

Qulleq-1 (6354/4-1): sidewall core description

Service report prepared for Statoil a.s.

T. Preuss, G. Dam and F. Dalhoff

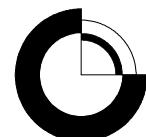


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Summary

The present report summarises the lithological description of 120 sidewall cores from the 6354/4-1 (Qulleq-1) well, drilled offshore West Greenland in the summer 2000.

Qulleq-1 was situated at:

Latitude: 63°48'48.03" N

Longitude: 54°27'06.61" W

in the Fyllas Banke area, West Greenland (Fig. 1) at a water depth of 1152 m. The well was spudded on July 10th, 2000 and reached TD of 2973 m below RT on September 4th, 2000 in Upper Santonian? sandstones. Qulleq-1 was plugged and abandoned as a dry hole on October 3rd, 2000.

Three sidewall core runs were made with Run 1A in 17½" hole section comprising 30 shuts with 27 recoveries and 3 misfired. The 8½" hole section contained run 2B and 2C with Run 2B comprising 60 shuts with 38 recoveries, 16 lost, 2 misfired and 4 empty and Run 2C with 60 shuts and 55 recoveries and 5 lost bullets.

All depths referred are in metres below rotary table (36 m a. m. s. l.)

Run 1A

Mudstones from 1895-1842 m. The mudstones are brownish to greenish grey with sst. patches. They are glauconitic and contain ?zeolites. The mudstones are indurated below 1862 m. and more soft above. They are non-calcareous.

Siltstones from 1842-1806.1 m. The siltstones are greenish grey and usually contain sst. patches. They are quartztic, but glauconite and dark minerals are common. The siltstones are bioturbated, non-calcareous and loose.

Mudstones from 1806.1-1748 m. The mudstones are greenish dark grey with sst. grains. They contain glauconite and ?zeolites. The mudstones are non-calcareous and indurated.

Run 2B and 2C

Sandstones from 2949-2648 m. The sandstones are generally quartztic, but glauconite and dark minerals are common. The sandstones are fine to coarse-grained and are generally moderately to well sorted. Few samples have granules. The sandstones are usually calcareous and loose. The sandstones below 2740 m are generally less sorted, less calcareous and some samples are not glauconitic, whereas all the sandstone samples above 2740 m are all well sorted, glauconitic and calcareous.

Mudstones from 2949-2648 m. Only few mudstones have been sampled from this interval. They are greyish to ol-black, contain silt and sand grains, in places carbonaceous, non-calcareous and soft.

Mudstones from 2648-1975. The mudstones are ol-black and usually contain silt and sandstone streaks (<2 mm), the sandstone streaks are well sorted quartztic and usually contain glauconite. They are loose and usually calcareous. The mudstones are relatively soft below approx. 2155 m, whereas above 2155 m most mudstones are indurated.

Run 1A

Shot No.	Depth (m RT)	Lithological description
1	1894.9	Mudst. w. vfs patches, ol-grey, glau., mass., non-calcareous, indurated.
2	1890	Mudst. w. vfs patches, dk grey, mica, mass., non-calcareous, rel. soft.
3	1872.5	Mudst. w. few vfs grains, gnsh grey, glau., mass., non-calcareous, indurated.
4	1867	Mudst. w. few vfs grains, gnsh grey, much glau., mass., calcareous, indurated.
5	1862	Mudst. w. scattered vfs grains, gnsh brown, much glau., mass., calcareous, rel. soft.
6	1847	Mudst. w. vfs patches, gnsh brown, glau., mass., non-calcareous, rel. soft.
7	1842	Mudst. w. vfs patches, gnsh brown, glau., mass., non-calcareous, rel. soft.
8	1832.5	Misfired.
9	1827.1	Misfired.
10	1823.1	Silty mudst., w. vfs patches, gnsh brown, glau., red min., non-calcareous, brittle.
11	1806.1	Silty mudst., ol-grey, glau., mica, red min., mass., non-calcareous, brittle.
12	1781.6	Silty mudst. w. scattered vfs grains, glau., red min. mass., non-calcareous, brittle.
13	1769	Mudst. w. vfs patches, scattered ms, qu grains and ?rock frag. (amph., pyrox.), gnsh dk grey, glau., red min., mass., non-calcareous, indurated.
14	1753	Silty mudst. w. vfs patches, scattered ms grains, gnsh dk grey, glau., red min., mica, mass., non-calcareous, brittle.
15	1748.1	Silty mudst. w. sandy patches, scattered ms grains, gnsh dk grey, glau., red min. (Fe-ox), mica, qu, dark min., ?zeolites, mass., non-calcareous, indurated.
16	1895	Silty mudstone w. silt streaks, dk grey, glau., red min., mica, dark min., mass., non-calcareous, indurated.
17	1890.1	Silty mudst. w. silty streaks, scattered sst grains, dk grey, glau., red min., mica, Fe-ox., ?zeolites, mass., non-calcareous, indurated.
18	1872.6	Mudst. w. scattered sst grains, gnsh grey, glau., Fe-ox., ?zeolites, mica, mass., non-calcareous, indurated.
19	1867.1	Mudst. w. abundant glauconite sst grains, glau. grains occur in thin streaks, gnsh grey, ?zeolites, dark min., mass., calcareous, indurated.
20	1862.1	Mudst. w. glauconite sst grains, glau. grains occur in thin streaks, gnsh grey, ?zeolites, dark min., shell frag., mass., calcareous, indurated.
21	1847.1	Mudst. w. scattered sst grains, gnsh grey, glau., dark min., ?zeolites, mica, mass., non-calcareous, indurated.

