Oil & Energy

HYDRO

Well 7220/6-1, Obelix

Final Well Report

March 2006

Partners:

STATOIL

Eni

IDEMITSU

Gaz de France

revus energy

SECTION A: GEOLOGY, GEOPHYSICS AND PETROPHYSICS.

TABLE OF CONTENTS

SECTION A: GEOLOGY, GEOPHYSICS AND PETROPHYSICS. 1
Figures and Tables 2
Well Summary 4
Objectives 4
Results 5
Licence owners 5
1 Data Acquisition 9
1.1 Lithostratigraphic summary 11
1.2 Hydrocarbon shows table: 12
1.3 Sidewall Coring Table: 14
1.4 Thin section descriptions 16
1.5 Conventional Coring Table 23
2 Geological and Geophysical evaluation 24
2.1 Results 24
2.1.1 VSP 24
2.1.2 Synthetic Seismogram 26
2.1.3 Summary 27
2.2 Stratigraphy, Sedimentology and Reservoir Quality: Summary 29
2.2.1 Fortet member equivalent (1137.5 m-1227.8 m, log): 29
2.2.2 Gipsdalen Group: Ørn and Falk formations (1227.8-1483.2 m): 31
2.2.3 Recommendations for futher work 33
2.3 Biostratigraphy 48
2.3.1 Main Stratigraphic Conclusions 48
2.4 Petroleum geochemistry 51
3 Petrophysical evaluation 53
3.1 Discussion 53
3.2 Petrophysical Evaluation input data and quality 53
3.2.1 LWD Logs 53
3.2.2 Wireline Logs 54
3.2.3 Composite Logs 55
3.2.4 Core Data 56
3.2.5 MDT Pressures and Samples 57
3.2.6 Corrections 59
3.3 CPI Evaluation Method 59
3.3.1 Net Sand / Shale Volume 59
3.3.2 Porosity 61
3.3.3 Water Saturation 61
3.3.4 CPI input parameters and CPI results 62
3.4 Fluid System – Formation pressure analysis and fluid samples 64
3.5 Formation Pressure Analysis and Electrical Log Interpretation 64
4 Post Site Survey for Well 7220/6-1 66
4.1 Summary: 66
4.2 Key words: 66
4.3 Well Data 66
4.4 Seismic DATA 67

Figures and Tables

Summary of Well Data....6
Location map....7
Geological Summary....8
Formation Evaluation Programme....9
Logging table: MWD / LWD / Wireline....10
Table 1.2 Hydrocarbon shows....14
Table 1.3. Sidewall cores....15
Table 1.4 Conventional Cores....23
Fig. 1. Composite display (normal polarity)....25
Fig. 2. VSP corridor stack and seismic. NH-0372: Inline 8354. Corridor stack shifted minus 7 ms. 26
Fig. 3. Well to Seismic Tie (SG9810 full offset stack). Timeshift of –14 ms is performed in order to match seismic with checkshot calibrated sonic log. The shifts are eatimated at Top Paleozoicum. 27
Table 2.1-1. Formation tops table....28
Table 2.1-2 Prognosis vs. results; Reservoir section. 28
Fig.2. 1. Paired seismic tie line through the 7220/6-1 well site from the NH0372 site survey and chronostratigraphic diagram illustrating the facies and biostratigraphic constraint on the formations present. The Fortet member equivalent unit is of Roadian-Capitanian and Induan age (the upper Permian is absent). The Ørn Formation of the Gipsdalen Group is of Kazimovian-early Asselian age, while the Falk Formation of the Gipsdalen Group is thought to be of Moscovian-Kazimovian age. 34
Fig.2. 2. Diagram showing the variations in dip and dip-direction within the uppermost Ørn Formation (dark green at the base of the right column), the Fortet member equivalent unit (orange in right column) and the base of the Snadd Formation from 7220/6-1 (darker green at the top of the right column). In the column on the right the dominant FMI facies (FA1, FA2), major cycles (FmeC1-3) and bed set boundaries are shown with the overall dip trends within the bedsets and cycles also highted. The top of cycle C1 is karsted (see Fig.3B) and is interpreted to correspond to the break between breccias of Roadian-Capitanian age and those of Induan age (see also Fig. 1). Note that the formation colour scheme used also corresponds to that used in Fig. 1. FMI fracture/bedding image interpretation from Rusconi et al. (2005). 35
Fig.2. 5. Thin section micrograph from the Fortet member equivalent unit in the Obelix 7220/6-1 well (1184.5 m) showing a range of different dolomitized lithoclasts and a dolosiltstone intraclast (A) with a dolosiltstone matrix (M). Note the contrast in porosity (blue resin impregnated) between the matrix (M) and between the different clast types (A-F). In this sample the dolosiltstone matrix will act as a baffle/barrier to fluid flow from the clasts. 38
Fig.2.6. Summary plots of porosity-permeability data from the cored interval of Fortet member equivalent unit in the 7220/6-1 well. A) Plot showing the complete spread of data. Note that most data fall in the 9-15% porosity range with a permeability of less than 5 mD. B) Detail of A (area shown in red box in A) highlighting that most measured permeabilities are less than 1mD. As can be seen from Fig. 5, most plugs cut very heterogeneous sediments. 39
Fig.2. 7. Paired gamma ray and FMI images of the pick of the contact chosen between the Ørn and Falk formations at 1436.4 m (log depth, green arrow). Other possible candidates considered are shown with a black arrow. The boundary was chosen on the basis of siliciclastic content in picked cuttings (thin section and SEM analysis) and gamma log character. Note the solution-modification of bedding and fractures close to the base of the Ørn Formation (i.e. 1424-1428.3 m, 1432-1435 m), as is consistent with SWC thin section observations. 40
Fig.2.8. Paired gamma ray and FMI images illustrating the pick of the base Gipsdalen Group and Falk Formation at 1483.2 m (log). Above this contact 10.5 m of basal Falk Formation conglomerates rest unconformably (U/C) onto a fractured basement of quartzites and quartz-mica schists. The Ugle Formation of the Gipsdalen Formation is absent (see also Fig. 1). The top of the conglomerates (tbc) is at 1472.7 m (log). 41
Fig.2.9. Thin section micrograph from the sidewall core at 1229.2 m (log depth) with both interparticle and intraparticle porosity (blue resin fills pores, 15% porosity, 2.3 mD horizontal permeabilty) developed in *Tubiphytes* packstone-wackestones. These buildup facies are themselves cut by dolomitic siltstones, interpreted to fill a karst-modified stylolite/bedding plane (highlighted with brackets). Field of view 8 mm, ppl. 42

Fig.2.10. A, B. Thin section micrographs from the sidewall cores at 1263.2 m (log) and 1284.2 m (log) showing evidence for the karstification of the Ørn Formation. A) The 1260-1266 m log interval of a prominent fault zone that cuts across karstified strata, with vuggy porosity filled by dolosiltstones (S) and brecciated lithoclasts of the host carbonates (B). B) The FMI for the 1281-1287 m log interval is characterized by a brecciated character, and this interpretation is confirmed by the sidewall core from 1284.2 m, as pictured on the left. 43
Fig.2.10. C. Illustration showing how an interval of karst within the Ørn Formation interpreted from the FMI data data (II, 1274-1287 m, log) has FMI textures directly comparable to the cored interval of the well. Such comparison (to the logs in I, III, IV) indicates that cavernous karstic porosity within the Ørn formation is sediment filled. Together, textural analysis of the FMI and the core data suggest that cavernous porosity is filled by both breccias and dolosiltstones (i.e. core photos from 1164-1166 m and 1173-1177 m at left and right, respectively). The early fill of cavernous porosity by sediments prevented cavern collapse/breakdown during burial. 44
Fig.2.11. A. Evidence for karst within the Ørn Formation. Examples of SWC constraints on the interpretation of vuggy porosity from FMI images. The interval from 1361.7 m to 1364.7 m is characterized by vuggy porosity that appears to be controlled by both steep fractures and bedding (dark low resistivity areas in the FMI). The thin sections reveal the development of solution enlarged moldic pores, vugs (SV) fractures (SF) and laminae (after stylolites?). Some of this secondary porosity is filled by dolosiltstones with a siliciclastic content that can result in a low restivity signal in the FMI images. The vuggy and fracture porosity is in part sediment and/or cement filled and partly open (i.e. OF, lower photomicrograph). Also see Fig. 12 for futher detail on this interval. 45
Fig. 2.11. B. Evidence for karst within the Ørn Formation. The 1401-1406 m interval appears to show well developed vuggy and fracture porosity (dark, low resistivity areas in the FMI). However, the SWC from 1403.2 m reveals that such porosity can be partly-completely filled by dolosiltstones. These dolosiltstones appear as a common fill of vuggy, moldic and fracture poriosity of SWC's taken from throughout the Ørn Formation, and are thought to be related to karst processes at the top Palaeozoic unconformity. 46
Fig.2.12. Thin section micrographs from SWC's taken to sample an interval characterized by an asymmetric gradual upward increase in porosity between 1361 m and 1365 m (log), with an abrupt decrease of porosity at its top. The prognosis was that this cycle would correspond to an upward-shallowing depositional cycle bounded above and below by flooding surfaces (and relatively deep water facies). The SWC data indicate that the main control on porosity variability is the distribution of secondary vuggy porosity that is in part filled by karst-related sediment (see Fig. 11A) rather than depositional facies variations. At 1362.5 m a significant discrepancy is observed between the CPI porosity value and that of the SWC, and is attributed to the presence of vuggy porosity, apparent in the FMI with the plug likely obtained from a high resistivity area, as circled. The four SWC's are characterized by moldic and intercrystalline porosity and contain hairline open fractures and partially-cemented fractures.....47
Table 2.1 Chronostratigraphy and Lithostratigraphy 50
Table 3.2-1 LWD logging services 54
Table 3.2-2 Formation Evaluation Wireline services, Intermediate Logging 54
Table 3.2-3 Formation Evaluation Wireline services, TD Logging 54
Table 3.2-4 Composite and Petrophysical Composite logs 55
Table 3.2-5 Whole core intervals, recovery and depth shifts 56
Table 3.2-6 MDT pressure tests, Run 1A 57
Table 3.2-7 MDT pressure tests, Run 2B 58
Table 3.2-8 MDT samples 58
Table 3.3-1 CPI input parameters 63
Table 3.3-2 Zone averages for log and core data over net reservoir intervals 64
Table 3.4-1 Water gradient from pressure interpretation and equivalent salinity / Rw 64
Fig.,4.1. Post site survey Correlation Panel 69

Well Summary

7220/6-1 is an exploration well on the Obelix A3 prospect in Seismic Area C, in the eastern part of the Loppa High in Barents Sea. The well was placed to test the presence of movable hydrocarbons.
Hydro Oil and Energy on behalf of PL225 drilled the well. The well was on cost 18 January 2005. Several spud attempts was done, with the first attempt on 20. January. The well was successfully spudded on the third attempt the 20 January and plugged and abandoned 30. March 2005.

Objectives

The primary target of the A3 prospect is the Permian and Carboniferous carbonates and mixed carbonates and clastics of the Gipsdalen Group.

The main objectives of the well was to:

- Prove the existence of moveable oil in the A3 prospect (Gipsdalen Group)
- Confirm in-place volumes as mapped

Important aspects of the above objectives was to:

- Confirm that oil is producible from the reservoir
- Evaluate the reservoir properties
- Evaluate PI
- Detect fractures
- Confirm HC contacts
- Evaluate HC properties
- Evaluate formation water properties

The well was planned to be drilled as a straight hole, and should be temporarily abandoned if the main objectives was met, in order to confirm some of the above aspects, e.g. PI, with a full DST.

Secondary objectives was to:

- Evaluate the Triassic (Carnian) interval (A1 Lead)

The A1 lead is a high-risk oil leg, down-flank from a major gas anomaly. The gas anomaly will not be penetrated by the well. The gas and the oil legs are defined by a structural closure

Results

The main result of well 7220/6-1 was the confirmation of the prognosed reservoir levels and the source/migration concept. The main reservoir targets were the Upper Palaeozoic Ørn and Falk Formations (Gipsdalen Group) with secondary targets within the Triassic Snadd Formation. None of the targets contained economical amounts of hydrocarbons. Only residual hydrocarbons were found in the Gipsdalen Group carbonates.

Even though the well did not prove any commercial hydrocarbons, good oil shows were obtained in carbonates of the Ørn and Falk Formations. The gross reservoir thickness and basic lithology were as prognosed, whereas the fracture density was less than expected.

The actual depths within the Triassic and Palaeozoic sections were encountered somewhat shallower than the prognosis, but within the uncertainty range. This is due to error in the velocity estimates from the seismic that was used in the depth conversion.

Three conventional cores were cut, covering the penetrated upper part of the Ørn Formation. The cores showed variable reservoir quality, but contained several zones with good reservoir quality and good oil shows. A total of 50 rotary sidewall cores were recovered from the well section

The well was permanently plugged and abandoned on the 30th of March 2005.

All depths in this report are referenced to RKB unless otherwise stated.

