☼ **P&A GAS DISCOVERY**

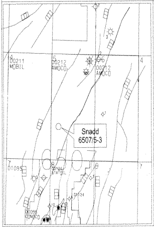
BP AMOCO NORWAY

COMPOSITE LOG

6507/5-3

SCALE 1:500
MEASURED DEPTH

FIELD MAP



WELL LOCATION

CO-ORDINATES AT SURFACE

Latitude:	65° 35' 20.85" N
Longitude:	07° 24' 36.93" E
Grid Reference:	426 690.60 m E 7 275 223.30 m N

CO-ORDINATES AT T.D

Latitude:	65° 35' 20.68" N
Longitude:	07° 24' 38.18" E
Grid Regerence:	426 706.41 m E 7 275 217.66 m N
Projection Mnemonics:	UTM32N CM9°E
Geodetic Datum:	ED50, 1924 Spheroid

CASING DETAILS:

Casing size	Depth	Leak-off test Result
30"	536.0m	NO LOT
20"	689.0m	LOT 1.32sg EMW
13 3/8"	1670.0m	LOT 1.68sg EMW

WELLSITE GEOLOGISTS:

Alan Hay	Cambrian Consultants
Graham Wheatley	Cambrian Consultants
Will Churcher	Quad Operations

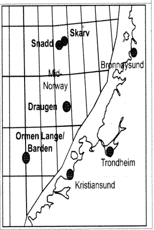
OPERATIONS GEOLOGIST:

Neil Hanley	Cambrian Consultants

GENERAL WELL DATA

PRE-SPUD WELL STATUS:	Exploration
COMPLETION STATUS:	P&A Gas Well
OPERATOR:	BP Amocc Norge
RIG USED:	West Navion
RIG TYPE:	Drillship
DEPTH DATUM:	RT
DATUM HEIGHT:	36.0m
DATE SPUDDED:	15th May 2000
REACHED T.D:	12th June 2000
RIG RELEASED:	
TOTAL DEPTH:	3000.0 mBRT 3000.0 mTVDBRT
LICENCE:	PL 212
INTERESTS:	BP AMOCO ENTERPRISE EXXON/MOBIL SDFI
WELLSITE GEOLOGY:	Cambrian/Quad
MUDLOGGING CONTRACTOR:	Geoservices
CORING CONTRACTOR:	Baker Hughes Inteq
MWD CONTRACTOR:	Baker Hughes Inteq
WIRELINE CONTRACTOR:	Schlumberger
DRILLING CONTRACTOR:	Smadvig

REGIONAL MAP



STRATIGRAPHY

STRATIGRAPHY	SEISMIC HORIZON	DEPTH mMDBRT	DEPTH mTVDBRT	DEPTH mTVDSS	VERTICAL THICKNESS	BASIS OF PICK
QUATERNARY						
Undifferentiated	1750.20	454.00	454.00	418.00	704.00	Seabed
TERTIARY						
Nordland Group						
Naust Fm	1799.00	1158.00	1158.00	1122.00	282.00	Wireline Pick
Kai Fm	1907.80	1440.00	1440.00	1404.00	417.50	Wireline Pick
Hordaland Group						
Brygge Fm	1978.30	1857.50	1857.50	1821.50	190.00	Wireline Pick
Rogaland Group						
Tare Fm	1990.50	2047.50	2047.50	2011.50	55.50	Wireline Pick
Tang Fm	1995.90	2103.00	2103.00	2067.00	38.50	Wireline Pick
CRETACEOUS						
Shetland Group						
Springar Fm	1996.50	2141.50	2141.50	2105.50	113.50	Wireline Pick
Nise Fm	2003.90	2255.00	2255.00	2219.00	340.50	Wireline Pick
Kvitnos Fm	2041.70	2595.50	2595.50	2559.50	242.00	Wireline Pick
Cromer Knoll Group						
Lysing Fm	2078.10	2837.50	2837.50	2801.50	55.20	Wireline Pick
Lange Fm	2089.50	2892.70	2892.70	2856.70	+107.30	Wireline Pick

WIRELINE FORMATION TESTS

TEST No.	DEPTH mMDBRT	DEPTH mTVDSS	MUD HYDROSTATIC psia		FORMATION PRESSURE psia	REMARKS
			BEFORE	AFTER		
1	2843.0	2807.0	6101.00	6098.00	5399.60	
2	2844.0	2808.0	6101.00	6096.00	5400.50	
3	2845.2	2809.2	6100.00	6098.60	5400.70	
4	2848.5	2812.5	6105.00	6104.00	-	abort, tight
5	2850.0	2814.0	6106.00	6105.50	5402.80	
6	2854.5	2818.5	6116.00	6113.00	5404.38	
7	2860.0	2824.0	6128.00	6124.00	5410.00	supercharged
8	2863.2	2827.2	6130.00	6130.00	5409.60	
9	2864.5	2828.5	6130.90	6130.00	5408.40	
10	2867.5	2831.5	6137.00	6136.50	-	abort, tight
11	2868.0	2832.0	6137.00	6136.00	5410.40	
12	2875.7	2839.7	6159.00	6153.00	5418.50	
13	2881.0	2845.0	6167.00	6162.00	5425.80	
14	2887.0	2851.0	6180.00	6177.00	5438.30	
15	2890.0	2854.0	6188.00	6183.00	5446.60	supercharged
16	2892.0	2856.0	6188.50	6186.00	5455.00	supercharged
17	2891.0	2855.0	6185.00	6182.00	5448.50	
18	2851.5	2815.5	6085.00	6085.00	5402.30	
19	2853.1	2817.1	6091.00	6090.70	5403.30	
20	2877.0	2841.0	6158.00	6153.00	5420.80	
21	2882.0	2846.0	6163.00	6163.00	5427.50	
22	2890.0	2854.0	6184.00	6180.00	-	abort, tight
23	2864.5	2828.5	6141.00	6144.00	5409.00	Fluid sample
24	2843.0	2807.0	6147.00	6195.00	5419.30	Fluid sample
25	2875.0	2839.0	6087.00	6061.00	5400.00	Water sample

LWD LOGGING

RUN NO.	TOOL TYPE	TOP DEPTH (m)	BOTTOM DEPTH (m)	REMARKS
1	MPR/DCP	500.0	701.0	12 1/4" Pilot Hole
2	MPR/DCP	695.0	1702.0	No problems
3	MPR/ORD/DCP	1702.0	2836.5	ORD tool failed below 2244m
4	MPR/DCP	2836.5	3000.0	Reamed over cored section, no problems