22	1842	Mudst. w. scattered sst grains, gnsh grey, glau., dark min., mica, ?zeolites, pyrite, Fe-ox, red min., non-calcareous, indurated.
23	1832.5	Silty vf sst, gnsh grey, well-sort., glau., dark min., red min., Fe-ox, mica, non-calcareous, loosely cemented.
24	1827	Siltstone, gnsh grey, well-sort, glau., mica, dark min., Fe-ox, red min., beautiful trace fossil w. backfill struct. (possibly <i>Zoophycus</i> isp.), mass., calcareous, loosely cemented.
25	1822.9	Siltstone, gnsh grey, well-sort, bioturb., glau., dark min., Fe-ox, mica, red min., mass., non-calcareous, loosely cemented.
26	1806	Muddy siltst. w. vf sst streaks, gnsh grey, well-sorted, glau., red min., dark min., mica, bioturb., beautiful trace fossil w. backfill struct. (possibly <i>Zoophycus</i> isp.), non-calcareous, indurated.
27	1781.6	Silty mudst. w. scattered sst grains, gnsh grey, glau., dark min., mica, non-calcareous, indurated.
28	1769	Mudst. w. scattered sst grains, dk grey, glau., mica, ?zeolites, mass., non-calcareous, soft.
29	1753	Mudst. w. scattered sst grains, dk grey, glau., mica, ?zeolites, Fe-ox, mass., non-calcareous, indurated.
30	1748	Misfired.

Run 2B

Shot No.	Depth (m RT)	Lithological Description
1	2962	Lost
2	2948.5	Lost
3	2932	Silty mudst., soft, brown-grey mottled, non-calcareous.
4	2916	Empty, mudst., grey-green, soft, shale clasts!, few sand grains, non-calcareous.
5	2911	Sst, fs-cs, light grey, loose, ?coal clasts, qu, dark min., mod. sort., angular, non-calcareous.
6	2906.5	Sst, vf, greenish, loose, qu., mica, well-sort., round.-subround., non-calcareous.
7	2901	Lost
8	2891.5	Lost
9	2885	Empty
10	2871	Silty mudst., ol-black, mudst. clasts (?caving), few sand grains, soft, ?plant frag., non-calcareous.
11	2853	Lost
12	2833	Silty sst, silt-fs, grey-green, loose, qu, mica, few dark min., poorly sort., ang.-subang., non-calcareous.
13	2805	Lost
14	2779.5	Sst, fs, grey, qu, dark min., loose, well-sort, ang.-subang., non-calcareous.
15	2755	Sst, vf-ms, grey-green, loose, qu, mica, dark min., mod. sort., ang.-subang., calcareous.
16	2738	Silty sst, silt-fs with mudstreaks, grey-green, loose, qu, mica, dark min., pyrite, poorly sort., sub-round., non-calcareous.
17	2735	Misfire
18	2725	Sst, fs-ms, loose, qu, glau., well-sort., subround., calcareous.
19	2701	Mudst., ol-black, non-calcareous, indurated.
20	2686	Sst, vf-ms w. dark silt streaks, loose, grey, qu, mica, dark min., well-sort. sst, calcareous.
21	2676	Sst, fs-ms, grey-green, loose, qu, glau., dark. min., well-sort., ang.-subround., calcareous.
22	2662	Sst, ms-cs, grey w. green spots, loose, qu, glau., dark min., well-sort., round-subround, calcareous.
23	2655	Sst, fs-ms, light w. green spots, loose, qu, glau., mica, dark min., well-sort., round-subround.
24	2648	Sst, ms, light with green grains, loose, qu, glau, dark min., pyrite, well-sort., subround., calcareous.
25	2635	Silty mudst., ol-black, calcareous, soft.
26	2622	Mudst. w. shale clasts, yellow-green with dark stringers, calcareous, soft.