Licence owners

Production License 225 was awarded by Royal Decree, the 30th of May 1997 with Norsk Hydro ASA as the operator.
The license percentage share of PL-225 is as follows:

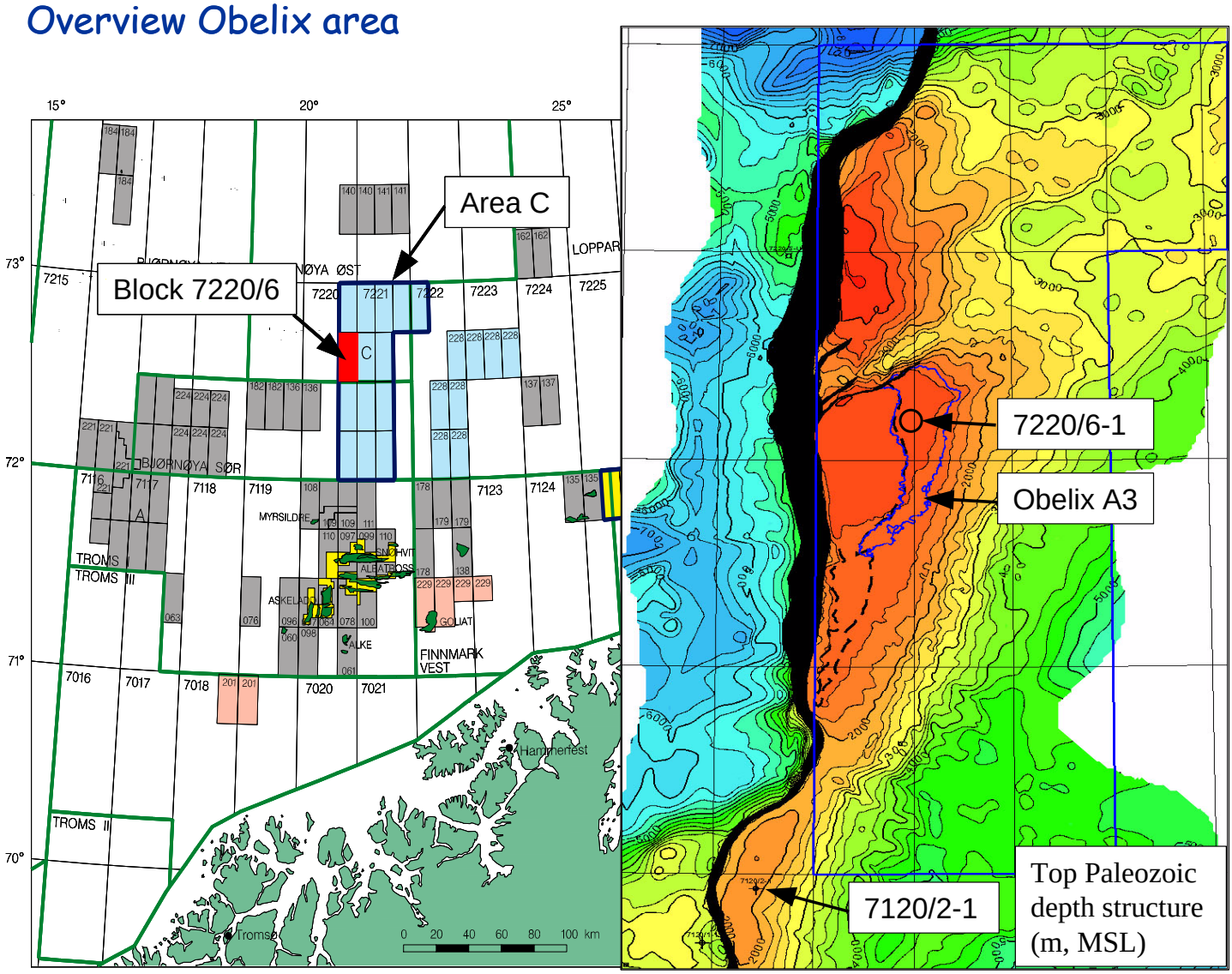
Hydro Oil & Energy	29 %
Eni Norge	31 %
Statoil	40 %

Summary of Well Data

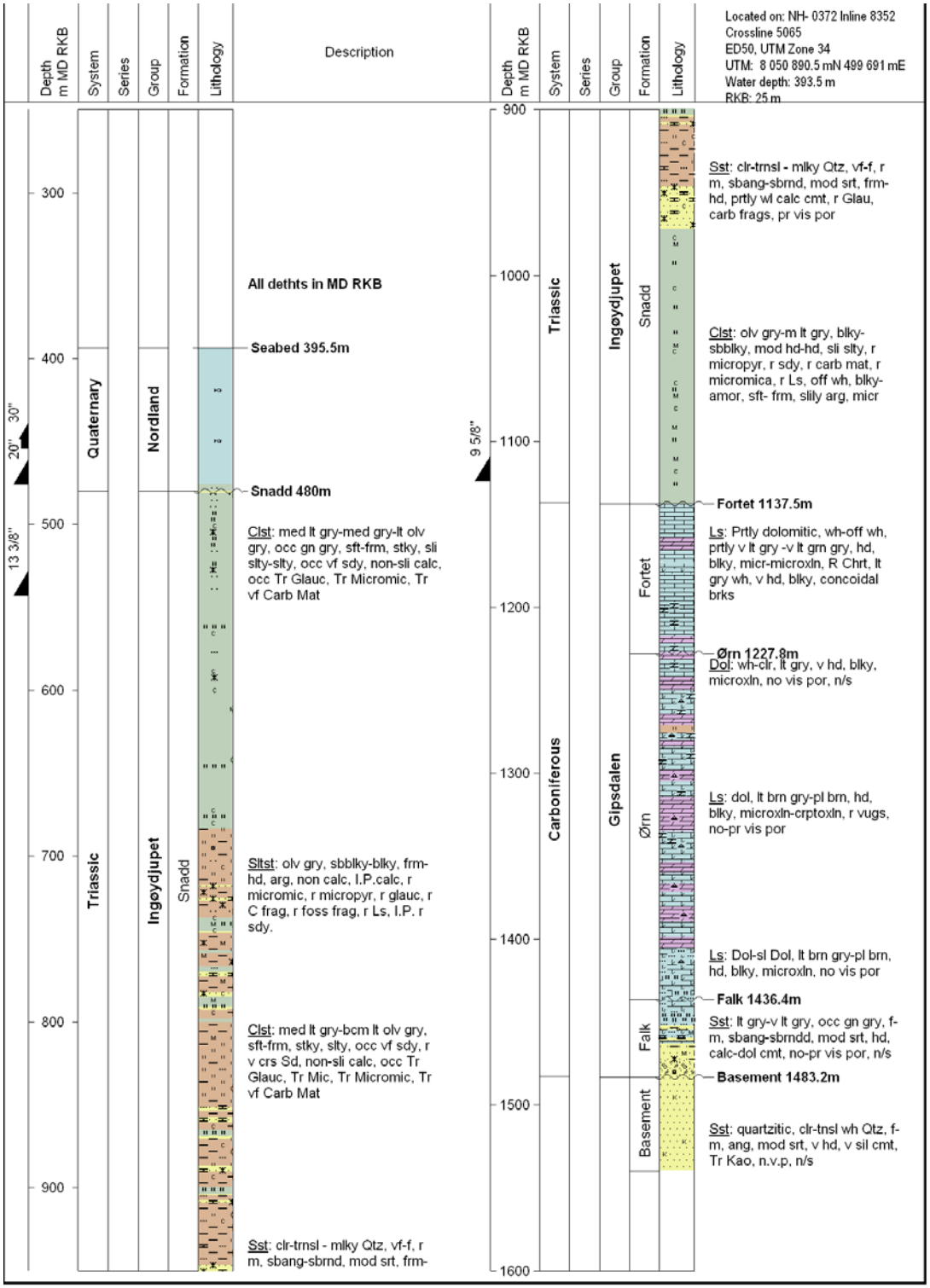
LOCATION:	Geo: 72°33'12,51" N 20°59'26,76" E UTM: 8 050 890,50 mN 499 691,00 mE ED 50, UTM Zone34, CM 21°E
OPERATOR:	Hydro ASA
RIG:	Eirik Raude
CONTRACTOR:	Ocean Rig
KB ELEVATION (to MSL):	25m
WATER DEPTH (MSL):	368,5m
START OF OPERATION:	18.01.2005
WELL SPUDDED:	20.01.2005
REACHED TD:	15.03.2005
OFF LOCATION:	30.03.2005
STATUS:	P&A
FORMATION AT TD:	Basement
Drilling depths (MD):	36" 393,5 m to 454,0 m 26" 454,5 m to 479,0 m 17 1/2" 479,0 m to 546,0 m 12 ¼" 546,0 m to 1130,0 m 8 ½" 1130,0 m to 1540,0 m
Casing / Liner depths:	30" 391,5 m to 454,2 m 20" 390,5 m to 476,2 m 13 3/8" 392,0 m to 543,0 m 9 5/8" 391,6 m to 1124,1 m

Location map

Overview Obelix area



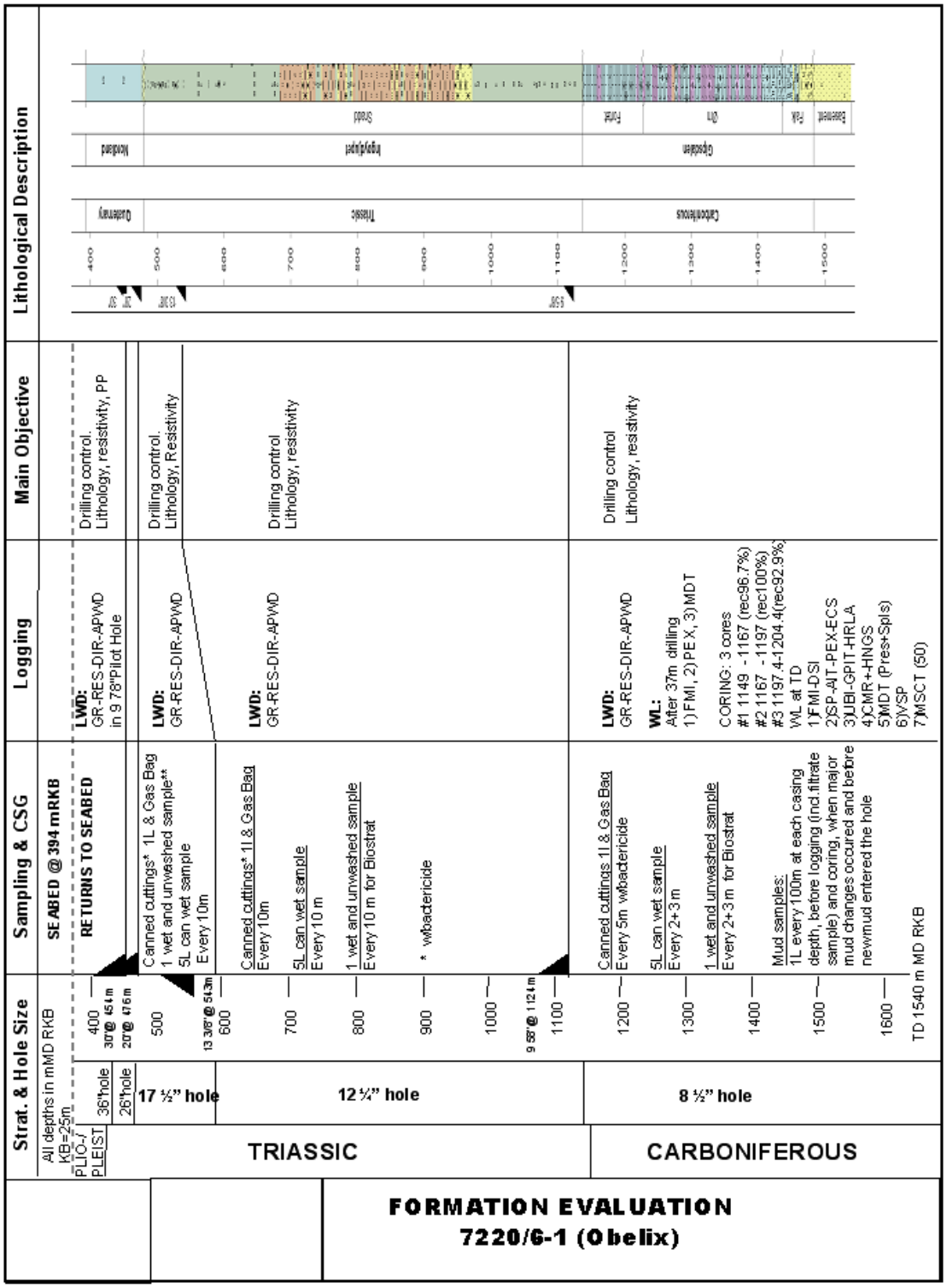
Geological Summary



1 Data Acquisition

The following figure and table gives an overview of the formation evaluation programme performed on the well:

Formation Evaluation Programme



Logging table: MWD / LWD / Wireline

Run	Hole diam	Log type	Interval logged	Comments
		MWD / LWD		
1	9 7/8	GR-RES-ECD-DIR	394,0 – 417,0 m	Pilot
2	9 7/8	GR-RES-ECD-DIR	394,0 – 477,0 m	Fishing
3	36	ECD-DIR	394,0 – 431,0 m	Hole opener not vertical
4	17½	ECD-DIR	394,0 – 462,0 m	Pilot
5	36	ECD-DIR	394,0 – 461,0 m	Hole opening
6	17½	GR-RES-ECD-DIR	429,0 – 531,0 m	Section TD
7	12¼	GR-RES-ECD-DIR	493,0 – 733,0 m	Leaking slip joint
8	12¼	GR-RES-ECD-DIR	733,0 – 1114,0 m	Section TD
9	8½	GR-RES-ECD-DIR	1114,0 – 1132,0 m	Core point
10	8½	GR-RES-ECD-DIR	1149,0 – 1428,0 m	Changed LWD and bit
11	8½	GR-RES-ECD-DIR	1428,0 – 1540,0 m	TD
		Wireline Logging		
		Intermediate logging		
1A	8½	FMI-GR	1133,0 – 1196,5 m	
1A	8½	PEX (TLD-MCFL-HGNS)	1122,7 – 1196,5 m	
1A	8½	MDT dual packer	1151,8 – 1191,8 m	Pump failure. Pulled out to troubleshoot and ran back in hole.
1A	8½	MDT dual packer	1148,8 – 1185,6 m	The drilling-mud clogged the pump. Unable to inflate packers.
		TD logging		
2B/A	8½	FMI-DSI	1537,5 – 600,0 m	No repeat section logged due to unable to close caliper
2A/A/B/A	8½	SP-AIT-PEX-ECS	1537,5 – 1100,0 m	Accidentally closed Compensators resulted in relogging main up log.
2A	8½	UBI-GPIT-HNGS	1535,0 – 1122,7 m	
2A/B	8½	CMR-HNGS	1535,0 – 1100,0 m	
2B	8½	MDT dual packer	1480,5 – 1150,0 m	
2A	8½	VSI	1502,9 – 728,6 m	
2A	8½	MSCT	1485,0 – 1219,1 m	50 sidewall cores sampled.

1.1 Lithostratigraphic summary

This summary is compiled predominantly from ditch cuttings and core descriptions.

Wire-line and LWD logs were used to aid lithological interpretation and the placement of formation boundaries.

The well was drilled with returns to seabed from the sea floor at 393,5 m MD to 479 m MD before setting the 20" casing at 476,2 m MD. For details on sampling descriptions see attached Composite log.