WIRELINE LOGGING

RUN NO.	TOOL TYPE	TOP DEPTH (m)	BOTTOM DEPTH (m)	REMARKS
1A	HALS/PEX/DSI/AMS/SP/GPIT	1673.0	2975.0	Abort DSI due to poor weather
1A	MDT/AMS/GR	2843.0	2892.0	22 prestests, 18 good
1A	VSP/GR/AMS	1050.0	2985.0	Checkshot above 1500m
1AB	FMI/DSI	400.0	2960.0	Obtain missing DSI data
1A	MSCT	2870.5	2891.5	15 attempts, 13 recovered
1B	MSCT	2862.0	2868.5	7 attempts, 6 recovered

RFT/MDT PRESSURES

◄—(RUN) SAMPLE
◁—(RUN) PRESSURE POINT

SIDEWALL CORES

RUN ► RECOVERED
RUN ▷ EMPTY/LOST

CORED INTERVAL

DEPTH
CORE NO (SHIFT) RECOVERY
DEPTH
DEPTH

HYDROCARBON SHOWS

● OIL
☼ GAS
✹ OIL AND GAS
◇ FLUORESCENCE

↖ FLUID GAIN
↘ FLUID LOSS TO FORMATION

◢ CASING SHOE

LINER HANGER

PRODUCTION LINER

DST ZONE

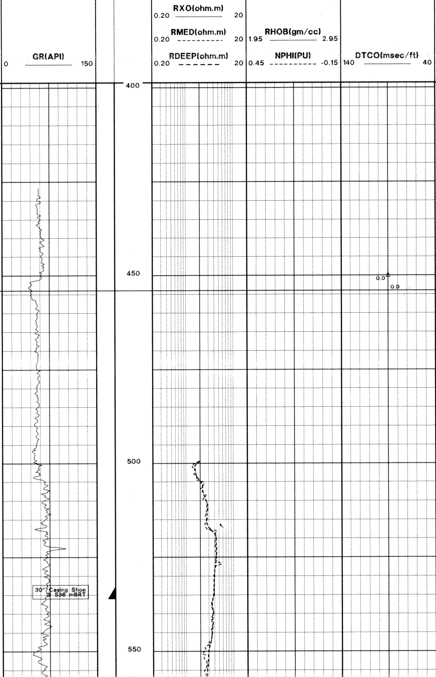
DEPTH
(NO)
DEPTH

LITHOLOGY ▤ Mudstone/ Shale/Clay ▨ Siltstone/ Silt ▨ Sandstone/ Sand ▨ Conglomerate/ Gravel ▨ Breccia ■ Coal/ Lignite ▼ Chert/ Flint ☒ Unknown Lithology/ Sample Gap

	▤	Limestone	▨	Dolomite	▤	Dolomitic Limestone	▨	Calcareous Dolomite	▨	Anhydrite/ Gypsum	▦	Halite	▽	Miscellaneous Chlorides	△	Miscellaneous Sulphates
	▨	Extrusive Igneous	▨	Intrusive Igneous	▨	Tuff	▨	Metamorphic								
LITHOLOGICAL QUALIFIERS	—	Argillaceous	- -	Silty		Sandy	○	Pebbly	⊥	Calcareous	∠	Dolomitic	Λ	Anhydritic	▼	Chert
	▬	Carbonaceous	B	Bituminous	G	Glauconitic	M	Micaceous	●	Pyritic	⊙	Oolitic	∨	Volcanic	\\	Tuffaceous
	L	Lithic	F	Feldspathic	C	Calcite	D	Dolomite	Fe	Ironstone	K	Kaolinite	Ph	Phosphate		
	Q	Quartz	S	Siderite	Si	Silica	Cl	Chlorite	⊖	Nodule	Fe	Iron Nodule	+	Halite		
FOSSILIFEROUS MATERIAL	∂	Macrofossils	≈	Bioclastic Debris	∞	Microfossils	Φ	Plant Remains								

CHRONO/LITHO STRATIGRAPHY	GAMMA RAY	DEPTH	RESISTIVITY	POROSITY LOGS	SONIC	LITHOLOGY DESCRIPTION & REMARKS

PERIOD	EPOCH	AGE	GROUP	FORMATION	MEMBER
QUATERNARY		PLEISTOCENE	NORDLAND GP	UNDIFFERENTIATED	



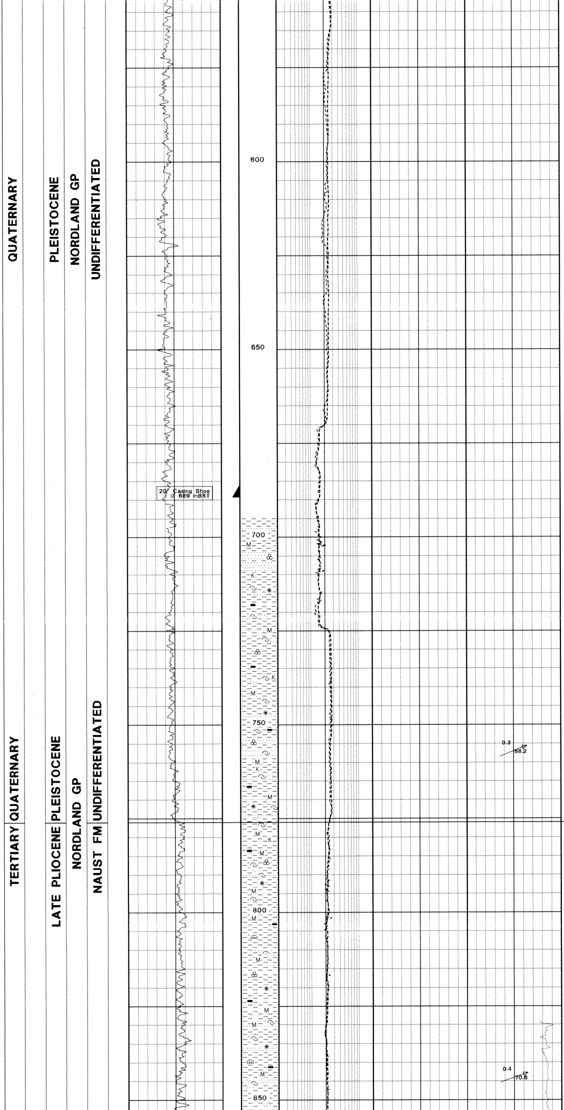
Whilst opening-up to 36" hole the string was lost due to a back-off at the saver-sub on the top-drive. This could not be fished and so the well was respudded 11.6m to the south west of the first hole.

The respud was drilled with 36"/26" tandem hole opener behind a 17.5" bit.
Having run 20" Casing, BOP and Riser, the 17 1/2" hole was drilled out on 25th May 2000

SEABED 454.00 mBRT
(454.00 mTVDBRT)

RETURNS TO SEABED

NO LOT



RETURNS TO SEABED

LOT: 1.32sg EMW
Tested with 1.28sg mud and 43 psi applied surface pressure.

CLAY: light to medium grey, slightly pale greenish grey, soft, amorphous, hygroturgid, sticky, with abundant sand grains, locally carbonaceous, locally micaceous with traces of lime, rare microfossils, traces lignite, trace pyrite.