27	2614	Lost
28	2581	Silty shale, ol-black, glau., laminated, indurated.
29	2551	Lost
30	2520	Lost
31	2484	Mudst. w. sandy streaks (<1 mm), black, glau., sst streaks calcareous, little indurated.
32	2461	Lost
33	2422	Lost
34	2390	Lost
35	2356	Misfire
36	2325	Lost
37	2305	Sandy siltst., dark grey w. light stringers, (sst, qu, glau., mica, well-sort., rounded, org. mat.), non-calcareous, soft.
38	2290.5	Silty mudst. w. few very thin vfs streaks, ol-black, glau., mica, org.mat., soft.
39	2266	Silty mudst. w. vfs patches, ol-black, glau., mica, calcareous.
40	2245	Silty mudst. w. few vfs streaks, ol-black, glau., org mat., mica, non-calcareous, soft.
41	2212	Silty mudst, ol-black, mica, soft.
42	2186	Mudst. w. vfs patches, ol-black, glau., non-calcareous, soft.
43	2170	Lost
44	2146	Lost
45	2140	Mudst. w. silty streaks, ol-black, mica, non-calcareous, indurated.
46	2132	Lost
47	2130	Silty mudst., ol-black, trace fossils, mica, non-calcareous, indurated.
48	2128	Mudst. w. fs streaks, ol-black, non-calcareous, indurated.
49	2126	Mudst. w. silty streaks, ol-black, glau., mica, non-calcareous, indurated.
50	2124	Mudst. w. silty streaks, ol-black, glau., non-calcareous, indurated.
51	2122	Empty
52	2120	Mudst. w. silty streaks, ol-black, glau., mica, non-calcareous, indurated.
53	2118	Silty mudst. w. silty streaks, ol-black, glau., mica, non-calcareous, indurated.
54	2116	Silty mudst., ol-black, ?broken, non-calcareous, soft.
55	2110	Mudst. w. silty streaks, ol-black, glau., mica, non-calcareous, indurated.
56	2073	Silty mudst., ol-black, glau., mica, possibly sst at base!, non-calcareous, indurated.
57	2040	Mudst. w. silty streaks, ol-black, glau., mica, non-clacareous, indurated.
58	2010	Silty mudst. w. vf sst streaks, grey-black, glau., non-calcareous, indurated.
59	1990	Siltst., grey-black, glau., mica, non-calcareous, indurated.
60	1975	Sandy siltst., grey, glau., dark min., mica, indurated.