Nordland Group (393,5 – 480,0 m MD)

Undifferentiated	(393,5 – 480,0 m)	– Clay-stones with minor Silts and Sands

Ingøydjupet Group (480,0 – 1137,5 m MD)

Snadd Formation	(480,0 – 684,0 m)	– Clay-stones with minor Sand- and Siltstones
Intra Early Carnian	(684,0 – 1137,5 m)	– Siltstones and Clay-stones with minor Sandstones. Rare Limestone stringers.

Gipsdalen Group (1137,5 – 1143,8 m MD)

Fortet Member equiv.	(1137,5 – 1227,8 m)	- Limestones and Dolomites
Ørn Member	(1227,8 – 1436,4 m)	- Limestones and Dolomites
Falk Member	(1436,4 – 1483,2 m)	- Siltsone beds and Carbonates

Basement (1483,2m MD – 1540m MD (TD)) Fractured meta-quartzites and quartz-mica schists

For more details and lithological descriptions, please refer to attached "Completion Log"

1.2 Hydrocarbon shows table:

INTERVAL (mRKB)	SOURCE	LITHOLOGY	SHOWS DESCRIPTION
660-670	Cuttings	Siltstones	No Petroleum odour, No Oil stain, weak dull brown fluorescence, very slow streaming blue-white fluorescence cut, no visible cut, no visible residue.
1137-1149	Cuttings	Limestones	Faint Petroleum odour, bright yellow white direct fluorescence, bright blue white instantaneous blooming slowly streaming cut fluorescence, yellow-white fluorescence residual ring, no visible residue.
1149 – 1158	Core	Limestones	Fair to good Petroleum odour, 70-100% uniform Oil stain, moderate to excellent yellow direct fluorescence, slow streaming yellow-blue fluorescence cut, no visible cut, bright blue white ring & patchy fluorescence residue, no visible residue.
1158 – 1164	Core	Dolomites	Poor Petroleum odour, no Oil stain, no direct fluorescence, no fluorescence cut, no visible cut, no fluorescence residue, no visible residue
1164-1167	Core	Limestones	Good Petroleum odour, 90% uniform light brown Oil stain, good uniform- occasional patchy yellow direct fluorescence, moderate streaming blue white-yellow fluorescence cut, no visible cut, mod-bright blue white-yellow ring residue, no visible residue
1167-1171	Core	Limestones	Good Petroleum odour, 90% uniform light brown Oil stain, excellent uniform bright yellow direct fluorescence, fast streaming blue-white fluorescence cut, good bright blue-white blooming fluorescence residue, no visible residue
1171-1172	Core	Limestones	Fair patchy pale yellow direct fluorescence, slow streaming blue-white fluorescence cut, pr mod blue-white streaming fluorescence residue, no visible residue
1172-1175	Core	Limestones	Good Petroleum odour, 90% uniform light brown Oil stain, excellent uniform bright yellow direct fluorescence, moderate streaming blue-white fluorescence cut, good blue-white blooming fluorescence residue
1175-1179	Core	Limestones	Fair Petroleum odour, poor spotty light brown stain, poor streaked pale yellow direct fluorescence, moderate blooming blue-white fluorescence cut, fair moderate blue-white blooming fluorescence residue, no visible residue
1179-1183	Core	Limestones	Fair Petroleum odour, fair uniform light brown Oil stain, excellent bright yellow direct fluorescence, moderate blooming bright blue-white fluorescence cut, poor moderate blue-white blooming fluorescence residue, no visible residue
1183-1186	Core	Limestones	Weak Petroleum odour, trace spotty light brown Oil stain, poor patchy pale yellow direct fluorescence, slow streaming pale blue-white fluorescence cut, poor moderate blue-white blooming fluorescence residue, no visible residue
1186-1189	Core	Limestones	Good Petroleum odour, excellent uniform light brown Oil stain, excellent bright yellow direct fluorescence, fast blooming blue-white fluorescence cut, good bright blue-white blooming fluorescence residue, no visible residue

INTERVAL (mRKB)	SOURCE	LITHOLOGY	SHOWS DESCRIPTION
1189-1190	Core	Limestones	Weak Petroleum odour, trace spotty light brown Oil stain, poor patchy pale yellow direct fluorescence, slow streaming pale blue-white fluorescence cut, poor moderate blue-white blooming fluorescence residue, no visible residue
1190-1192	Core	Limestones	Good Petroleum odour, excellent uniform light brown Oil stain, excellent bright yellow direct fluorescence, fast blooming blue-white fluorescence cut, good bright blue-white blooming fluorescence residue, no visible residue
1192-1196	Core	Limestones	Weak Petroleum odour, trace patchy light brown Oil stain, poor patchy pale yellow direct fluorescence, very slow streaming-clody blue white fluorescence cut, no visible cut, mod blue white-yellow patchy ring fluorescence residue, no visible residue
1196-1197.4	Core	Limestones	Moderate Petroleum odour, patchy-uniform light brown Oil stain, patchy pale yellow direct fluorescence, slow streaming-cloudy blue white fluorescence cut, moderate blue white-yellow ring-patchy fluorescence residue, no visible residue
1197.4-1198	Core	Limestones	Fair Petroleum odour, fair uniform light brown Oil stain, poor spotty pale yellow direct fluorescence, very slow streaming moderate blue white fluorescence cut, dull blue white ring fluorescence residue, no visible residue
1198-1200	Core	Limestones	Weak-fair Petroleum odour, poor spotty light brown Oil stain, poor spotty brown yellow direct fluorescence, no-slow streaming blue white fluorescence cut, dull blue white ring fluorescence residue, no visible residue
1200-1201	Core	Limestones	No-weak Petroleum odour, no Oil stain, trace spotty pale yellow direct fluorescence, very slow streaming pale blue white fluorescence cut, dull blue white ring fluorescence residue, no visible residue
1201-1203	Core	Limestones	Fair Petroleum odour, fair uniform light brown Oil stain, fair uniform bright yellow direct fluorescence, moderate blooming blue white fluorescence cut, dull blue white ring fluorescence residue, no visible residue
1203-1225	Cuttings	Limestones	Weak Petroleum odour, no-trace spotty light brown Oil stain, trace spotty bright yellow direct fluorescence, very slow-slow streaming dull-moderate blue white fluorescence cut, dull blue white ring fluorescence residue, no visible residue
1225-1242	Cuttings	Limestones	Poor-fair Petroleum odour, weak uniform-occasional good uniform light brown Oil stain, poor slow streaming blue white fluorescence cut, spotty blue white fluorescence residue, no visible residue
1242-1255	Cuttings	Limestones	Fair Petroleum odour, strong spotty-weak uniform moderate Oil stain, 90% uniform bright blue white-yellow direct fluorescence, instant flash followed by slow streaming blue white fluorescence cut, no visible cut, good blue white-yellow ring fluorescence residue, no visible residue
1255-1305	Cuttings	Limestones	Good Petroleum odour, uniform light brown Oil stain, spotty bleeding Oil stain, 100 % bright white-yellow direct fluorescence, instant flash followed by slow streaming blue white fluorescence cut, dull blue white ring fluorescence residue, no visible residue

INTERVAL (mRKB)	SOURCE	LITHOLOGY	SHOWS DESCRIPTION
1305-1367	Cuttings	Limestones	Fair Petroleum odour, dark brown Oil in vugs, occasional bleeding Oil stain, 100 % white-yellow direct fluorescence, slow streaming blue white fluorescence cut, blue white fluorescence ring residue, no visible residue
1367-1396	Cuttings	Limestones	Faint Petroleum odour, spotty light brown Oil stain, 100 % dull white-yellow direct fluorescence, instant flash followed by slow streaming bright-dull blue white fluorescence cut, dull blue white ring fluorescence residue, no visible residue
1396-1428	Cuttings	Limestones	Faint-poor Petroleum odour, no-very weak spotty light brown Oil stain, no-poor dull yellow-bright yellow white direct fluorescence, very slow streaming blue white fluorescence cut, dull blue white fluorescence ring residue, no visible residue.

Table 1.2 Hydrocarbon shows

1.3 Sidewall Coring Table:

The cores were not described offshore, but sent onshore for analysis. Descriptions from Thin sections are attached below

Core No.:	Depth	Lithology	Formation
1	1485,0		
2	1480,5		
3	1477,0		
4	1461,5		
5	1452,8		
6	1441,8		
7	1432,2		
8	1418,8		
9	1404,3		
10	1403,2		
11	1402,2		
12	1400,8		
13	1393,5		
14	13865		
15	1377,1		
16	1370,1		
17	1364,5		
18	1363,1	No sample. Repeated at #51	
19	1362,5		
20	1361,4		
21	1352,8		
22	1347,9		
23	1338,2		
24	1335,7		
25	1330,0		
26	1321,1		
27	1316,2		
28	1306,8		

Core No.:	Depth	Lithology	Formation
29	1302,0		
30	1297,8		
31	1292,4		
32	1288,4		
33	1284,7		
34	1277,5		
35	1272,1		
36	1263,2		
37	1259,0		
38	1253,7		
39	1248,9		
40	1243,2		
41	1241,0		
42	1237,7		
43	1235,5		
44	1229,2		
45	1225,9		
46	1220,5		
47	1219,1		
48	1215,0		
49	1208,0		
50	1204,8		
51	1363,1		

Table 1.3. Sidewall cores

1.4 Thin section descriptions

SYMBOL INDEX

LITHOLOGY/TEXTURE

M = Lime Mudstone
W = Lime Wackestone
P = Lime Packstone
G = Lime Grainstone
B = Lime Boundstone
RX-LS = Recrystallized lst.
D = Dolomite

W_d = Dolomitic wackest. (<50% dol.)
W_D = Dolowackestone (>50% dol.)
C = Chert
Gy = Gypsum
A = Anhydrite
H = Halite
S = Shale
SS = Sandstone

OTHER LITHOLOGIC DESCRIPTORS

▲ = Cherty
Λ = Anhydritic
> = Gypsiferous
: = Silty
· = Sandy
= Shaly

= Dolomitic
⊥ = Calcareous
= Halitic
▷ = Brecciated

PARTICLE TYPES

= Ooids
= Coated grains
= Intraclasts
= Lithoclasts
= Fecal pellets
= Peloids
= *Microcodium*
= Bioclasts
~ = *Palaeoaplysina*
Ω = *Tubiphytes*

= Algal/cyanobacterial laminations, laminar
= Algal/cyanobacterial laminations, columnar
= Oncoids
= Encrusting algae
= Green algae
= Red algae
= Phylloid algae
= *Girvanella*

= Calcispheres
= Corals (undiff.)
= Bivalves (undiff.)
= Rudists
= Prismatic
= Gastropods
= Brachiopods
= Bryozoans
= Trilobites
= Ostracods
= Echinoderms

= Foraminifera (undiff.)
= Agglutinated
= Benthic
= Encrusting
= Planktonic
= Fusulinids
= *Orbitolina*
= Sponges
↑ = Spicules
= Stromatoporoids
= Stromatactis

Abundantly occurring particles are underlined. Rare particles are enclosed within brackets.
The most important compositional symbol (particle type) is placed closest to the lithological/textural symbol in the lithology descriptions.

A1-2

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2005-07-06

HYDRO

SYMBOL INDEX

PORE TYPES

Φ	=	Open pores	CV	=	Cavern
♠	=	Cemented pores	BC	=	Intercrystalline
♠	=	Partly cemented pores	FE	=	Fenestral
BP	=	Interparticle	MO	=	Mouldic
WP	=	Intraparticle	FR	=	Fracture
GF	=	Growth-Framework	SH	=	Shelter
VUG	=	Vuggy	BR	=	Breccia
CH	=	Channel			

PORE CEMENTS

EC	=	Equant calcite to slightly ferroan calcite	FD	=	Ferroan dolomite
FC	=	Equant ferroan calcite	A	=	Anhydrite
ELC	=	Elongate calcite	G	=	Gypsum
IC	=	Fibrous to bladed calcite with isopacheous distribution	C	=	Chert
			P	=	Pyrite
RF	=	Radiaxial fibrous calcite	K	=	Kaolinite
MS	=	Microstalactitic calcite	CH	=	Chalcedony
SC	=	Syntaxial calcite	MQ	=	Megaquartz
PC	=	Poikilotopic calcite	MIQ	=	Microquartz
D	=	Dolomite	Sp	=	Sphalerite
BD	=	Baroque dolomite	Ba	=	Barite

ABBREVIATIONS

A/A	As above	Loc.	Locally
Abd.	Abundant	X	Sample not stained for carbonate.

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2005-07-06

HYDRO

Well 7220/6-1

Depth (m)	SWC #	Lithology	Particles	Pores	Remarks
1204.80	50	▲↑⁒W$_D$	↑	Abd. MoΦ Minor BCΦ Some FR●$_{EC}$	Molds are after dissolved sponge spicules.
1208.00	49	·W$_D$		Some MOΦ Minor VUGΦ FRΦ	Quartz sand grains
1215.00	48	▲∘↑W$_D$	↑ ∘	Some BCΦ Minor WPΦ	
1219.10	47	·▲⁒D	⁒↑∘	Some-abd. BCΦ Minor WPΦ	Finely crystalline dolomite. Quartz sand grains.
1220.50	46	▲∘⁒D	⁒∘	Some BCΦ Minor MOΦ Some BP●$_{EC}$	Finely crystalline dolomite
1225.90	45	⩵:D		Abd. BCΦ Minor MOΦ	Finely crystalline dolomite. Quartz silt.
1229.20	44	✶Ω W/P$_D$	Ω ✶ (#)	Some WPΦ Some BPΦ Minor MOΦ	Some laminae with calcitic, bioclastic, very fine grained quartz sand
1235.50	43	Ω ▬P/G$_D$	▬⁂Ω (⚡)	Some WPΦ Some BPΦ	
1237.70	42	Ω ✶W$_D$	✶Ω ▬ (⁂#)	Some MOΦ Some BCΦ Minor WPΦ	
1241.00	41	✶Ω W$_D$	Ω ✶▬	Some MOΦ Minor BCΦ Minor WPΦ	

Well 7220/6-1

Depth (m)	SWC #	Lithology	Particles	Pores	Remarks
1243.20	40	Ω ↑✱W_D	✱↑ Ω ⬬	Some-abd. MOΦ Minor BCΦ Some MO⬣ Poilotopic calcite	Minor chert
1248.90	39	▲↑W_D	↑	Some MOΦ Minor WPΦ Minor BCΦ	Disrupted argillaceous laminae
1253.70	38	▲↑∘D	↑ ∘	Some MOΦ Some BPΦ FR⬣$_{EC}$	Abundant chert
1259.00	37	≡D	↑	Some MOΦ Some BCΦ	Finely crystalline dolomite. Few chert nodules.
1263.20	36	∘P/G_D	∘	Some BPΦ Minor MOΦ	Some silty (quartz) laminae and infillings
1272.10	35	∘P/G_D	∘ (large)	Abd. BPΦ Some BCΦ Minor MOΦ	
1277.50	34	:✱W_D	✱ ⬬# (↑∴)	Some MOΦ Some WPΦ	Some silica nodules. Quartz silt.
1284.70	33	λ8P_D	8	Some MOΦ	Some chert. Collapse breccia?
1288.40	32	D	∘	Abd. BCΦ	Moderate-finely crystalline dolomite. Minor chert.
1292.40	31	▲∘W/P_D	∘ (↑)	Abd. MOΦ	
1297.80	30	✱∘P/G_D	∘ ✱	Some-abd. MOΦ Minor BCΦ	
1302.00	29	D		Some BCΦ FRΦ Some FR⬣$_{EC}$	Finely crystalline dolomite. Slightly argillaceous.