SAND: translucent to opaque, colourless to pale orange, very fine to fine, subangular to subrounded, subspherical, loose, intercalated within clay.

CLAY: medium grey to greenish grey, occasionally pale yellow brown, locally dark green stained, soft, amorphous, locally subblocky, hackly break, hygroturgid, sticky, with abundant sand grains, locally carbonaceous, locally micaceous, rare microfossils, trace lignite, trace pyrite.

SAND: varicoloured, yellow to dark yellow, commonly yellow brown, pink to red, predominantly very fine to commonly medium, locally coarse to very coarse, subrounded to angular, subelongate, common metamorphic rock fragments, quartz and feldspar, biotite mica, rare glauconitic grains, loose, intercalated within clay.

CLAY: medium grey to greenish grey, occasionally pale yellow brown, locally dark green stained, soft, amorphous, locally subblocky, hackly break, hygroturgid, sticky, with abundant sand grains, locally carbonaceous, locally micaceous, rare microfossils, trace lignite, trace pyrite.

NAUST FM 776.00 mBRT
(776.00 mTVDBRT)

SAND: varicoloured, clear to translucent, occasionally opaque, pale yellow brown to dark yellow, occasionally pink to pale red brown, commonly colourless, very fine to very coarse, grading to gravel, subangular to subrounded, occasionally well rounded, subelongate to subspherical, common metamorphic rock fragments, quartz and feldspar, biotite mica, rare glauconitic grains, microfossils, echinoid spines, shell fragments, loose, intercalated within clay.

CLAY: medium greenish grey to dark greenish grey, locally pale to moderate brownish grey, soft, amorphous, sticky, hygroturgid, locally moderately firm, subblocky, hackly break, non to slightly calcareous, micropyritic, with abundant sand grains, locally carbonaceous, locally micaceous, occasional forams, shell fragments, echinoid spines.

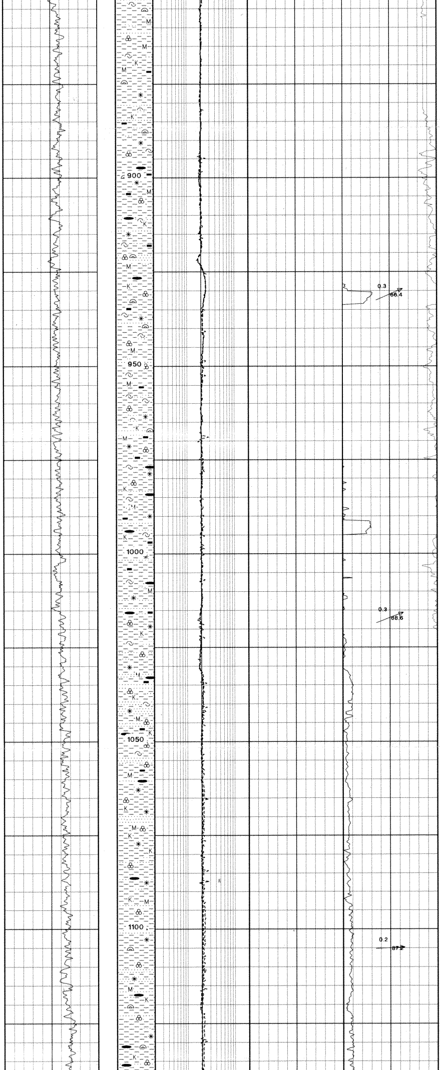
SAND: clear to translucent, occasionally opaque, colourless to pale brown, commonly yellow brown quartz, predominantly very fine to medium, subangular to subrounded, occasionally coarse to very coarse, subrounded to well rounded, loose, occasional orange pink feldspar, biotite mica, lithic fragments.

TERTIARY

LATE PLIOCENE

NORDLAND GP

NAUST FM



SAND: clear to translucent, occasionally opaque, colourless to pale brown, commonly yellow brown quartz, predominantly very fine to medium, subangular to subrounded, occasionally coarse to very coarse, subrounded to well rounded, loose, common irridescent shell fragments.

SAND: clear to translucent, occasionally opaque, colourless to pale brown, commonly yellow brown quartz, predominantly very fine to very coarse, subangular to subrounded, loose.

CLAY: locally very pale greenish grey, soft to occasionally moderately firm, partially laminated, subblocky, locally with carbonaceous banding, slightly calcareous.

SAND: clear to translucent, occasionally opaque, colourless to pale brown, commonly yellow brown quartz, predominantly very fine to medium, rarely medium to very coarse, subangular to subrounded, loose.

CLAY: moderate to dark grey, occasionally light greenish grey, soft, amorphous, sticky, abundant intercalations of sand, micropyritic, locally carbonaceous, micaceous, occasional forams, shell fragments.

TERTIARY

LATE PLIOCENE

NORDLAND GP

NAUST FM

SAND: clear to translucent, occasionally opaque, colourless to pale brown, commonly yellow brown quartz, occasional orange pink feldspar, black biotite mica, lithic fragments, predominantly very fine to medium, subangular to subrounded, occasionally coarse to very coarse, subrounded to well rounded, loose, with occasional conglomeratic subangular fragments of metamorphic and volcanic clasts.

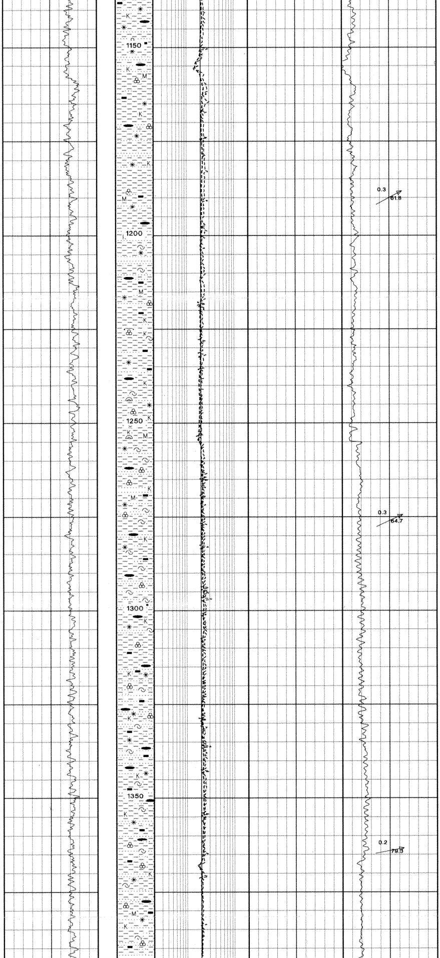
CLAY: moderate to dark grey, occasionally light greenish grey, soft, amorphous, sticky, abundant intercalations of sand, micropyritic, locally carbonaceous, micaceous, occasional forams, shell fragments, becoming increasingly indurated.