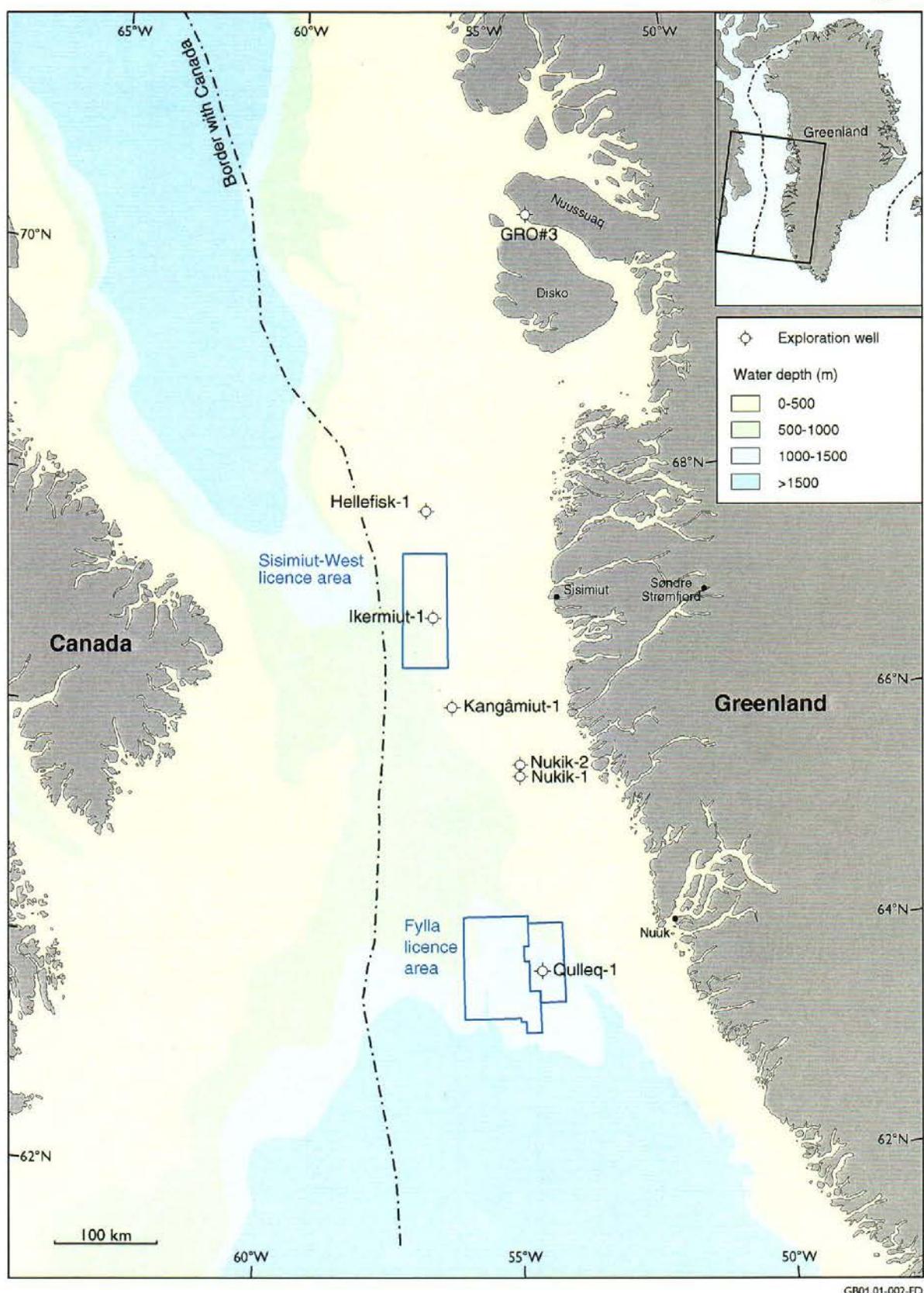
Run 2C

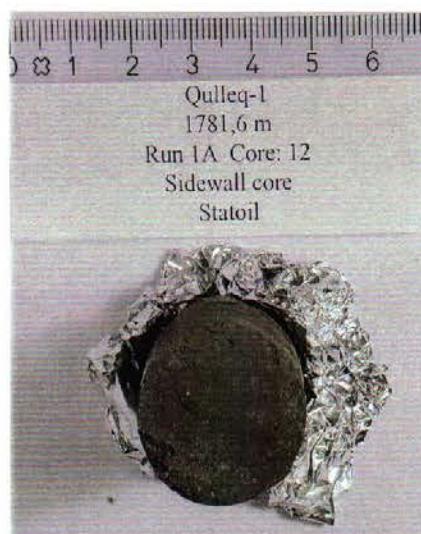
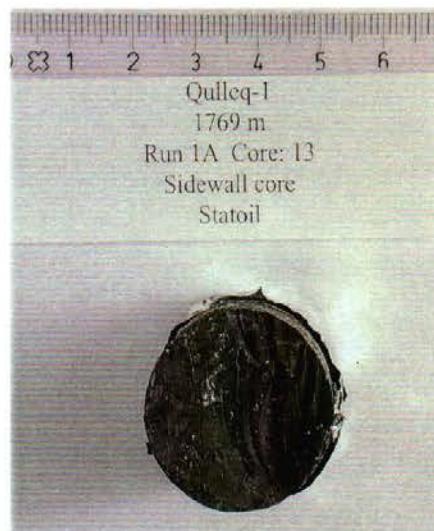
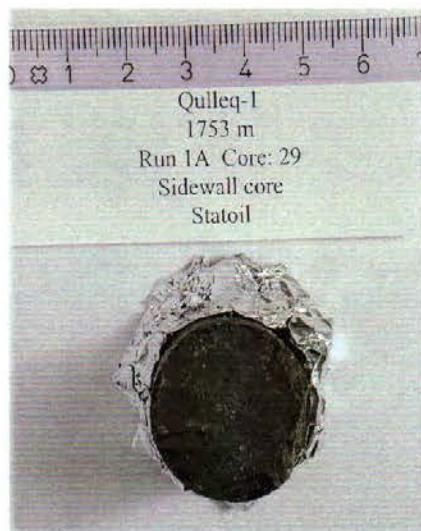
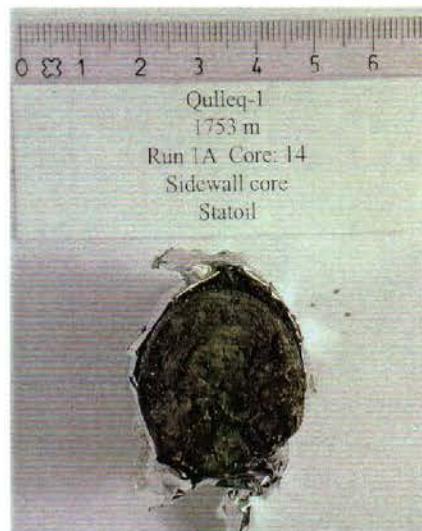
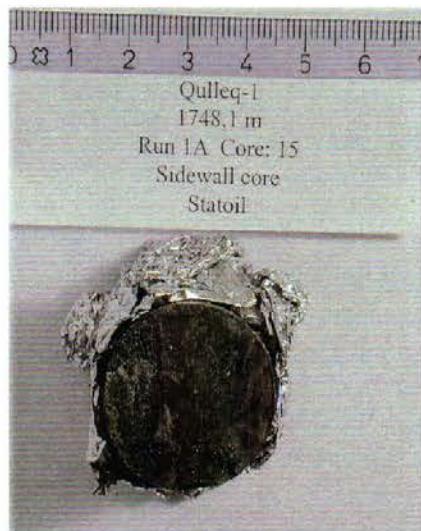
Shot No.	Depth (m RT)	Lithological Description
1	2948.5	Fragments of filtercake and cavings?
2	2940.5	Sst w. granules (<1 cm), fs-cs, grey-green, loose, qu, ?feldspar, mudst. clasts, poorly sorted, subang., non-calcareous.
3	2925	Sst., fs-cs, light grey, qu, dark min., pyrox, mica, poorly sort., non-calcareous.
4	2916	Lost
5	2902.5	Lost
6	2894	Sst, fs, light green, loose, qu, few dark and red min., well-sort., calcareous.
7	2885	Sst w. granules, fs-cs, grey-green, loose, qu, glau., dark min., poorly sort., subround., calcareous.
8	2875.5	Mudst., grey, silt and fs grains, mica, poorly sorted, carbonaceous, non-calcareous.
9	2853	Sst with granules (<1 cm), fs-cs, grey-green, loose, qu, ?glau., poorly sort., calcareous.
10	2848	Sst, fs-cs, white, loose, qu, mica, poorly sort., calcareous.
11	2828	Sst, fs-ms, grey, loose, qu, glau., poorly sort., calcareous.
12	2816	Sst w. granules, fs-ms, grey-green, loose, qu, glau., dark min., well-sort., subround., qu overgrowth, calcareous.
13	2796.5	Sst, vfs-ms, grey-green, loose, qu, glau., dark min., well-sort., calcareous.
14	2721	Sst, fs-cs, grey-green, loose, qu, glau., dark min., well-sort., subround.-subang., qu overgrowth, non-calcareous.
15	2696	Sst, vfs-fs, grey w. dark streaks, loose, qu, mica, dark min., well-sort., subround. calcareous.
16	2682	Sst, fs-ms, light-grey w. dark streaks, loose, qu, glau., dark min., mudst. clasts, Fe-ox, well-sort., calcareous.
17	2671	Sst, fs-ms, grey-green, loose, qu, glau., dark min., mica, well-sort., round.-subround., calcareous.
18	2659	Sst, fs-cs, grey-green, loose, qu, glau., dark min., mod. sort., subang., qu overgrowth, calcareous.
19	2652	Sst, ms, light grey-green, loose, qu, glau., dark min., mica, well-sort., sub-round., qu overgrowth, calcareous.
20	2642	Clayst., black, fracture w. calcite, calcareous, partly indurated.
21	2630	?Filtercake
22	2604	Lost
23	2592	Silty mudst. w. vfs streaks (<2 mm), ol-black, glau., mica, soft, sst streaks are calcareous, soft.
24	2565	Silty mudst. w. sst streaks, ol-black, qu, glau., dark min., mica, soft, calcareous.