Well 7220/6-1

Depth (m)	SWC #	Lithology	Particles	Pores	Remarks
1306.80	28	∘ G_D	∘	Some BCΦ Minor BPΦ Minor MOΦ	
1316.20	27	✶ ∘ G_D	∘ ✶ (∴)	Some BCΦ Minor BPΦ Minor MOΦ	
1321.10	26	∘ G_D	∘	Some BCΦ Minor BPΦ Minor BC● Poik. FE-calcite	Stylolite
1330.00	25	D		Some BCΦ Minor MOΦ	Finely crystalline dolomite. Stylolite.
1335.70	24	D		Some MOΦ Some BCΦ Minor BC● Poikilotopic calcite	Moderately crystalline dolomite. Minor quartz silt. Locally chert.
1338.20	23	∘D (∘P/G_D?)	∘	Some BCΦ Some MoΦ Some FRΦ	Some bladed, interparticle dolomite crystals may indicate an anhydrite precursor.
1347.90	22	λ ∘P/G_D	∘ λ∴	Some BCΦ Some BOΦ	Stylolite
1352.80	21	∘D	∘	Some BPΦ Some FRΦ Minor BCΦ	Moderately crystalline dolomite
1361.40	20	∘D	∘	Some BCΦ Some MOΦ Some FRΦ Minor BC● Poik. Fe-calcite	Geopetal infill of MoΦ. Finely crystalline dolomite.

Well 7220/6-1

Depth (m)	SWC #	Lithology	Particles	Pores	Remarks
1362.50	19	λW/P_D	∘λ (∴↑)	Some MOΦ Minor BCΦ Abd. MO●$_{Poik. Fe-calcite}$ SOME FR●$_{FC}$	
1363.20	18	D		Some BCΦ Minor-some MOΦ Some MO●$_Q$ Some FR●$_{EC}$	Finely crysatlline dolmite
1364.50	17	D	∘	Some MOΦ Some BCΦ Minor MO●$_{EC}$	One sedimentary clast. Moderately crystalline dolo-mite.
1370.10	16	D	∘	Abd. BCΦ Minor MOΦ Abd. FR●$_{FC}$	Finely crystalline dolomite
1377.10	15	↑✶∘D (↑✶∘P/G_D?)	∘̲ ✶↑	Abd. MOΦ Some BCΦ	Moderately crystalline dolomite
1386.50	14	✶D	✶ (↑)	Some BCΦ Minor MOΦ	Argillaceous laminae. Finely crystalline dolomite.
1393.50	13	∘D	∘̲ (↑)	Some MOΦ Some BCΦ Minor MO●$_{FC}$	Finely crystalline dolomite. Patches of saddle dolo-mite and pyrite.
1400.80	12	λD	λ	Some MOΦ Minor BCΦ Minor MO●$_{Poik. Fe-calcite}$ FR●$_{FC}$	
1402.20	11	D	∘ (✶)	Abd. BCΦ Minor MOΦ Minor BC●$_Q$	Finely crystalline dolomite

Well 7220/6-1

Depth (m)	SWC #	Lithology	Particles	Pores	Remarks
1403.20	10	D		Some BCΦ Minor MOΦ	Finely crystalline dolomite
1404.30	9	✱P/G_D	✱	Some MOΦ Minor BPΦ	Coarse-grained sediment
1418.80	8	✱D (✱P_D?)	✱	Some BCΦ Minor MOΦ Minor MO●$_{FC}$	
1432.20	7	✱∘D	∘✱	Some MOΦ Some BCΦ	Moderate-coarsely crystalline dolomite
1441.80	6	≡D		Abd. BCΦ	Finely crystalline dolomite
1452.80	5	[illegible] W	[illegible] ✱∘	Some WP●$_{EC}$ Minor FR●$_{FC}$	Minor stylolite-associated porosity
1461.50	4	⊿ [illegible] m-c sst.		Some-abd. BPΦ Some MOΦ	Some large poly-crystalline quartz grains
1477.00	3	Pebble-sized sst.		Minor BPΦ Minor FRΦ Minor FR●$_{FC}$	Pebbles composed of ⊿ M sst.
1480.50	2	[illegible] m sst.		Some BPΦ	Poorly sorted. Partly slica cemented.
1485.00	1	M sst.		Minor MOΦ	Strongly silica cemented

A1-8

HYDRO

1.5 Conventional Coring Table

Core #	Operation time					Formation	Cut				Recovery				Comment	Time since drilled / cored	Gas B/U	Barrell
	Date	RIH	Cut	POOH	Tot Hrs		Start mMD	Stopp mMD	m	m/hr	Top mMD	Base mMD	m	%				
---	02-mar	-----	-----	23.0	23.0	Top Ls res Ørn Fm	1137.0	1149.0	12.0	-----	-----	-----			Drilling 8 1/2" hole. Encountered Limestone with good oil shows at 1137m. Stopped for coring @ 1149m.			Corpro halvfmoon corebarrells
1	04-mar	18.0	6.0	13.0	37.0	Ørn Fm	1149.0	1167.0	18.0	3.0	1149.0	1166.4	17.4	96.7	Pulled due to full barrell.	41.0	TG=2,30/1,50%	**60' Aluminium**
2	05-mar	10.5	8.5	13.5	32.5	Ørn Fm	1167.0	1197.4	30.4	3.6	1167.0	1197.4	30.4	100.0	Pulled due to full barrell. Start WL logging	24.0	TG=0,94/0,83%	**90' Aluminium**
3	09-mar	17.0	4.0	16.0	37.0	Ørn Fm	1197.4	1204.4	7.0	1.8	1197.4	1203.9	6.5	92.9	Pulled due to jamming of at 1204,4m	93.5	TG=2,46/0,4	**120' Aluminium**
		45.5	18.5	42.5	106.5		Accum core		55.4				54.3	98.0				
							Accum reservoir		67.4									

Table 1.4 Conventional Cores

2 Geological and Geophysical evaluation

2.1 Results

Prognosed and actual depth values in well 7220/6-1 are listed in table 2.1.1. Prognosed and actual depth and thickness numbers for the reservoir section are listed in Table 2.1-2 Prognosis vs. results; Reservoir section.

2.1.1 VSP

A Zero Offset Vertical Seismic Profile (ZOVSP) was recorded in the vertical well 7220/6-1 in the Obelix structure. The data was recorded from 1530 m to 638 m MD in normal operating wireline mode. VSP stations were recorded at 15.12 m MD intervals using a four level VSI tool.

A tuned array of 3X150 cu.in G-gun airguns were used as a source, deployed from the crane of the rig. The data quality was considered to be good, but with some casing arrivals on the shallowest levels (638 m – 728 m).

All results are in the VSP-Velocity Report (dok.no. NH01097746) created by Schlumberger.

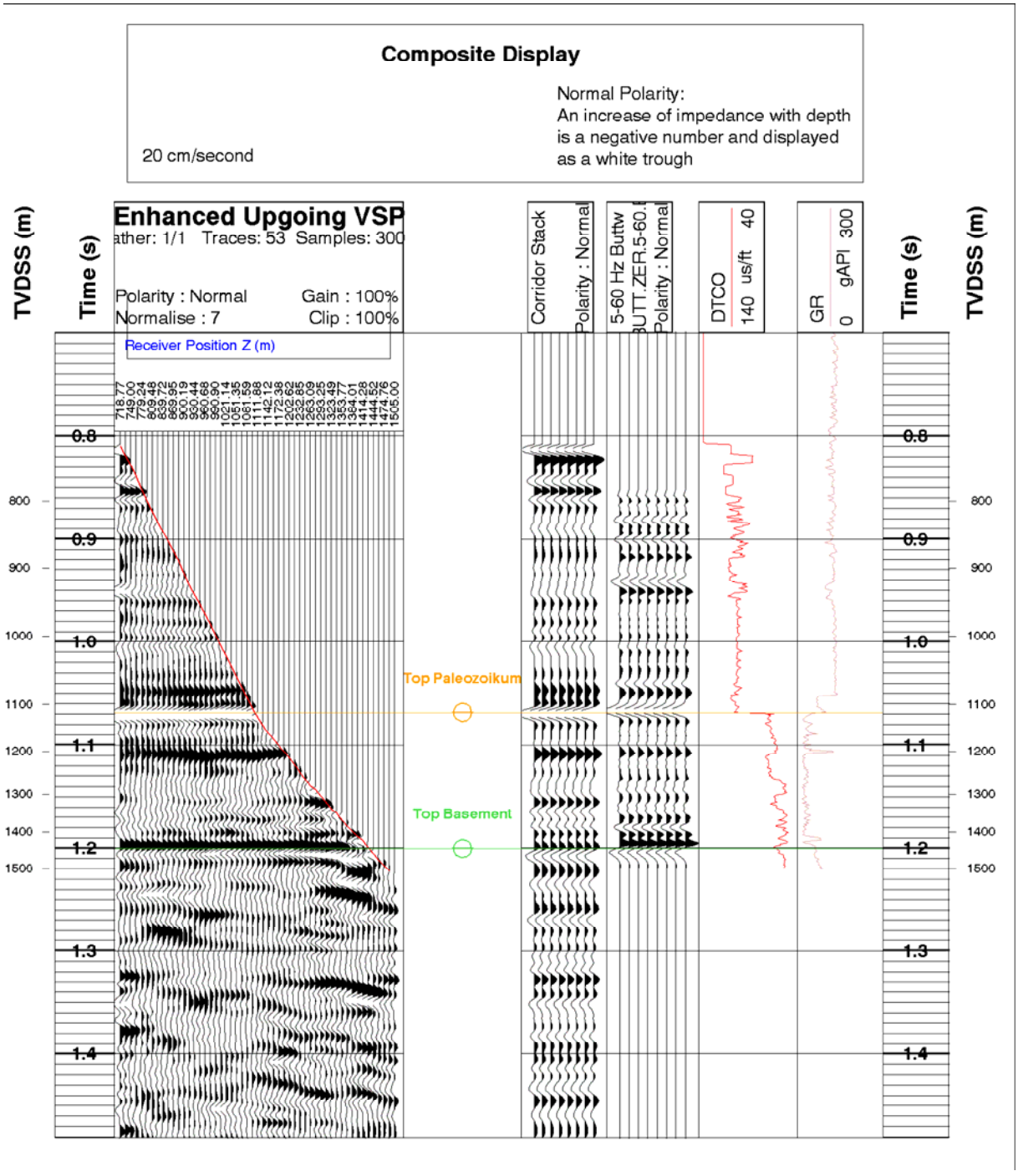

Fig. 1. Composite display (normal polarity)

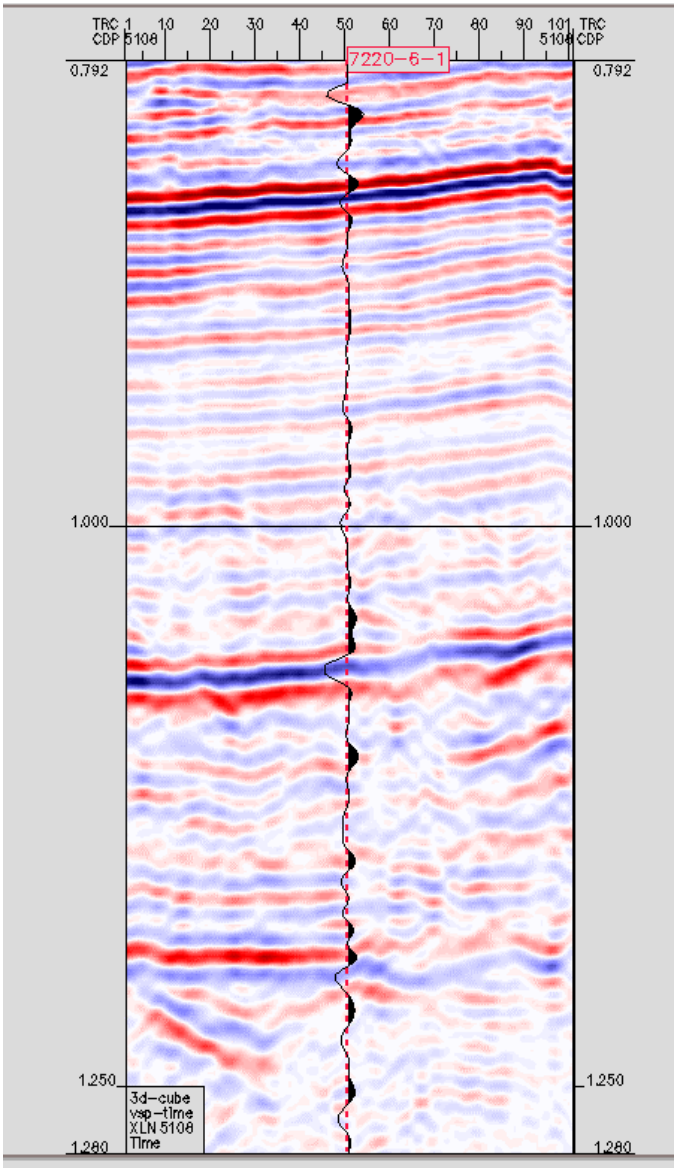

Fig. 2. VSP corridor stack and seismic. NH-0372: Inline 8354. Corridor stack shifted minus 7 ms.