TERTIARY

LATE PLIOCENE

NORDLAND GP

NAUST FM



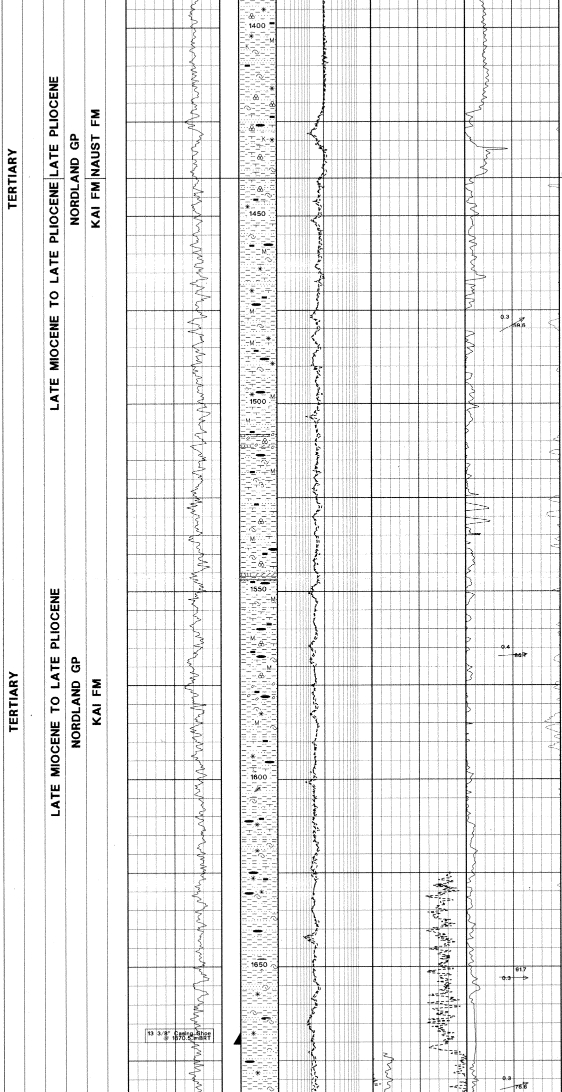
MUDSTONE: moderate to dark grey, occasionally light greenish grey, soft, amorphous, sticky, abundant intercalations of sand, micropyritic, locally carbonaceous, micaceous, occasional forams, shell fragments, becoming very silty, grading to silty mudstone.

MUDSTONE: moderate to dark grey, locally moderate to dark greenish grey, soft, amorphous, sticky, hygroturgid, locally firm, subblocky, plastic, non to slightly calcareous, commonly silty, sandy, locally with abundant very coarse metamorphic/lithic rock fragments, traces of forams, shell fragments, glauconite, mica and micropyrite.

SAND: clear to translucent, occasionally opaque, colourless to pale yellowish brown, occasionally milky white quartz, predominantly very fine to medium, subangular to subrounded, occasionally coarse to very coarse, subrounded to well rounded, loose, occasional orange pink & dark grey feldspar, black biotite mica, lithic fragments.

MUDSTONE: moderate to dark greenish grey, dark olive grey, soft, amorphous, sticky, hygroturgid, locally firm, subblocky, plastic, hackly break, very silty/sandy / very fine floating sand grains, clear to translucent, colourless to occasionally pale yellow brown quartz. Non-slightly calcareous, metamorphic/lithic rock fragments, traces of forams, shell fragments, glauconite, mica and micropyrite.

SAND: clear to translucent, occasionally opaque, colourless to pale yellowish brown, occasionally milky white quartz, predominantly very fine to fine, subangular to subrounded, occasionally medium to very coarse, subrounded to well rounded, loose, occasional orange pink & dark grey feldspar, black biotite mica, lithic fragments, traces pyrite, carbonaceous material, shell fragments.



MUDSTONE: moderate to dark greenish grey, dark olive grey, soft, amorphous, sticky, hygroturgid, locally firm, subblocky, plastic, hackly break, very silty/sandy / very fine floating sand grains, clear-translucent, colourless to occasionally pale yellow brown quartz. Non-slightly calcareous, metamorphic/lithic rock fragments, traces of forams, shell fragments, glauconite, mica and micropyrite.

SAND: predominantly clear to translucent, colourless, rarely pale yellowish brown, occasionally opaque milky white quartz, generally very fine to fine, commonly medium, sub-angular to sub-rounded, occasionally coarse to very coarse, rounded to well rounded, loose, rare pale orange pink feldspar, dark green glauconite, occasional crystalline pyrite.

KAI FM 1440.00 mBRT
(1440.00 mTVDBRT)

MUDSTONE: moderate to dark greenish grey, moderate to dark olive grey, soft, amorphous, sticky, hygroturgid, locally firm, subblocky, plastic, hackly break, slightly silty / sandy, moderately to very calcareous, traces of forams, shell fragments, glauconite, mica and micropyrite.

MUDSTONE: moderate to dark greenish grey, moderate to dark olive grey, soft, amorphous, sticky, hygroturgid, locally firm, subblocky, plastic, hackly break, slightly silty / sandy, slightly calcareous, traces of forams, shell fragments, glauconite, mica and micropyrite.

MUDSTONE: moderate to dark greenish grey, moderate to dark olive grey, soft, amorphous, sticky, hygroturgid, locally firm, subblocky, plastic, hackly break, slightly silty / sandy, non to moderately calcareous, traces of forams, shell fragments, glauconite, mica and micropyrite.

MUDSTONE: moderate to dark greenish grey, moderate to dark olive grey, soft, amorphous, sticky, hygroturgid, locally firm, subblocky, plastic, hackly break, slightly silty / sandy, moderately to very calcareous, traces of forams, shell fragments, glauconite, mica and micropyrite, abundant pebbles / gravel of metamorphic and lithic rock fragments.

SILTSTONE: olive grey to olive black, soft, amorphous to subblocky, locally with abundant sand grains and mica, grading to silty mudstone, rare lithic fragments.

MUDSTONE: moderate to dark greenish grey, moderate to dark olive grey, soft, amorphous, sticky, hygroturgid, locally firm, subblocky, plastic, hackly break, slightly silty / sandy, moderately to very calcareous, traces of forams, shell fragments, glauconite, mica and micropyrite

MUDSTONE: moderate to dark greenish grey, becoming light grey to pale yellow brown, soft, amorphous, sticky, hygroturgid, slightly hygroclastic, locally firm, subblocky, plastic, hackly break, slightly silty / sandy, traces of forams, shell fragments, glauconite, mica and micropyrite.

MUDSTONE: moderate to dark greenish grey, moderate to dark olive grey, soft, amorphous, sticky, hygroturgid, locally firm, sub-blocky, plastic, hackly break, grading to siltstone, commonly sandy.