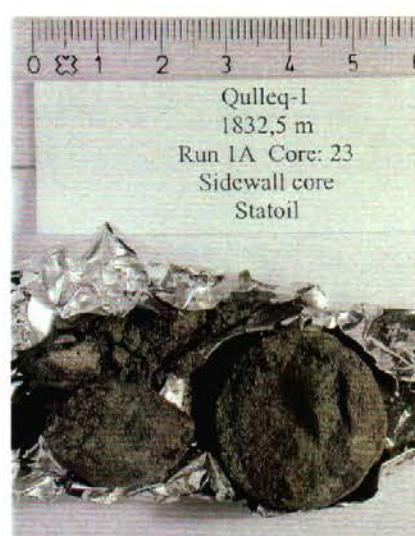
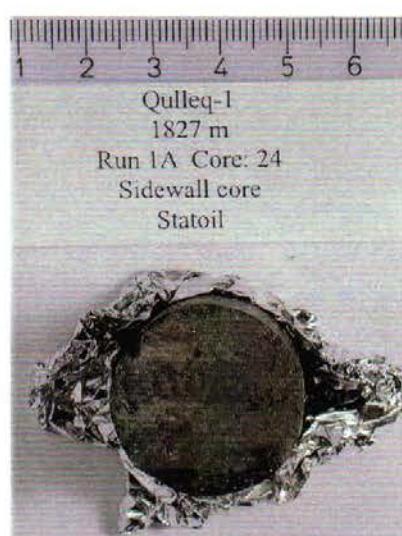
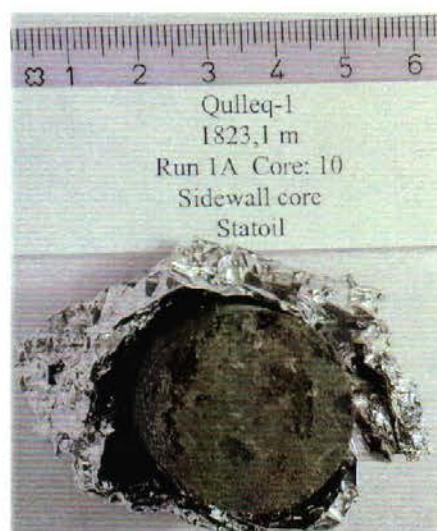
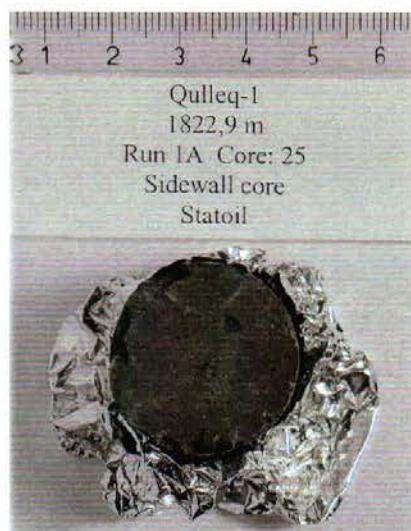
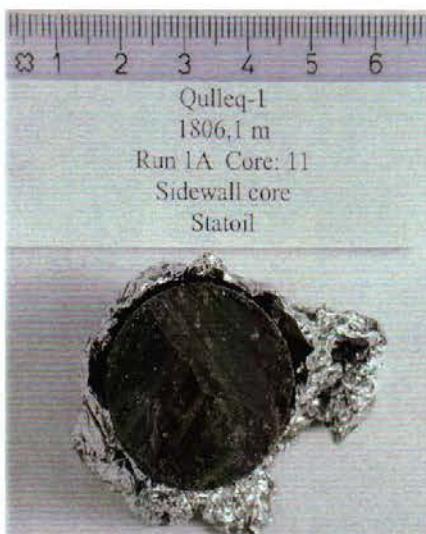
25	2540	Clayst., ol-black, calcareous, partly indurated.
26	2530	Lost
27	2508	Silty mudstone w. very well-preserved fs streaks (<3 mm), ol-black, qu, glau, dark min., mica, soft, sst streaks are calcareous.
28	2498	Mudst. w. vfs streaks, ol-black, calcareous, soft.
29	2478	Silty mudst. w. fs streaks, ol-black, glau., dark min., calcareous, soft.
30	2450	Lost
31	2436	Silty mudst. w. well-preserved fs streaks, ol-black, glau., dark min., soft.
32	2410	Silty mudst. w. fs streaks (few), ol-black, glau., dark min., soft.
33	2400	Heterolith (50% sst), lam. sst streak (<3 mm), sst loose, ol-black, glau., dark min., mica, calcareous, soft.
34	2380	Heterolith (50% sst), lam. sst streak (<3 mm), sst loose, ol-black, glau., dark min., mica, calcareous, soft.
35	2368	Heterolith (50% sst), lam. sst streak (<3 mm), sst loose, ol-black, glau., dark min., mica, calcareous, soft.
36	2342	Silty mudst. w. sst streaks, ol-black, glau., dark min., sst calcareous, soft.
37	2296	Silty mudst. w. sst streaks, ol-black, glau., dark min., sst calcareous, soft.
38	2280	Silty mudst. w. sst streaks, ol-black, glau., dark min., sst calcareous, soft.
39	2270	Silty mudst w. fs streaks, ol-black, ?bioturb., glau., dark min., sst calcareous, indurated.
40	2250	Silty mudst., fractured, ol-black, soft.
41	2220	Silty mudst. with few sst streaks, ol-black, glau., sst calcareous, soft.
42	2197	Siltst., grey-brown, calcareous, indurated.
43	2194	Silty mudst., very little sst, ol-black, glau., calcareous, soft.
44	2190	Silty mudst. w. few sst streaks, ol-black, glau., sst calcareous, soft.
45	2182	Silty mudst. w. silty streaks and few sst patches, ol-black, glau., little calcareous, soft.
46	2178	Silty mudst., very fractured, ol-black, soft.
47	2174	Mudst., very fractured, ol-black, little calcareous, soft.
48	2164	Mudst. w. small sst patches, ol-black, sst calcareous, soft.
49	2155	Mudst. w. small patches of sands, ol-black, indurated. NOTICE change in induration.
50	2146	Mudst. w. vfs streaks, glau., little calcareous, indurated.
51	2144	Silty mudst. w. vfs streaks, ol-black, ?bioturb., soft.
52	2138	Silty mudst. w. small vfs patches, ol-black, glau., calcareous, soft.
53	2122	Silty mudst. w. small vfs streaks, ol-black, glau., little calcareous, soft.
54	2120	Silty mudst. w. small vfs streaks, ol-black, glau., shell frag., benthic forams, sst calcareous, indurated.
55	2117	Silty mudst. w. silt streaks, ol-black, glau., little calcareous, indurated.
56	2114	Silty mudst. w. vfs streaks, ol-black, glau., sst calcareous, indurated.
57	2102	Silty mudst. w. vfs streaks, ol-black, glau., mica, sst calcareous, indurated.

