous material, carbonaceous, grading to coarse silt in places.
LIMESTONE: (mudstone), grey to very pale grey, off white, soft to moderately firm, amorphous to sub blocky, microcrystalline, very argillaceous, arenaceous, no visible porosity.
SANDSTOINE: Recovered as rock flour, grey to dark grey, soft, amorphous, friable, slightly calcareous, very argillaceous, very silty.

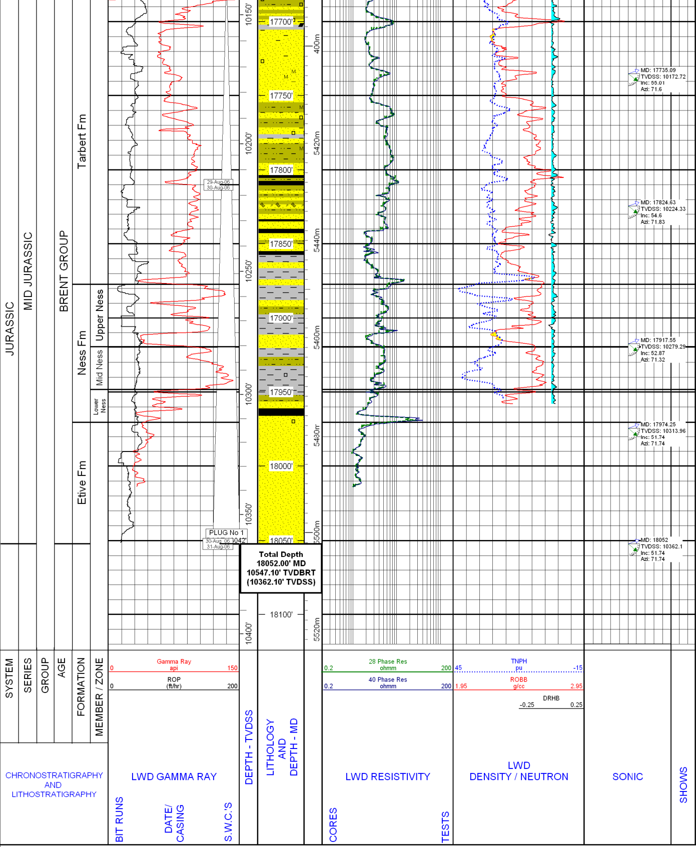
17449.72ft MD(10009.66ft TVDSS)

Heather Fm

CLAYSTONE: Dark grey brown to light grey brown, occasionally very pale brown, soft to moderately firm, splintery in places, waxy, predminantly homogeneous, grading to siltstone in places, trace carbonaceous material. trace pyrite.
Trace LIMESTONE: (mudstone), grey to very pale grey, off white, soft to moderately firm, amorphous to sub blocky, microcrystalline, very argillaceous, arenaceous, no visible porosity.

CLAYSTONE: predominantly medium grey to dark grey, occasional red brown to brown, moderately firm to firm sub blocky to blocky, grading to silty claystone in places, slightly calcareous.
SANDSTONE: pale brown to off white, pale cream, pale grey to pale green grey, argillaceous, predominantly seen as rock flour but common weak to moderately consolidated grains, poor cement, moderately firm, friable, fine grained, sub rounded to rounded, fair inter-granular porosity, common trace of fine disseminated pyrite, no show.

17684.92ft MD(10143.94ft TVDSS)



Tarbert Fm

SANDSTONE: pale grey to pale cream grey, predominantly seen as rock flour, but commonly as weakly consolidated grains, very fine to fine grain, moderately well sorted, sub rounded to round, moderately firm, friable, poor cement, fair inter-granular porosity, common pyrite, no show.

SANDSTONE: light brown, light grey brown, predominantly seen as rock flour, with common weakly cemented consolidated types, friable, fine grained, sub round to round, sub spherical, moderate sorting, moderate inter-granular porosity, no show, no stain, commonly argillaceous, trace pyrite.
CLAYSTONE: predominantly medium to dark grey, moderately firm to firm, occasionally moderately hard, sub blocky to blocky, commonly seen grading to siltstone in places, slightly calcareous.
COAL: dark brown to dark brown black, moderately firm to hard, sub blocky to blocky, brittle, splintery, concoidal fracture, occasional very fine micro-pyrite lamination, vitreous lustre.

17877.37ft MD(10255.24ft TVDSS)

Upper Ness

17919.57ft MD(10280.51ft TVDSS)

Mid Ness

17948.4ft MD(10298.04ft TVDSS)

Lower Ness

17970.39ft MD(10311.57ft TVDSS)

Etive Fm

MW:12.8,PV/YP:32/16,VIS:74,GELS:7/13/15,ES:54.2,CL:25.41,O/W:77/23,

SANDSTONE: Recovered as rock flour, very pale brown to grey white, very pale grey, to grey brown, moderately firm, friable, sub angular, very argillaceous. Recovered as loose QUARTZ: Transparent to translucent, opaque, colourless, very pale orange, very pale yellow, white, medium to fine grained, moderately sorted, sub round to spherical, rare weak calcareous cement, trace pyrite, trace carbonaceous material no visible porosity, no show above OBM.
SILTSTONE: Very dark grey, grey brown, moderately, firm to hard, blocky to angular, heterogeneous, non calcareous, non swelling, very argillaceous, trace carbonaceous material, trace pyrite.
COAL: Black, hard, brittle, splintery, vitreous lustre.

CONVENTIONAL CORES

No.	Recovery		Drilled Depths (Feet)		Corrected Depths (Feet)		Formation	Description
	Feet	%	Top	Base	Top	Base		

SIDEWALL CORES

Run	No.	MD	TVD	Recovery	Description

No Conventional or Sidewall Cores Taken

RFT/MDT PRESSURE DATA SHEETS

No RFT/MDT's Taken

DST

No DST's Taken

VSP OPERATIONS

No VSP's Taken