SILTSTONE: olive grey to olive black, soft, amorphous to subblocky, locally with abundant sand grains, grading to silty mudstone, rare lithic fragments.

LOT: 1.68sg EMW
Tested with 1.52sg mud and **914** psi applied surface pressure

TERTIARY

LATE MIOCENE TO LATE PLIOCENE

NORDLAND GP

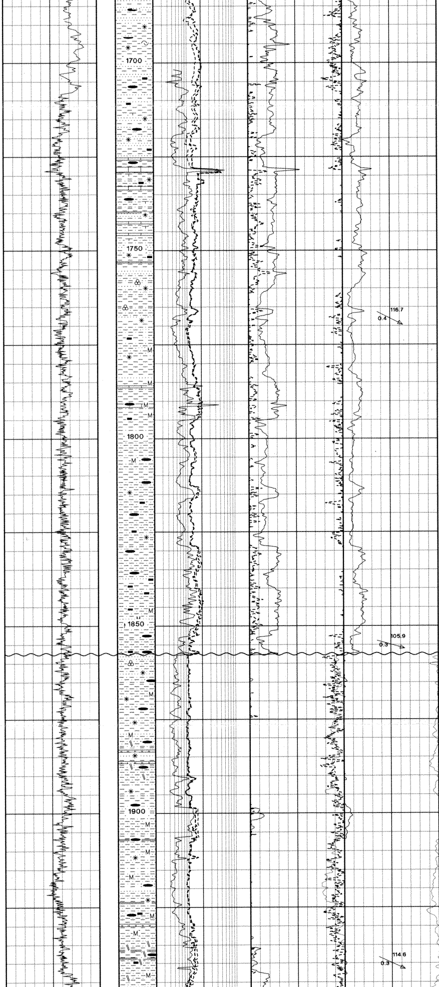
KAI FM

TERTIARY

LATE MIOCENE TO LATE PLIOCENE | EARLY EOCENE TO LATE OLIGOCENE

NORDLAND GP | HORDALAND GP

KAI FM | BRYGGE FM



MUDSTONE: moderate to dark greenish grey, moderate to dark olive grey, becoming pale to dusky yellowish brown, soft, amorphous, sticky, hygroturgid, locally firm, sub-blocky, plastic, hackly break, traces of forams, shell fragments, glauconite, mica and micropyrite.

SILTSTONE: pale yellowish brown to dusky yellowish brown, genrally soft to locally firm, subblocky to subtabular, occasionally very sandy or argillaceous, grading to silty mudstone with abundant thin sandy laminations, common lithic and carbonaceous debris, rarely glauconitic, pyritic.
LIMESTONE: pale cream to very pale yellowish bown, occasionally pinkish white, hard to firm, subtabular, rarely subblocky, microcrystalline, rarely dark brownish yellow, traces of included sand grains, locally grading to calcite cemented sandstone.

MUDSTONE: olive grey to dusky yellowish brown, soft to firm, subblocky, very silty, traces of glauconite.

SILTSTONE: light olive green to dark greenish grey, firm, subblocky to rarely blocky, locally with forams, common black carbonaceous / lignitic material, abundant coarse mica flakes, disseminated micropyrite, occasional masses of nodular pyrite, abundant micromica, locally with very fine to fine included sand grains, occasionally grading to mudstone.

SAND: colourless, commonly translucent to opaque, fine to locally very fine, loose, occasionally as very thin laminations.

SILTSTONE: very pale yellowish grey with abundant black carbonaceous / lignitic material with micropyrite.

BRYGGE FM 1857.50 mBRT
(1857.50 mTVDBRT)

MUDSTONE: reddish brown, locally pale bluish green to dark bluish green, soft to firm, subblocky, very silty, traces of glauconite.

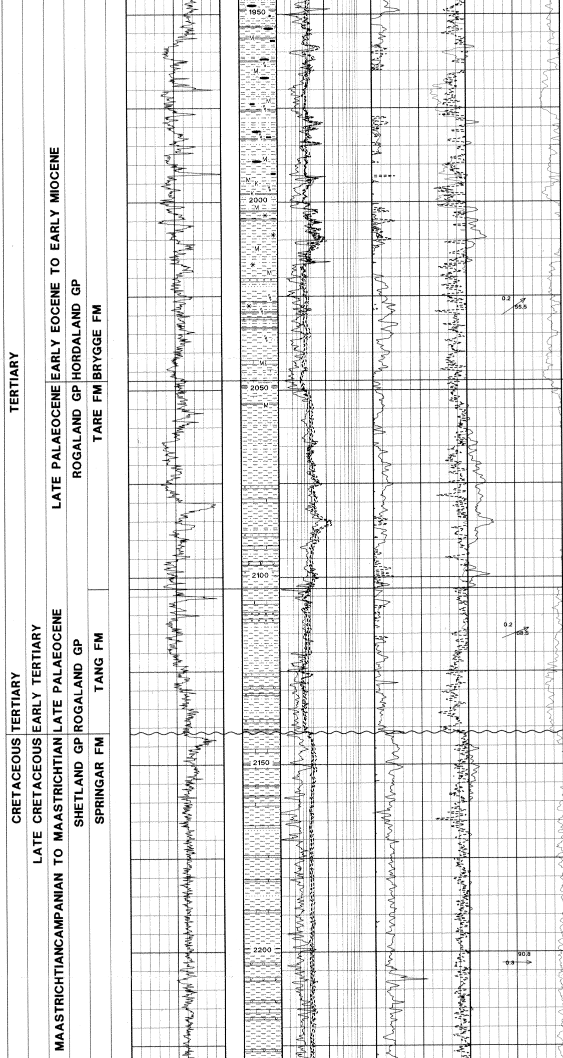
SILTSTONE: yellowish grey to olive grey, grey, firm, subblocky, commonly soft, earthy, locally crumbly, non to slightly calcareous, with abundant very fine, disseminated dark green glauconite grains, commonly with fine to medium muscovite and chlorite, disseminated pyrite, rare microfossils.

SAND: clear to translucent, occasionally opaque to milky white, colourless to pale yellow quartz, very fine to fine, rare medium to coarse grains of pale yellow well rounded quartz, subangular to subrounded, generally loose, occasionally poorly cemented with calcite, occasional dark orange pink feldspar, dark green glauconite.

TUFF: greyish dusky green to lightly bluish green, very fine pyrite else as siltstone.

SILTSTONE: dark yellowish brown and medium to dark dusky green, occasionally pale to medium grey, soft to firm, slightly translucent with abundant finely disseminated pyrite, occasional fragments of pale green glassy material present.

TUFF: medium to dark dusky green and locally pale to medium grey, soft to firm, slightly translucent, abundant dissemnated pyrite, occasional cuttings of pale green glassy material.



MUDSTONE: pale to moderate greyish green, firm to locally moderately hard, blocky, non calcareous, traces glauconite, mica, rare carbonaceous material, pyrite, rare pale grey cuttings of volcanic tuff?