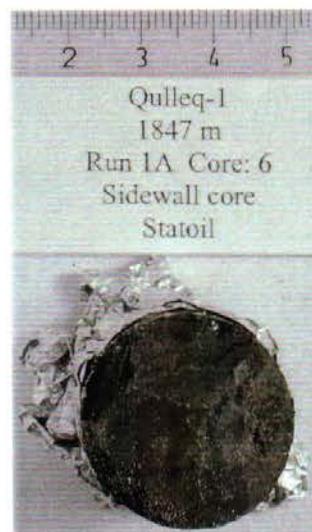
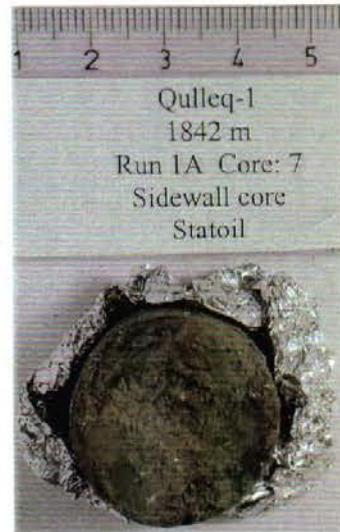
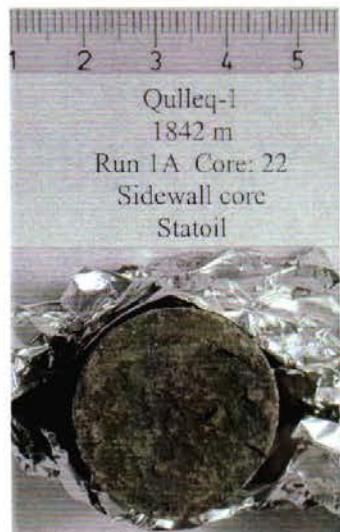
- 58 2083 Silty mudst. w very thin vfs streaks, ol-black, glau., ?shell frag., non-calcareous, indurated.
- 59 2060 Silty mudst. w. very thin silt/vfs streaks, ol-black, glau., mica, ?forams, very little calcareous, indurated.
- 60 2024 Siltst. w. sst streaks, ol-black/grey, glau, non-calcareous, indurated.