2.1.2 Synthetic Seismogram

Check shots and calibrated LWD/Wireline logs from the well have been applied to generate synthetic seismograms and seismic to well ties Figure 3

Top Paleozoic seismic marker came in 44..3 m shallower than prognosed. The seismic interpretation of Top Paleozoicum follows a strong peak reflecting a increase in acoustic impedance below the Triassic strata. Estimated timeshift is –14 ms from seismic to chechshot calibrated logs.

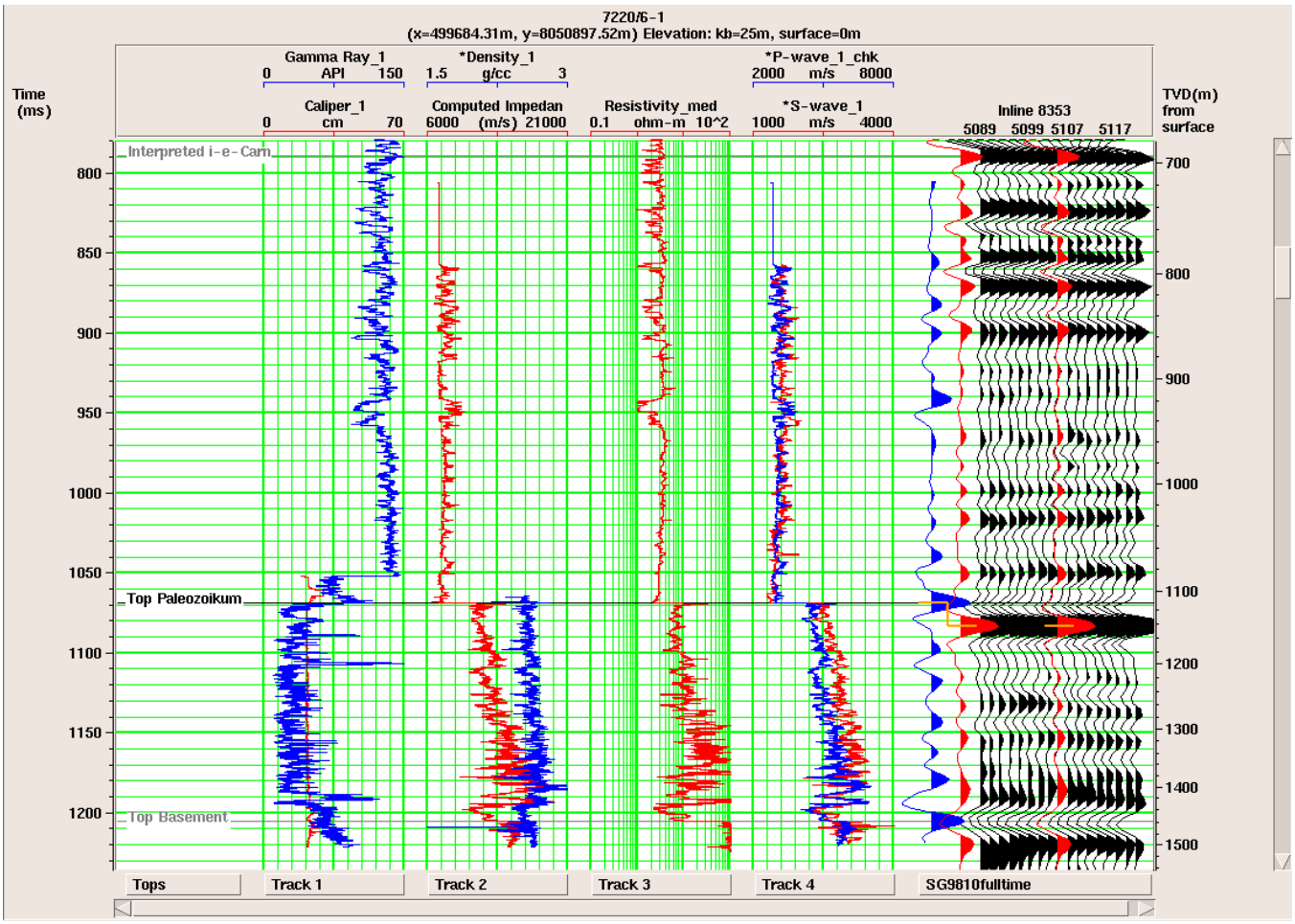

Fig. 3. Well to Seismic Tie (SG9810 full offset stack). Timeshift of –14 ms is performed in order to match seismic with checkshot calibrated sonic log. The shifts are eatimated at Top Paleozoicum.

Top Basement is observed 43 m shallower than prognosed, hence, the total thickness of the penetrated part of the Gipsdalen group is as prognosed.

2.1.3 Summary

The actual depths are generally shallower than prognosed but all depths were encountered within the given uncertainties. A relatively high deviation from prognosed depth for the Top Paleozoicum is attributed to errors in the velocity estimates within the Triassic interval from the seismic used in the depth conversion. The total thickness of the reservoir section was as prognosed.

Air gap:	**25.0 m**
Water depth:	**368,5 m MSL**

		Actual			
GROUP	**FORMATION**	**m MD RKB**	**m TVD RKB**	**m TVD MSL**	**Thickness**
NORDLAND	Sea bed	**393,5**	**393,5**	368,5	
	Intra Lower Quaternary				
INGØYDJUPET	Snadd	**480,0**	**480,0**	455,0	204,0
	Intra Early Carnian	**684,0**	**684,0**	659,0	453,4
GIPSDALEN	Fortet Member Equiv	**1137,5**	**1137,4**	1112,4	90,3
	Ørn	**1227,8**	**1227,7**	1202,7	208,6
	Falk	**1436,4**	**1436,3**	1411,3	46,8
BASEMENT		**1483,2**	**1483,1**	1458,1	56,8
TD		**1540,0**	**1539,9**	1514,9	

Table 2.1-1. Formation tops table

Group	Formation	MD RKB	TVD MSL	TVD MSL Prognosis	Thickness	Thickness Prognosis	Thickness Difference
GIPSDALEN	Ørn+Fortet	**1137,5**	1112,5	1183,0	298,9	171,0	127,9
	Falk	**1436,4**	1411,4		46,8	173,0	126,2
	Ugle				0	53,0	53
TD							

Table 2.1-2 Prognosis vs. results; Reservoir section.

2.2 Stratigraphy, Sedimentology and Reservoir Quality: Summary

From top to bottom, the mixed carbonate and siliciclastic reservoir section in the 7220/6-1 well is divisible into three distinctive parts (Fig. 2.1); 1) a 90.3 m thick Fortet member equivalent unit (1137.5-1227.8 m, Roadian-Capitanian and Induan age), 2) a 208.6 m thick interval of extensively dolomitized Kazimovian-Asselian Ørn Formation carbonates (Gipsdalen Group, 1227.8-1436.4 m log) and 3) 46.8 m of mixed carbonates and siliciclastic sediments of the Falk Formation (Gipsdalen Group, 1436.4-1483.2 m log, ?Moscovian-Kazimovian age?). The Falk Formation rests unconformably onto the metamorphic basement of highly fractured basement quartzites and quartz-mica schists with a measured porosity of 2% and a permeability of 0.012 mD (i.e. a type 1 fractured reservoir; 1483.2-1537 m, log). The reservoir section is unconformably overlain at 1337.5 m (log) by marginal marine Ladinian claystones of the Snadd Formation that form a top seal (Fig. 2.1). The analyzed reservoir section is highly heterogeneous, as described below.

2.2.1 Fortet member equivalent (1137.5 m-1227.8 m, log):

This 90.3 m section consists of breccias with subordinate dolosiltstones and conglomerates. It comprises three 25-35 m thick depositional cycles (Fme C1-C3; Fig. 2.2), defined on the basis of sedimentary and/or FMI character. The top of the lower most cycle is solution-modified (FmeC1, 1188.8 m, log; Fig. 2.2). This surface is karstified and it is interpreted to represent an unconformity *within* the breccias, and is consistent with biostratigraphic data indicating that the Upper Permian is absent (Fig. 2.1).

Analysis of the bedding data from the FMI shows rapid increases of dip within bedsets on a 2-5 m scale (i.e. from 10°-40°, 1206-1203.5 m; Figs. 2.2, 2.3). The bedset boundaries are normally characterized by a change in FMI facies and an apparent major shift in dip direction (C1A-I, C2A-D, C3A-E, Figs. 2.2, 2.4). The bed sets stack to form three major cycles (C1-3, Fig. 2.2), each characterized by initial upward increase and then decrease in depositional dip. The sediments are dominant by poorly sorted breccias, with individual bedsets characterized by one or two prevalant types of clast (Figs. 2.3, 2.4). The latter is taken to indicate clast-derivation from local point sources *within* individual bedsets. The breccias are intercalated with dolosiltstones, minor conglomerates (Figs. 2.3, 2.4), and have a sparse fauna that indicates non-marine deposition (palynomorph-dominated) with freshwater algae present towards its top and base (core data from 1154.5 m measured depth, cuttings data 1227 m measured depth).

Overall, the crudely organised breccias are considered to represent terrestrial rock fall deposition on scree slopes and proximal alluvial fans. Bedset thicknesses of 5-8 m and major changes in dip

direction between bedsets (Fig. 2.2), suggest intercalation of several different but low relief point sourced scree/alluvial slopes systems. These slopes are considered to extend a short distance (i.e. <1 km) from cliffs with a variable orientation (fault/fracture controlled?). In contrast to the breccias, the intercalated dolosiltstones are interpreted to represent development of lacustrine conditions. Modern analogues in a comparable temperate climatic setting are for example to be found in the French subalpine chains and Italian Dolomites, where scree slopes derived from carbonate bedrocks enter lakes with lacustrine carbonate deposition.

The common reworking of dolosiltstones as clasts into the breccias (Fig. 2.3) suggests that development of lacustrine conditions was ephemeral. The occasional conglomerates and common occurrence of siliciclastic grains within the dolosiltstones and matrix (i.e. Fig. 2.5) are taken to indicate some input by fluvial systems that drained basement rocks at this time exposed to the west. Thus, as a whole, the Fortet member equivalent unit appears to be dominated by proximal gravity-driven processes, local clast derivation and is thought to have occurred within an erosional depression. Here, times of increased runoff saw fluvial input and temporary development of lacustrine conditions. The depression itself is possibly of karstic origin, but this is unproven as are its lateral extent/orientation. There is no evidence in the core or FMI date to support an interpretation of deposition *within* a cave system with a collapsed roof (i.e. crackle/mosaic breccias are characteristic of cave-roof collapse absent).

2.2.1.1 Reservoir Quality:

The three Fortet member equivalent cycles (Figs. 2.1-2.3) are each characterized by an upward increase and decrease in depositional dip (Fig. 2.2). This decimetre-scale dip change is approximately paralleled by porosity variations, with the greatest porosities associated with the steepest dips in the mid part of each cycle. This variability would appear to be related to depositional processes, but the exact controls on the porosity variability have not been investigated. On a metre to sub-metre scale, porosity distribution is extremely heterogeneous, and occurs 1) *within* individual clasts (dominantly interclastic and moldic porosity; i.e. Figs. 2.4, 2.5), 2.2) between the breccia clasts themselves (mm-cm scale intercrystalline porosity; Fig. 2.5) and 2.3) also locally within the sedimentary matrix to the clasts (dominantly intercrystalline and/or moldic porosity). Significant contrast in hydrocarbon staining is observed between and within the different clast types and the matrix (Fig. 2.3). Porosity destructive processes are both; 1) primary, the fill of interclast porosity by sediment fines (Figs. 2.3, 2.4, 2.5) and 2.2) secondary, precipitation of pyritic and blocky calcite cements (Fig. 2.4).

Plug data from the cored interval have an average porosity of 13.2% (min 9.4%, max 20.2%, n=89), and a mean permeability of 3.7 mD (Fig. 2.6; excluding one data point of 1350 mD at

1196.25 m). Due to the highly heterogeneous nature of the breccias (Figs. 2.3-2.5), most of the core plug data sample a combination of both the beccia clasts and matrix and so are difficult to evaluate. An important feature of this unit is that it contains almost no fractures (Core/FMI analysis; Figs. 2.3, 2.5). The fractures present in the cored interval are limited *within* individual clasts (i.e. 1149.7 m, 1150.7 m Fig. 2.5) are interpreted to be compaction related. These observations suggest that flow within the unit will be controlled by the properties of the matrix. Since the matrix is a heterogeneous breccia it is anticipated that flow on a mm-dm scale will likely be highly tortuous and vary both between different clast types (dominated by moldic or intercrystalline pores) and between the clasts and matrix (i.e. see Figs 2.3-2.5).

2.2.2 Gipsdalen Group: Ørn and Falk formations (1227.8-1483.2 m):

Moscovian-Asselian carbonates and mixed carbonate-clastic rocks of the Gipsdalen Group (Ørn and Falk formations, respectively) are encountered between 1227.8 m and 1483.2 m (log, Fig. 2.1). The Falk Formation is differentiated from the Ørn Formation on the basis of intercalacted siliciclastics and gamma log character, with the pick made at 1436.4 m (Fig. 2.7). The base of the Falk Formation is characterized by a 10.5 m thick package of conglomerates containing clasts of quartzite and quartz-mica schist derived from metamorphic basement rocks below (Fig. 2.8). Within the Ørn and Falk formations dips are generally gentle except where approaching a fault zone encountered between 1261.2 m and 1270 m (log). Below the fault zone, FMI bedding picks show the Ørn and Falk formations to have a general ENE dip at 10°-20°.

Strata of the Ørn Formation are extensively dolomitized albeit with increasing limestone content towards its base and within the Falk Formation indicated by the CPI and proven by one SWC (1452.8 m, log). Most sidewall cores (SWC's) are characterized by replacive and largely fabric-destructive crystalline dolomites. However, good textural preservation of depositional textures is seen in carbonates in the upper part of the Ørn Formation (i.e. sidewall cores 1229-1248.9 m; Fig. 2.9) and within the Falk Formation (i.e. SWC 1452.8 m). Depositional rock fabrics and fauna from the *in situ* Ørn Formation (and Ørn Formation clasts within the overlying Fortet member equivalent unit) indicate deposition occurred in a wide range of environments, ranging from intertidal-supratidal restricted marine conditions (tidal flat laminites) to sub-wavebase open marine wackestones. Evidence for carbonate buildup deposition (*Tubiphytes* wacke-packstones; Fig. 2.9) is observed as a single 20 m thick shoaling-upward succession towards the top of the Ørn Formation (Fig. 2.2), that overlies spiculitic wacke-packstones interpreted to represent a zone of maximum flooding (i.e. 1248 m SWC). Elsewhere in the Ørn Formation, the ghosts of benthic foraminifera, peloids, crinoids and spicules are consistent with deposition in shallow marine moderate-low energy conditions.