MUDSTONE: pale to moderate greyish green, becoming moderate to dark yellow brown, firm to locally moderately hard, blocky, non-calcareous, traces of glauconite, mica and rare carbonaceous material, pyrite.

TUFF: pale grey, pale purple grey, occasionally speckled with very fine to fine white feldspar crystals, firm, blocky, non-calcareous.

TARE FM 2047.50 mBRT
(2047.50 mTVDBRT)

MUDSTONE: pale to moderate greyish green, firm to locally moderately hard, blocky, non-calcareous, traces of glauconite, mica and rare carbonaceous material, pyrite.

TUFF: medium to dark grey, greyish brown, moderately hard, blocky, gritty, non-calcareous, locally pale purple brown, light grey, rare light green glassy fragments

SANDSTONE: white to off white, clear to translucent occasionally opaque milky white quartz, very fine to fine, subangular to subrounded, loose, rarely to moderately well cemented with calcite, traces crystalline pyrite.

LIMESTONE: off white to pale yellow, occasionally pale orange, soft, locally firm, amorphous to rounded, locally blocky, moderately hard, microcrystalline, slightly argillaceous. grading to pale to moderate yellowish brown, very hard, blocky to splintery, microcrystalline, slightly argillaceous in part.

TANG FM 2103.00 mBRT
(2103.00 mTVDBRT)

MUDSTONE: pale to moderate greyish green, firm to locally moderately hard, blocky, non-calcareous, traces of glauconite, mica and rare carbonaceous material, pyrite, becoming moderate grey mudstone in part.

TUFF: medium to dark grey, greyish brown, moderately hard, blocky, gritty, non-calcareous, locally pale purple brown, light grey, rare light green glassy fragments.

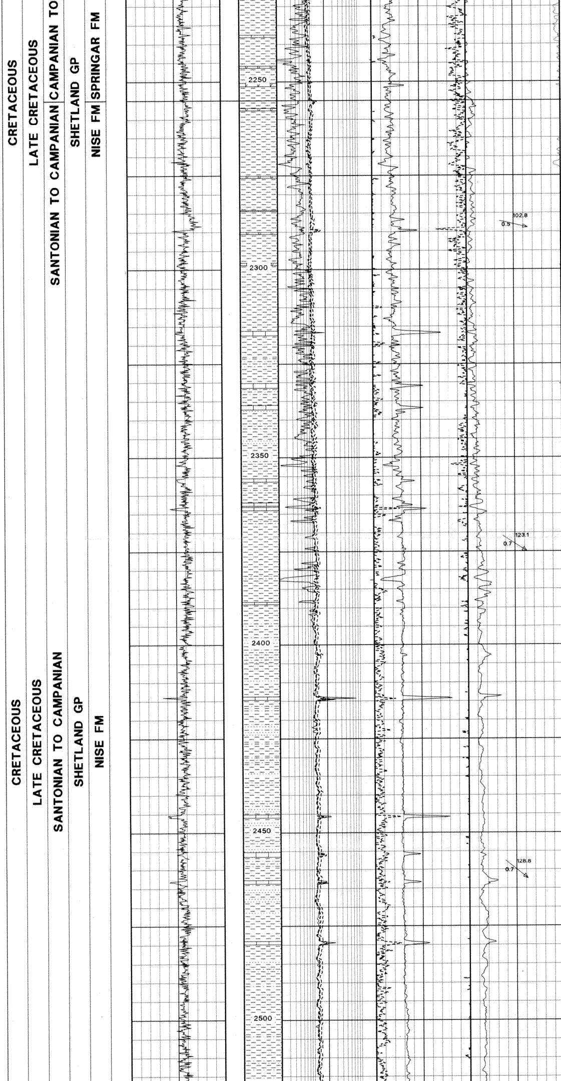
SPRINGAR FM 2141.50 mBRT
(2141.50 mTVDBRT)

LIMESTONE: white to off white, locally pale greyish brown-buff, hard, microcrystalline, occasionally chalky, earthy, slightly argillaceous, locally dolomitic, pale to moderate yellow brown, very hard, blocky to splintery, brittle, microcrystalline.

MUDSTONE: pale to moderate greyish green to greyish brown, rarely tan to moderate brown, variegated, commonly pale green to dark bluish green, rarely medium to dark brown, soft to locally firm, slightly hygroclastic, subblocky to subfissile, occasionally slightly splintery, sharp to hackly break, locally abundant micromica, micropyrite.

SANDSTONE: clear to translucent, colourless quartz, very fine to fine, subangular to subrounded, moderately well sorted, commonly occurs as disseminated grains within the mudstone.

LIMESTONE: off white to cream, moderately hard to hard, blocky, earthy, locally slightly chalky, locally dolomitic.



NISE FM 2255.00 mBRT
(2255.00 mTVDBRT)

MUDSTONE: brownish grey to dark brownish grey and olive black, soft to locally firm, slightly hygroclastic, subblocky to subfissile, occasionally hard, slightly splintery, sharp to hackly break, locally abundant micromica, micropyrite, common massive pyrite.

SILTSTONE: pale to moderate greyish green to greyish brown, commonly pale green to dark bluish green, rarely medium to dark brown, soft to locally firm, slightly hygroclastic, subblocky to subfissile, locally abundant micromica, micropyrite, grading to mudstone.

MUDSTONE: brownish grey to dark brownish grey and olive black, soft to locally firm, slightly hygroclastic, subblocky to subfissile, occasionally hard, slightly splintery, sharp to hackly break, locally abundant micromica, micropyrite, common massive pyrite, micro-laminations of dark carbonaceous material and intercalations of sandstone.

SANDSTONE: translucent to opaque, colourless quartz, very fine to fine grained, subrounded to subangular, moderately well sorted, loose or very poorly cemented, intercalated with mudstone.

MUDSTONE: pale to moderate greyish green to greyish brown, rarely tan to moderate brown, variegated, commonly pale green to dark bluish green, rarely medium to dark brown, soft to locally firm, slightly hygroclastic, subblocky to subfissile, occasionally slightly splintery, sharp to hackly break, local abundant micromica, micropyrite.

SANDSTONE: translucent to opaque, colourless, occasionally orange-brown frosted, rose quartz, predominantly very fine to fine, subrounded to subangular, moderately to well sorted, generally loose and poorly cemented, intercalated with mudstone and siltstone.

MUDSTONE: pale to moderate greyish green to greyish brown, rarely tan to moderate brown, variegated, commonly pale green to dark bluish green, rarely medium to dark brown, soft to locally firm, slightly hygroclastic, subblocky to subfissile, occasionally slightly splintery, sharp to hackly break, locally abundant micromica, micropyrite.

SILTSTONE: olive grey, firm, blocky, abundant very fine sand grains, glauconite, and black streaks and specks of carbonaceous material.