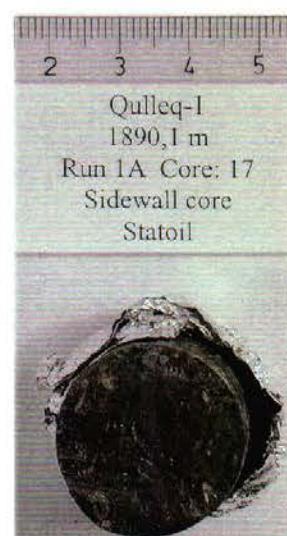
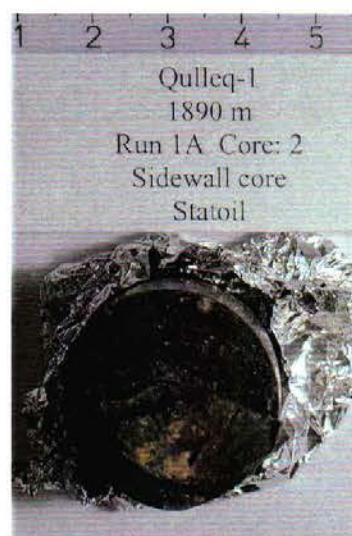
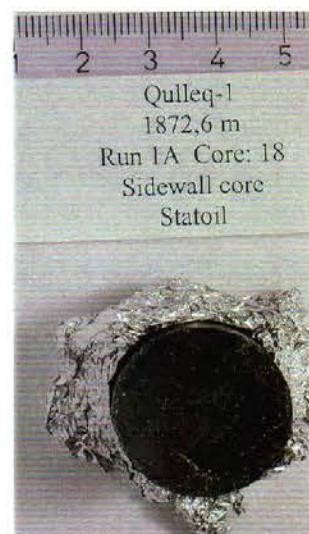
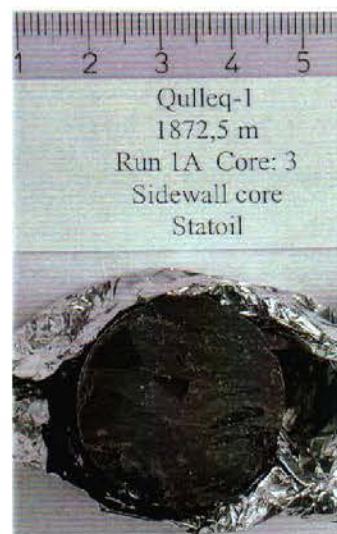
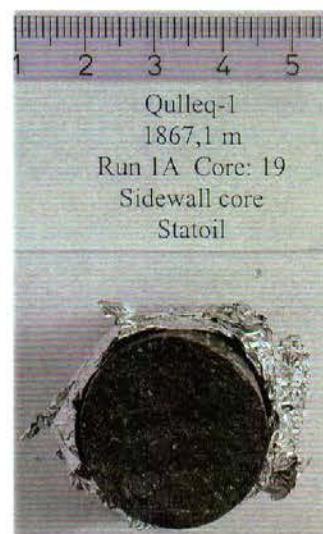
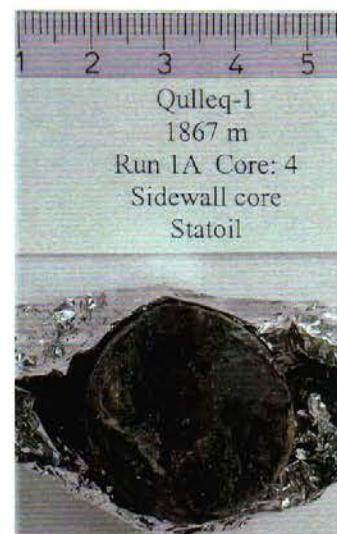
Fig.1