The carbonates of the Gipsdalen Group, in particular the Ørn Formation, appear to be penetratively karstified. Evidence includes; 1) karstic sediment-filled caverns (i.e. 1276-1286 m FMI data; Fig. 2.10), 2) dissolution along fractures and bedding planes (FMI data) and 3) SWC thin sections where siliciclastic silts fill secondary porosity formed along fractures, bedding planes and also moldic pores (i.e. SWC's 1229.2 m, 1263.2 m, 1272.1 m, 1284.7 m, 1297.8m, 1321.1 m, 1403.2 m and 1432.2 m; Fig. 2.11). The SWC and FMI observations suggest that karstification, most likely linked to the top Palaeozoic unconformity, occurred preferentially along fractures and bedding planes (Fig. 2.11). Evidence for karstification extends downward from immediately below the Fortet member equivalent (i.e. Fig. 2.9) throughout the entire Ørn Formation and possibly into the Falk Formation (e.g. Figs. 2.10, 2.11). Sediments, dominated by dolosiltstones (but also including local breccias) appear to be an important fill of the karstic porosity.

2.2.2.1 Reservoir Quality:

The CPI indicates porosity variability on a 5-20 m scale (i.e. Fig. 2.12). The FMI data indicate that in the Ørn and Falk formations the matrix porosity is augmented by both fracture and secondary vuggy-cavernous (?karstic) porosity (i.e. Fig 2.7, 1424-1428 m and 1432-1435 m). There are locally some significant discrepencies between the porosties measured from core plugs and the CPI (i.e. Fig. 2.12). However, such discrepancies can explained by both the patchy nature of porosity indicated by the FMI and the presence of both vuggy porosity and fracture porosity (solution-enlarged). However, calibration of the FMI by the SWC data indicates that vuggy porosity apparent in the FMI can be partially-completely occluded by low resistivity karst-related sediments (i.e. Figs. 2.10, 2.11, 2.12). In the SWC thin sections (Fig. 2.11), these sediment fills commonly have properties consistent with those encountered in dolosiltstones in the Fortet member equivalent unit (e.g. between 1137.5 m and 1227.8 m, Figs. 2.5, 2.6).

The average SWC measured porosity within the Ørn Formation is 10.6% (Max 24%, Min 1.5%, n= 38), with a mean permeability of 0.51 mD (Max= 0.648 mD, Min=0.495 mD, n=19). For the Falk Formation there is an average 8% porosity (Max=16.5%, Min=0.6%, n=5) and permeability of 0.495 mD (n=4). However, it is important to note that there is a bias in the sample set, as they were preferentially located in order to sample zones with higher porosity and hydrocarbon saturation.

Fracture density is significantly greater than that apparent in the overlying Fortet member equivalent unit. Open fractures interpreted from the FMI have a consistent NNW-SSE orientation, although few open fractures are observed in the SWC's. In the SWC's fractures are observed to be both, 1) filled by blocky calcites and/or 2) to have a partial filling of dolosilts thought to be related to karstification (i.e. Figs. 2.10A, 2.11, 2.12). The latter observation indicates that it is

possible that the low-resistive fractures apparent in the FMI may be partially-completely sediment occluded. Observations from the Ørn and Falk Formations indicate that there a dual porosity system is developed, with a low permeability matrix system augmented by fracture, vuggy,and kasrtic porosity. However, at least part of this secondary karstic/vuggy/fracture system appears to be filled by sediments related to the top Palaeozoic unconformity, and can potentially have a significant impact on reservoir performance.

2.2.3 Recommendations for futher work

The main recommendations for future work to improve understanding of the reservoir are as follows:

1) Investigation of the relationship between hydrocarbon saturation, pore type, pore size and wettability in the reservoir section (Ørn Formation) and relation to CMR response using SWC's.

2) A study to differentiate the proportion of open fractures and vuggy porosity within the Ørn and Falk Formations from those with a sedimentary fill.

3) A diagenetic study to determine the relative timing of porosity creation and destruction (in particular dolomitization, karst, fracturing episodes and karst-related sediments) using cathodoluminescence , stable isotope and fluid inclusions.

4) Seisclass 3D mapping on the SG9810 survey and using the 7220/6-1 well data in order to; A) define the areal extent of the Fortet member equivalent unit (that appears to be a reservoir interval characterized by matrix properties alone), B) map out karst bodies within the Ørn Formation and differentiate different fills, C) map out the build-ups in order to isolate areas of best reservoir quality.

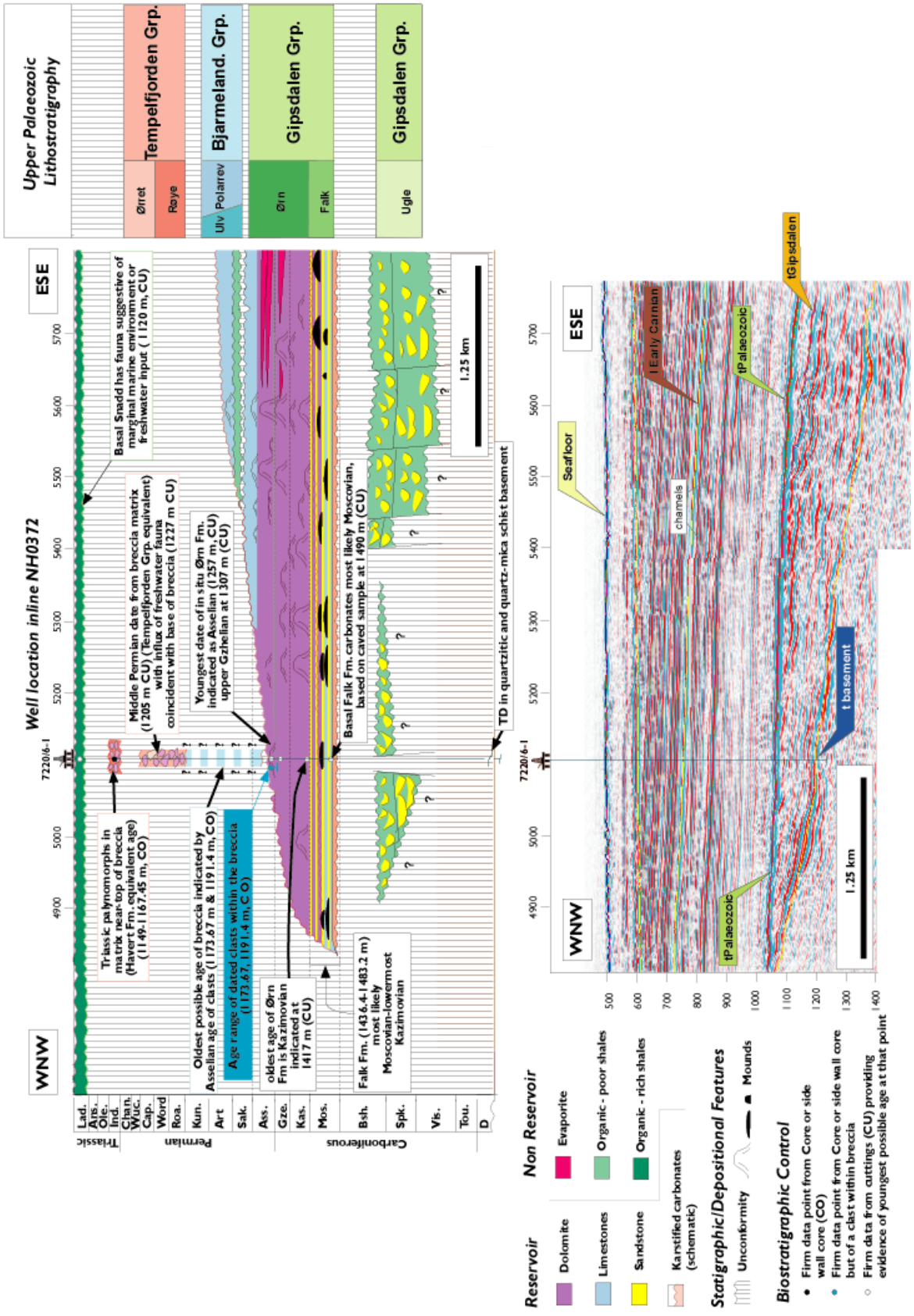

Fig.2. 1. Paired seismic tie line through the 7220/6-1 well site from the NH0372 site survey and chronostratigraphic diagram illustrating the facies and biostratigraphic constraint on the formations present. The Fortet member equivalent unit is of Roadian-Capitanian and Induan age (the upper Permian is absent). The Ørn Formation of the Gipsdalen Group is of Kazimovian-early Asselian age, while the Falk Formation of the Gipsdalen Group is thought to be of Moscovian-Kazimovian age.

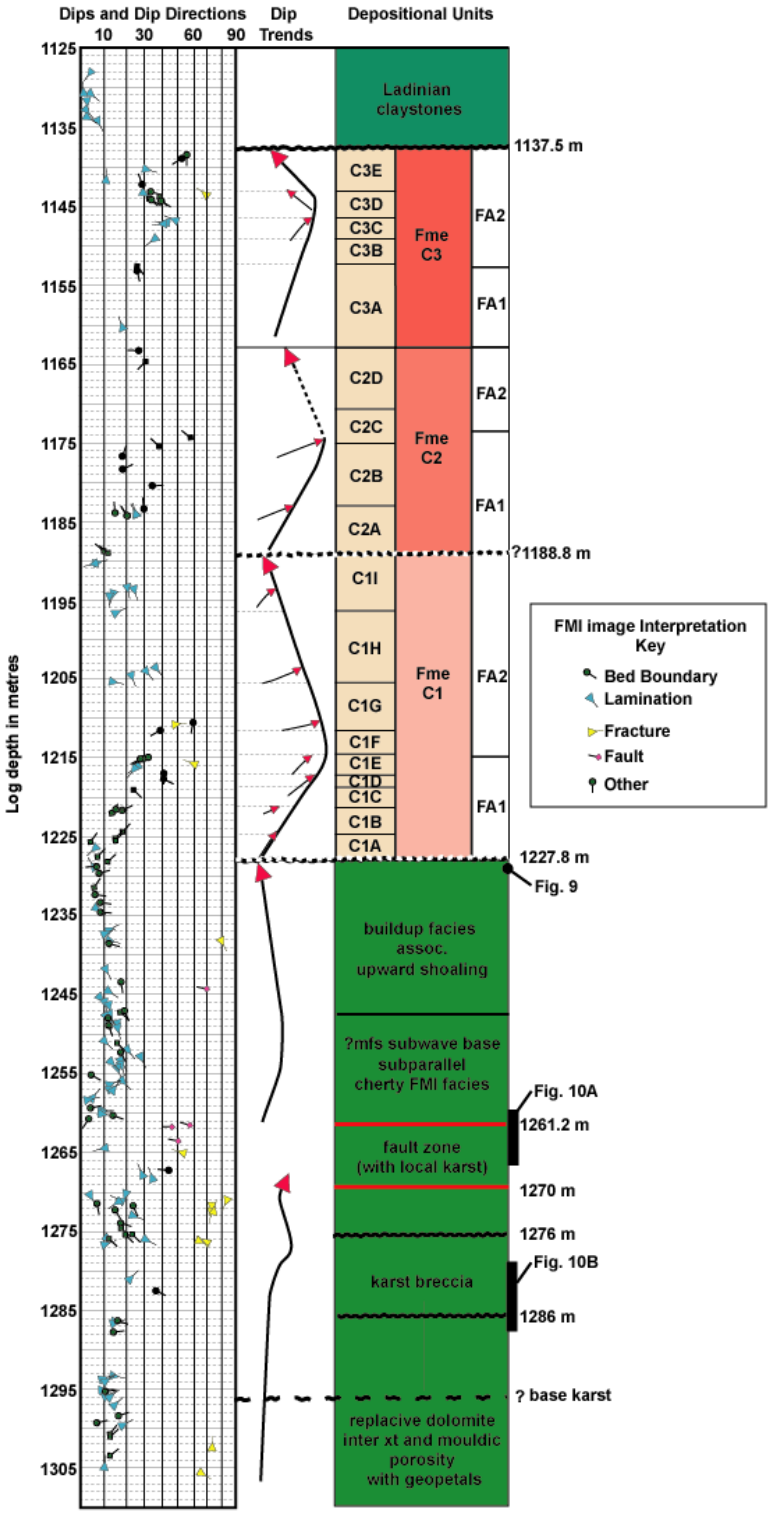

Fig.2. 2. Diagram showing the variations in dip and dip-direction within the uppermost Ørn Formation (dark green at the base of the right column), the Fortet member equivalent unit (orange in right column) and the base of the Snadd Formation from 7220/6-1 (darker green at the top of the right column). In the column on the right the dominant FMI facies (FA1, FA2), major cycles (FmeC1-3) and bed set boundaries are shown with the overall dip trends within the bedsets and cycles also highted. The top of cycle C1 is karsted (see Fig.3B) and is interpreted to correspond to the break between breccias of Roadian-Capitanian age and those of Induan age (see also Fig. 1). Note that the formation colour scheme used also corresponds to that used in Fig. 1. FMI fracture/bedding image interpretation from Rusconi et al. (2005).