MUDSTONE: olive grey, pale yellowish brown, pale to moderate greyish green to greyish brown, rarely tan to moderate brown, variegated, commonly pale green to dark bluish green, rarely medium to dark brown, soft to locally firm, slightly hygroclastic, subblocky to subfissile, occasionally slightly splintery, sharp to hackly break, locally abundant micromica, micropyrite.

CRETACEOUS

LATE CRETACEOUS

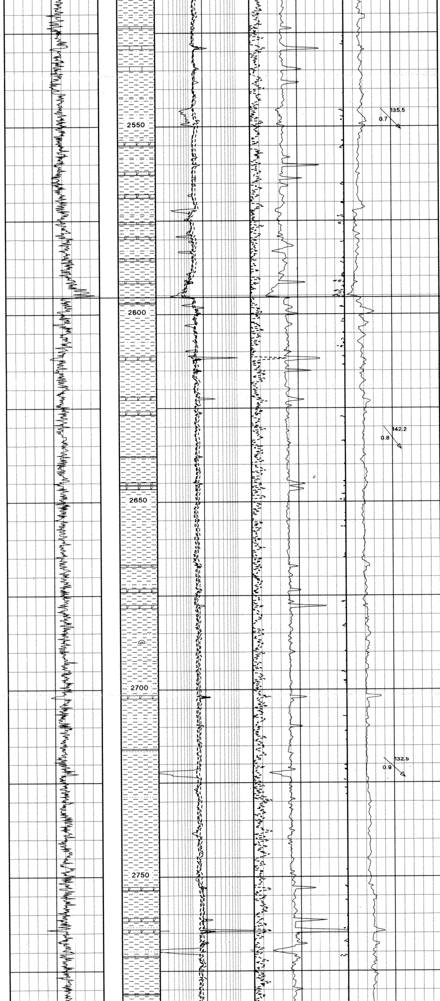
SANTONIAN TO CAMPANIAN

SHETLAND GP

NISE FM

TURONIAN TO SANTONIAN

KVITNOS FM



MUDSTONE: olive grey, rarely reddish brown and pale greenish blue to pale green, olive black to geenish black, rarely medium grey, soft to firm, subblocky to subtabular, occasional very fine to disseminated black carbonaceous specks.

LIMESTONE: off white to cream, tan, pale yellowish brown, moderately hard to hard, blocky to splintery, earthy, locally slightly chalky, locally dolomitic.

SILTSTONE: olive grey, firm, blocky, abundant very fine sand grains, glauconite, and black streaks and specks of carbonaceous material.

LIMESTONE: white, hard, subtabular, brittle, occasionally chalky, microcrystalline, locally tan to pale yellowish brown, very hard, blocky to brittle, microcrystalline, dolomitic.

KVITNOS FM 2595.50 mBRT
(2595.50 mTVDBRT)

MUDSTONE: olive grey, firm, subblocky to subtabular, locally silty, micromicaceous, locally common black carbonaceous material, rare nodular pyrite, interbedded with very thin limestone stringers.

MUDSTONE: olive grey, rarely reddish brown and pale greenish blue to pale green, olive black to geenish black, rarely medium grey, soft to firm, subblocky to subtabular, occasional very finely disseminated black carbonaceous specks.

MUDSTONE: olive grey, rarely reddish brown and pale greenish blue to pale green, olive black to greenish black, rarely medium grey, soft to firm, subblocky to subtabular, occasional very fine to disseminated black carbonaceous specks, white to pale orange brown fibrous calcite.

CRETACEOUS

LATE CRETACEOUS

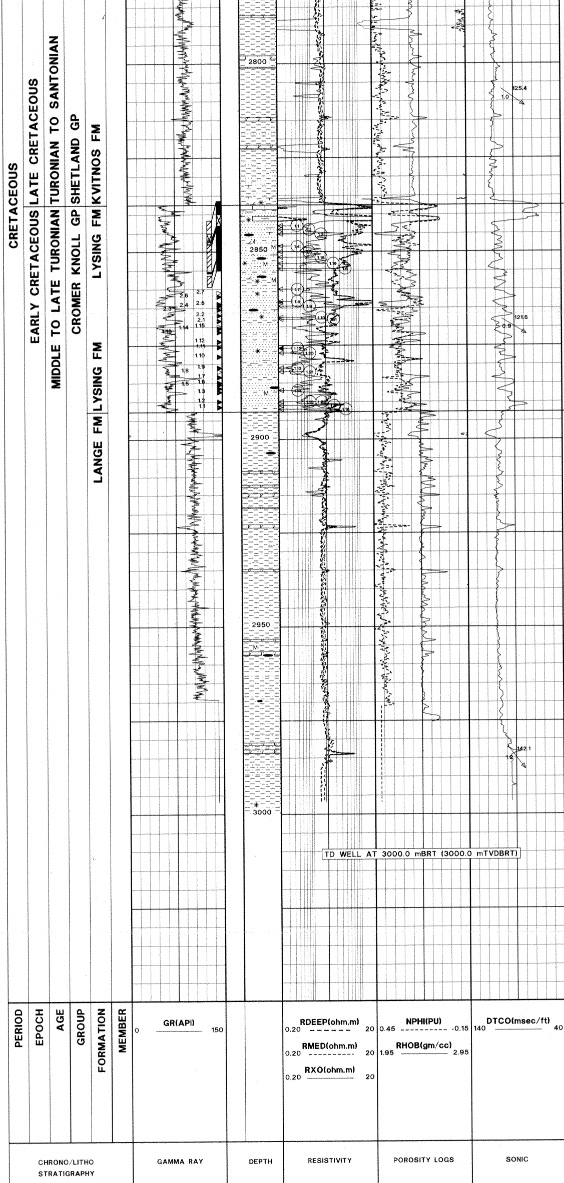
TURONIAN TO SANTONIAN

SHETLAND GP

KVITNOS FM

MUDSTONE: olive grey, slightly greyish brown, locally pale green, rarely reddish brown, firm, subblocky, micromicaceous, locally microcrystalline pyrite, commonly speckled, dark brown-black carbonaceous material, silty grading to siltstone.

SANDSTONE: white to off white, clear to translucent, colourless to occasionally opaque milky white quartz, very fine to fine, well sorted, subangular to subrounded, poorly to moderately cemented with calcite, common very fine dark green crystalline glauconite/chlorite.



MUDSTONE: brownish grey to olive brown, moderate greenish grey, firm to moderately hard, blocky to occasionally tabular, commonly subblocky, earthy, even fracture, trace very fine mica, rare crystalline pyrite, occasionally moderate reddish brown, moderately hard, slightly waxy, rare inclusions of dark green glauconite, commonly silty, non-slightly calcareous.

LIMESTONE: white to off white, occasionally light grey, soft occasionlly firm, crumbly, streaked pyrite and mica, floating crushed sand grains, occasionally pale to moderate orange pink, crumbly, microcrystalline, slightly argillaceous, arenaceous grading to calcareous sandstone.