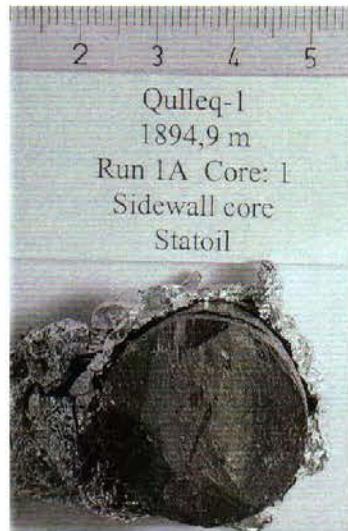


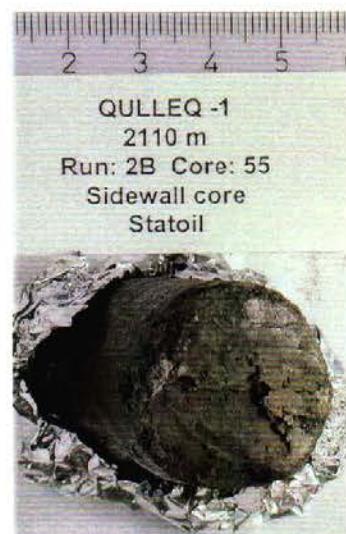
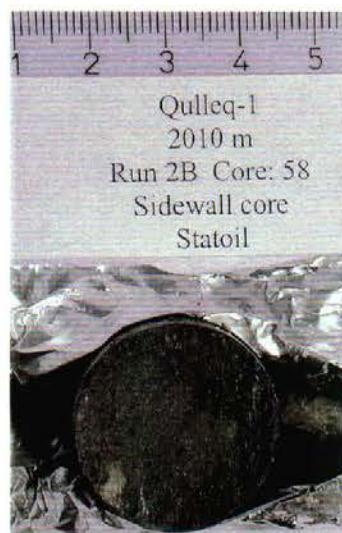
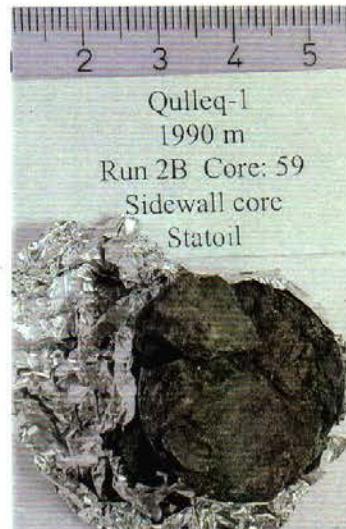
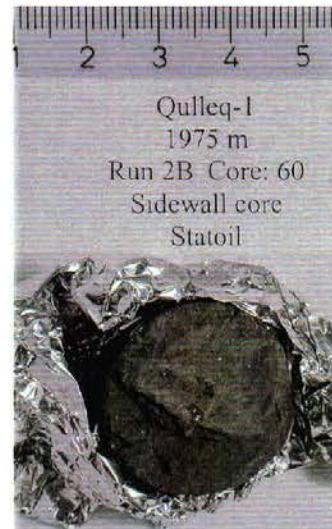


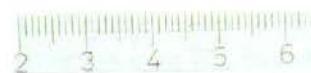












QULLEQ -1
2120 m
Run: 2B Core: 52
Sidewall core
Statoil



Quelleq-1
2122 m
Run 2B Core: 51
Sidewall core
Statoil



QULLEQ -1
2124 m
Run: 2B Core: 50
Sidewall core
Statoil



Quelleq-1
2126 m
Run 2B Core: 49
Sidewall core
Statoil