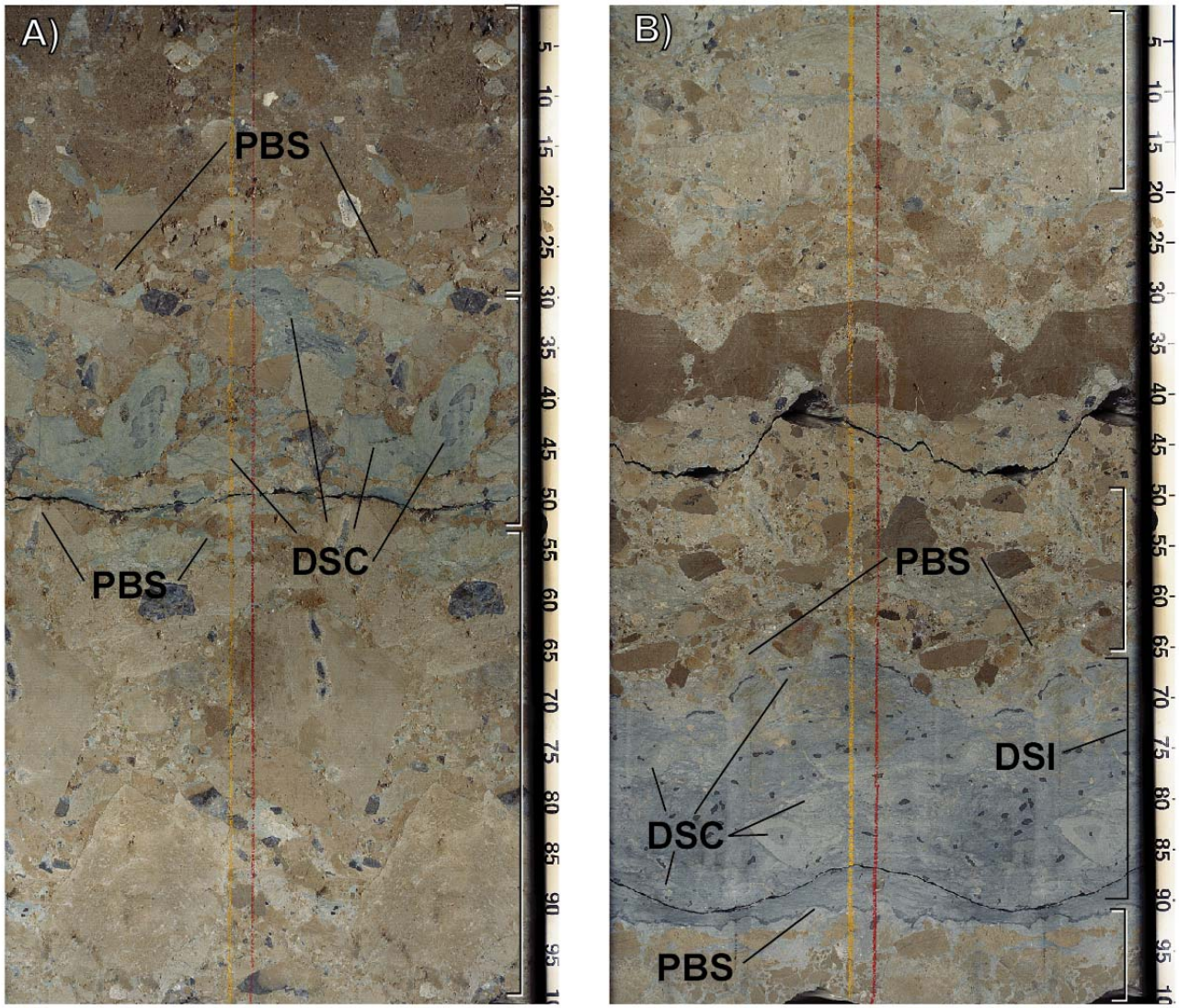

Fig.2. 3. **Autocar 360° whole core images showing the heterogeneity of breccias within the Fortet member equivalent unit. These images also show evidence for the depositional origin of the dolosiltstones and clastic-rich dolosiltstones and demonstrate the variation on hydrocarbon content between different clast types and the matrix. A) Dolosiltstones as reworked clasts within the breccia (light grey colour, DSC, 1174-1175 m, measured depth). PBS = primary bedding surface – a surface of depositional origin. B) Example of bedded siltstones (DSI) overlying an etched (solution-modified) primary bedding contact (PBS) and in turn overlain by bedded breccia with abundant dolomitic clasts (brown, 1179-1180 m measured depth; DSC= dolosiltstone clasts). Scale in centimetres.**

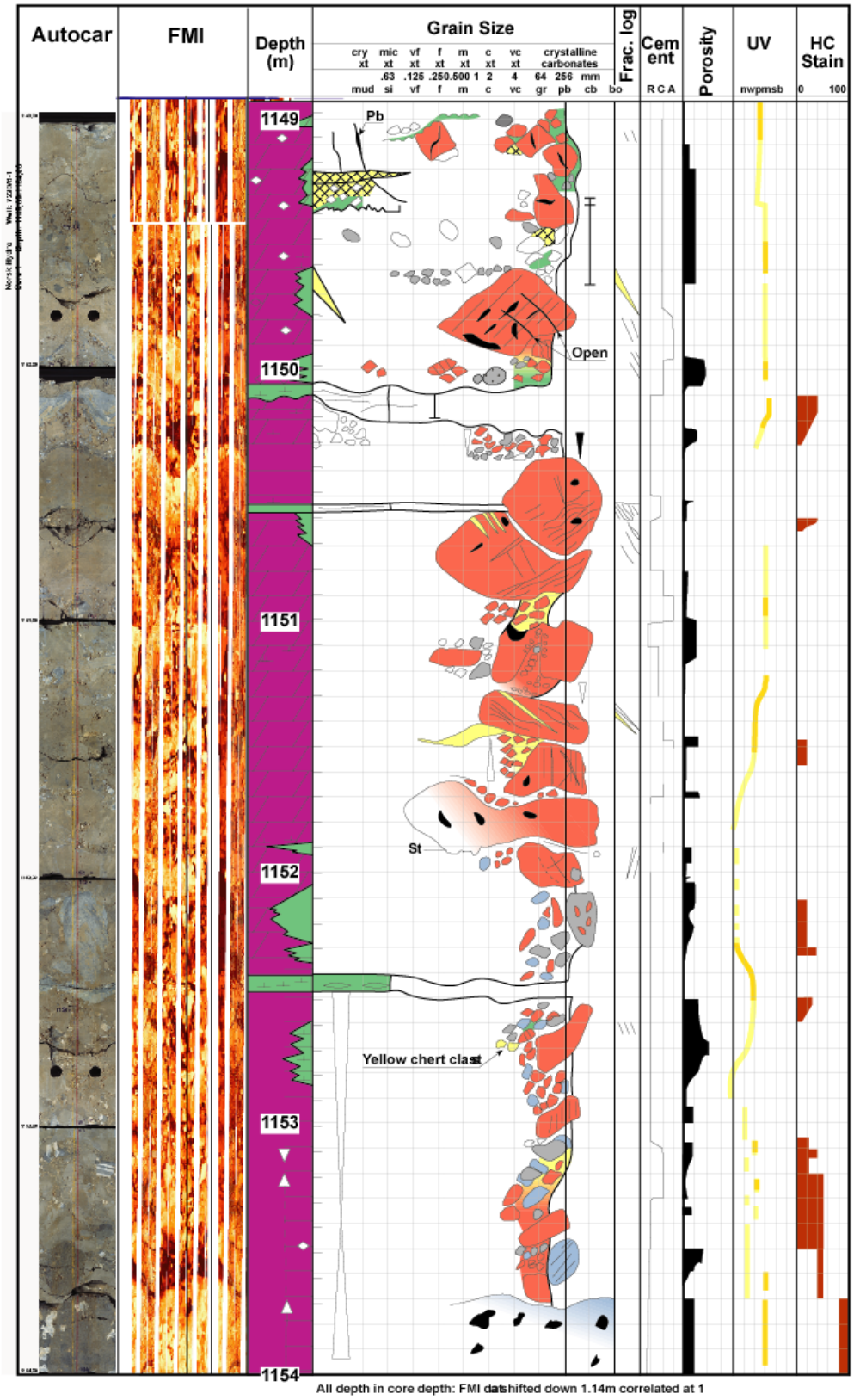

Fig.2. 4. Sample of a detailed core log between 1149 m and 1154 m (measured depth), with core description calibrated against autocar and FMI images. Note the very patchy distribution of porosity and variation in hydrocarbon staining in clasts and matrix. Key to lithologic column; purple = dolomites, green = clay-rich dolosiltstones. Key to grain size column; orange clasts = fine grained dolomites, blue = molic dolomites (often cherty, black within clasts), green= matrix, light grey clasts= dolostilstone intraclasts, yellow = sparry cement.

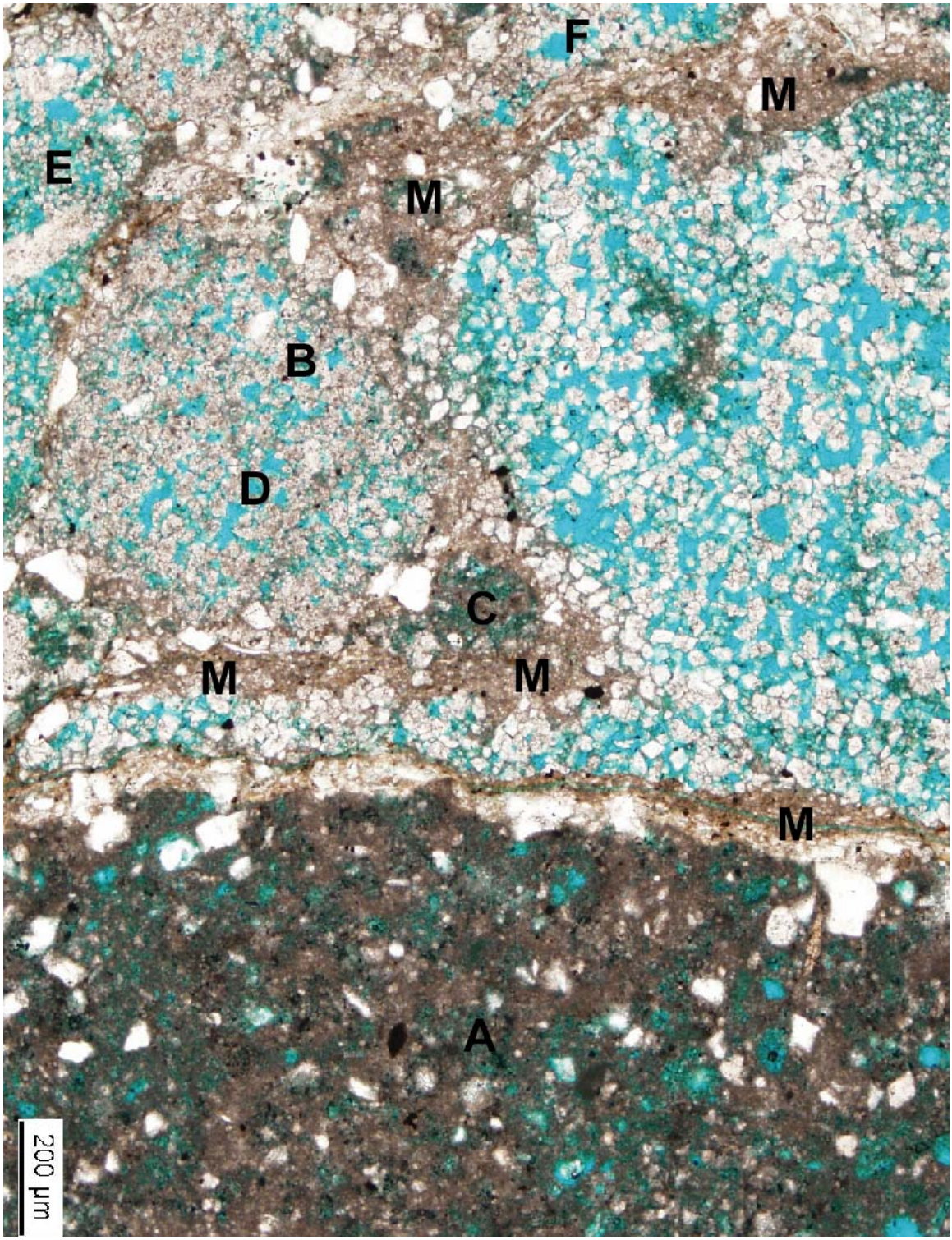

Fig.2. 5. Thin section micrograph from the Fortet member equivalent unit in the Obelix 7220/6-1 well (1184.5 m) showing a range of different dolomitized lithoclasts and a dolosiltstone intraclast (A) with a dolosiltstone matrix (M). Note the contrast in porosity (blue resin impregnated) between the matrix (M) and between the different clast types (A-F). In this sample the dolosiltstone matrix will act as a baffle/barrier to fluid flow from the clasts.

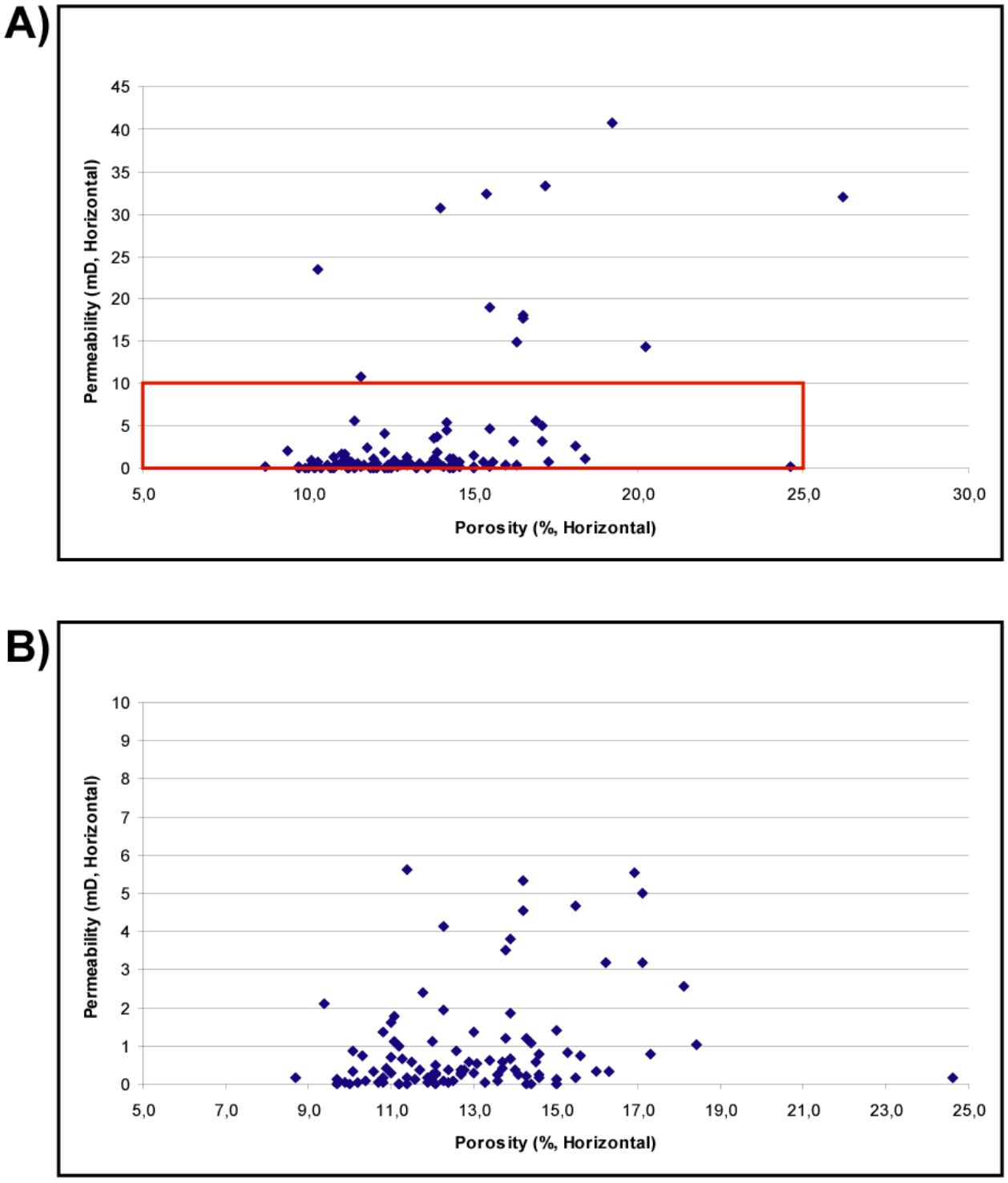

Fig.2.6. Summary plots of porosity-permeability data from the cored interval of Fortet member equivalent unit in the 7220/6-1 well. A) Plot showing the complete spread of data. Note that most data fall in the 9-15% porosity range with a permeability of less than 5 mD. B) Detail of A (area shown in red box in A) highlighting that most measured permeabilities are less than 1mD. As can be seen from Fig. 5, most plugs cut very heterogeneous sediments.