LYSING FM 2837.50 mBRT
(2837.50 mTVDBRT)

SANDSTONE: clear to translucent, occasionally milky white, colourless to pale yellow green frosted quartz, very fine to very coarse, predominantly very fine to medium, poorly sorted, subangular to subrounded, subspherical, occasionlly subelongate to elongate, medium to very coarse muscovite mica, trace crystalline pyrite, clear crystalline and pale orange pink fibrous calcite, abundant off white crushed and reconstituted carbonate cement, generally loose, no cemented grains, no shows.

MUDSTONE: light greenish grey, medium to dark grey, firm, subfissile to platy, micromicaceous, finely disseminated pyrite, occasional calcite as fracture infill, occasionally abundant glauconite

LIMESTONE: buff to white, firm , blocky, microcrystalline, no shows.

SANDSTONE: clear to translucent, occasionally milky white, medium to very coarse, moderately to poorly sorted, local weak dolomitic to calcareous cement, argillaceous in part, common glauconite, no shows.

LANGE FM 2892.70 mBRT
(2892.70 mTVDBRT)

MUDSTONE: olive grey to brownish grey, firm to soft, subfissile to subblocky, locally glauconitic, with traces carbonaceous specks, micropyritic, silty in part

LIMESTONE: off white, light greyish white, predominantly microcrystalline, moderately firm, occasionally tan to yellow brown, cryptocrystalline, dolomitic, no shows.

MUDSTONE: olive grey, becoming greenish black to olive black, amorphous to locally subfissile, earthy in part, occasional sand grains, hygroclastic to hygroturgid, non calcareous.

LIMESTONE: buff, moderatly firm, sub-blocky to blocky, friable, microcrystalline, no shows.

DOLOMITE: buff to tan, hard to firm, locally soft, cryptocrystalline, no shows.

LITHOLOGY DESCRIPTION & REMARKS

SIDEWALL CORES

Core Run /No.	Depth mBRT	Lithology and Shows	POROSITY			SHOWS			
			Pr	Fr	Gd	Tr	Pr	Fr	Gd
1/1	2891.50	SANDSTONE: mottled light grey, quartzose, transparent, fine to occasionally medium grained, common glauconite, slightly argillaceous, appears well cemented.		X					
1/2	2890.00	SANDSTONE: light grey, quartzose, transparent, translucent, fine grained, occasionally very fine grained, subrounded, subspherical		X					
1/3	2887.50	SANDSTONE: light grey, quartzose, transparent, translucent, very fine grained, subrounded, glauconitic, rare mica.		X					
1/4	2886.50	SANDSTONE: light grey, quartzose, transparent, translucent, very fine grained to occasionally fine grained, rounded to well rounded, locally subrounded, rare mica.		X					
1/5	2885.50	MUDSTONE: mudium grey, dull, homogeneous							
1/6	2885.00	SANDSTONE: light grey, quartzose, very fine to locally fine grained, subrounded to well rounded, rare mica, slightly argillaceous.	X						
1/7	2883.50	SANDSTONE: light grey, quartzose, transparent, translucent, very fine to fine grained, subrounded to rounded, subspherical, occasional carbonaceous flecks.		X					
1/8	2882.00	MISSING							
1/9	2881.00	SANDSTONE: light grey, quartzose, transparent, very fine grained, trace muscovite, occasional glauconite.		X					
1/10	2878.00	SANDSTONE: off white, quartzose, translucent, medium grained, subangluar to subrounded, abundant white cement, common glauconite, rare pinpoint light yellow fluorescence (possibly mineral).	X			X			
1/11	2875.50	SANDSTONE: light grey, quartzose, translucent, predominantly medium grained, occasionally fine grained, subangular to angular, fiable, abundant glauconite, light blue/violet patchy direct fluorescence, occasionally patchy pale yellow direct fluorescence.			X			X	
1/12	2874.00	SANDSTONE: light to medium grey, mottled off white, fine to medium grained, subrounded, common glauconite, carbonaceous flecks, rare mica, rare light yellow white speckled direct fluorescence.		X		X			
1/13	2871.50	SANDSTONE: light grey, mottled green, translucent, medium to coarse, locally fine grained, subrounded, abundant glauconite, trace speckled light yellow white direct fluorescence.			X	X			
1/14	2870.50	SANDSTONE: off white, mottled green, very fine to fine grained, abundant white cement, occasional glauconite.	X						
1/15	2870.00	MISSING							
2/1	2868.50	SANDSTONE: light grey, milky white, translucent, quartzose, very fine grained, rarely fine grained, subangular to subrounded, well sorted, common glauconite, abundant translucent cement, no shows.	X						
2/2	2867.00	SANDSTONE: light brown, quartzose, very fine to fine grained, subangular to angular, argillaceous matrix, trace mica, trace glauconite.	X						
2/3	2865.50	MUDSTONE: dark grey, slightly silty, subvitreous.							
2/4	2864.50	SANDSTONE: off white, brown grey, fine to medium grained, subangular to subrounded, abundant white cement, trace glauconite, rare specks of light yellow direct fluorescence (probably mineral).	X						
2/5	2864.00	SANDSTONE: mottled off white, light grey, quartzose,translucent, transparent, medium to fine grained, slightly argillaceous, abundant white cement, trace glauconite.	X						
2/6	2862.0	SANDSTONE: medium grey brown, very fine grained, angular to subrounded, rarely rounded, well sorted, occasionally glauconitic.		X					
2/7	2861.00	MISSING							

CORING INFORMATION

	UNSHIFTED DATA					SHIFTED DATA					
Core No.	Cut From	Cut To	Rec. From	Rec. To	Percent Recovery	Cut From	Cut To	Rec. From	Rec. To	Percent Recovery	REMARKS
1	2836.50	2843.00	2836.50	2840.00	54.0%	2841.66	2848.16	2841.66	2845.16	54.0%	Jammed off, unable to restart.
2	2843.00	2844.00	2843.00	2843.65	65.0%	2846.65	2847.65	2846.65	2847.30	65.0%	Picked off bottom to investigate the source of object which fell to drill floor. Object revealed as 300 x 24 mm bolt from gooseneck support on top drive. drive. Changeout all bolts on gooseneck support. Attempt to restart coring - no go.
3	2844.00	2854.00	2844.00	2851.56	94.6%	2847.85	2857.85	2847.85	2855.41	94.6%	Malfunction on weight-on-bit indicator, stop coring. Pick up core barrel and broke core with 11 tonnes overpull. Troubleshoot problem with gauge. Attempt to restart coring - no go.
4	2852.00	2855.00	2852.00	2855.00	100.0%	2856.41	2859.41	2856.41	2859.41	100.0%	Jammed off after 3m. Unable to restart.