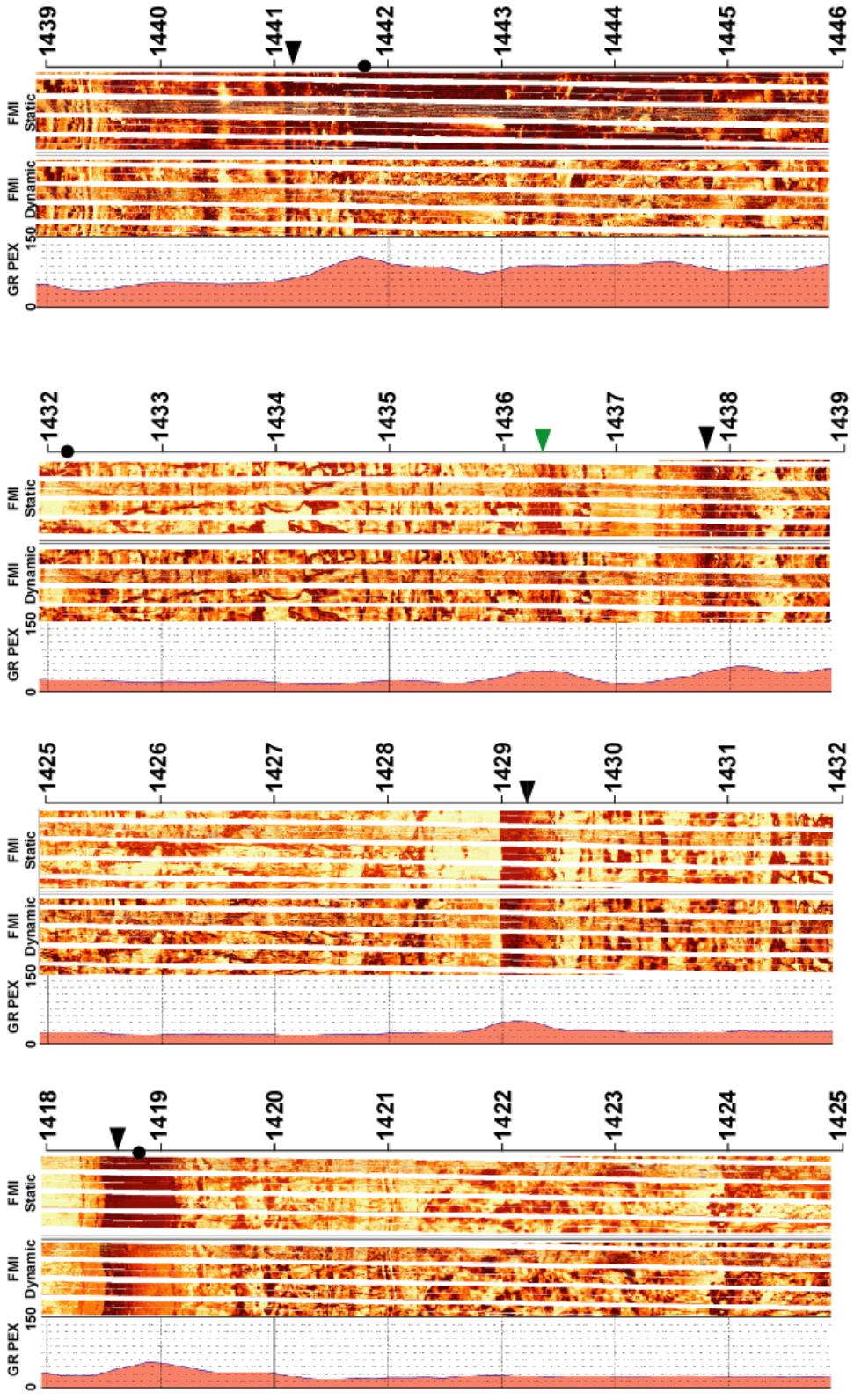

Fig.2. 7. Paired gamma ray and FMI images of the pick of the contact chosen between the Ørn and Falk formations at 1436.4 m (log depth, green arrow). Other possible candidates considered are shown with a black arrow. The boundary was chosen on the basis of siliciclastic content in picked cuttings (thin section and SEM analysis) and gamma log character. Note the solution-modification of bedding and fractures close to the base of the Ørn Formation (i.e. 1424-1428.3 m, 1432-1435 m), as is consistent with SWC thin section observations.

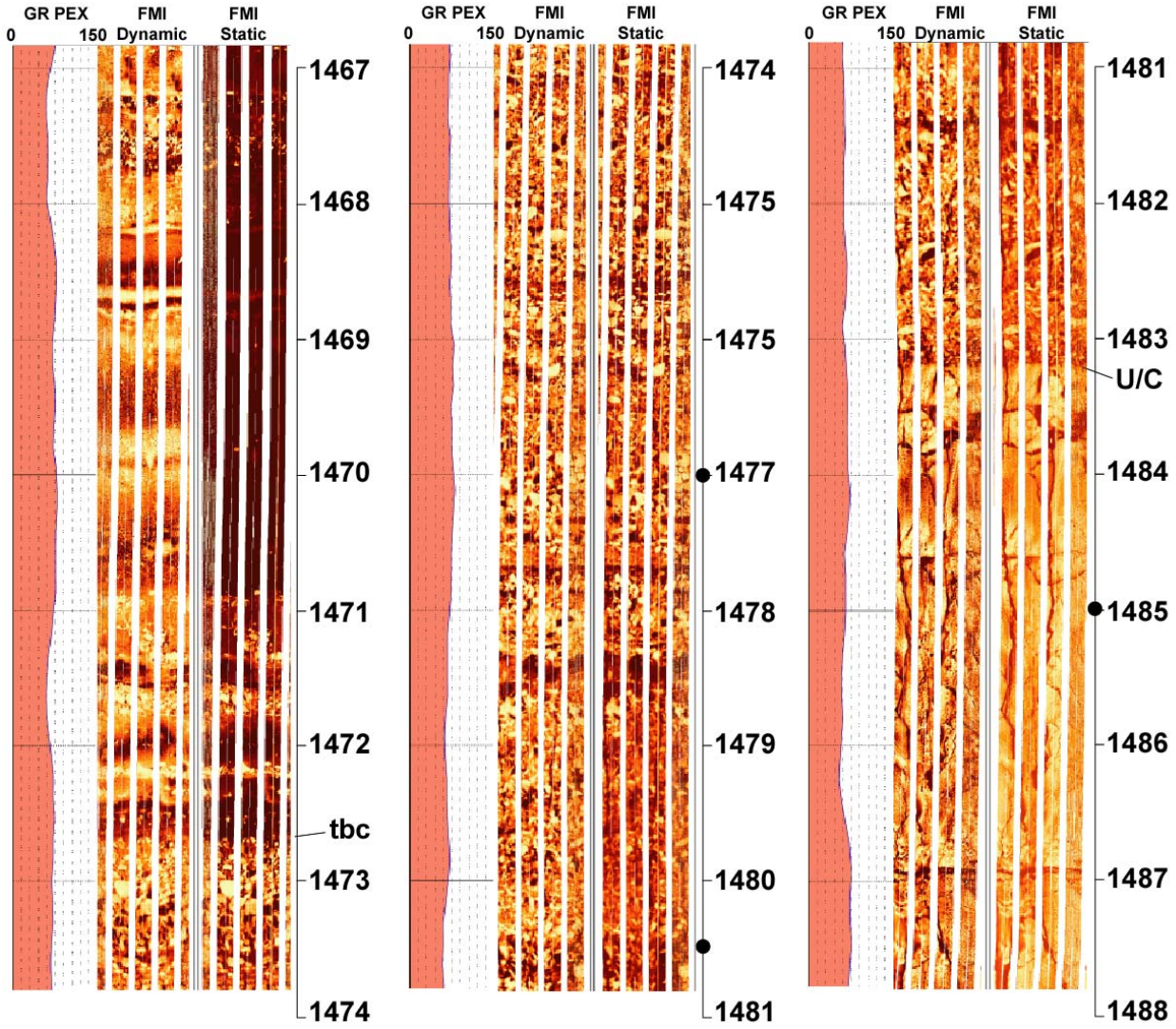

Fig.2.8. Paired gamma ray and FMI images illustrating the pick of the base Gipsdalen Group and Falk Formation at 1483.2 m (log). Above this contact 10.5 m of basal Falk Formation conglomerates rest unconformably (U/C) onto a fractured basement of quartzites and quartz-mica schists. The Ugle Formation of the Gipsdalen Formation is absent (see also Fig. 1). The top of the conglomerates (tbc) is at 1472.7 m (log).

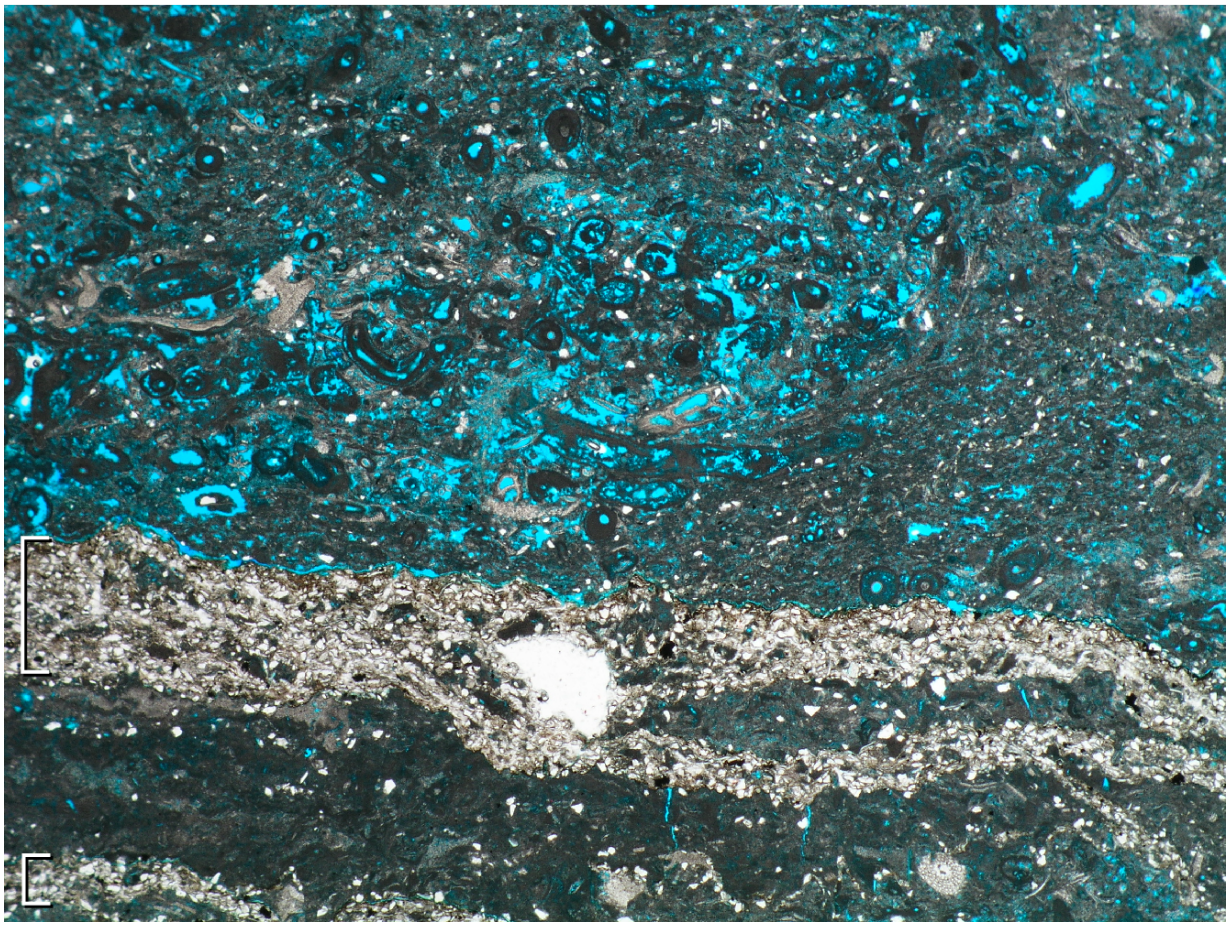

Fig.2.9. Thin section micrograph from the sidewall core at 1229.2 m (log depth) with both interparticle and intraparticle porosity (blue resin fills pores, 15% porosity, 2.3 mD horizontal permeabilty) developed in *Tubiphytes* packstone-wackestones. These buildup facies are themselves cut by dolomitic siltstones, interpreted to fill a karst-modified stylolite/bedding plane (highlighted with brackets). Field of view 8 mm, ppl.

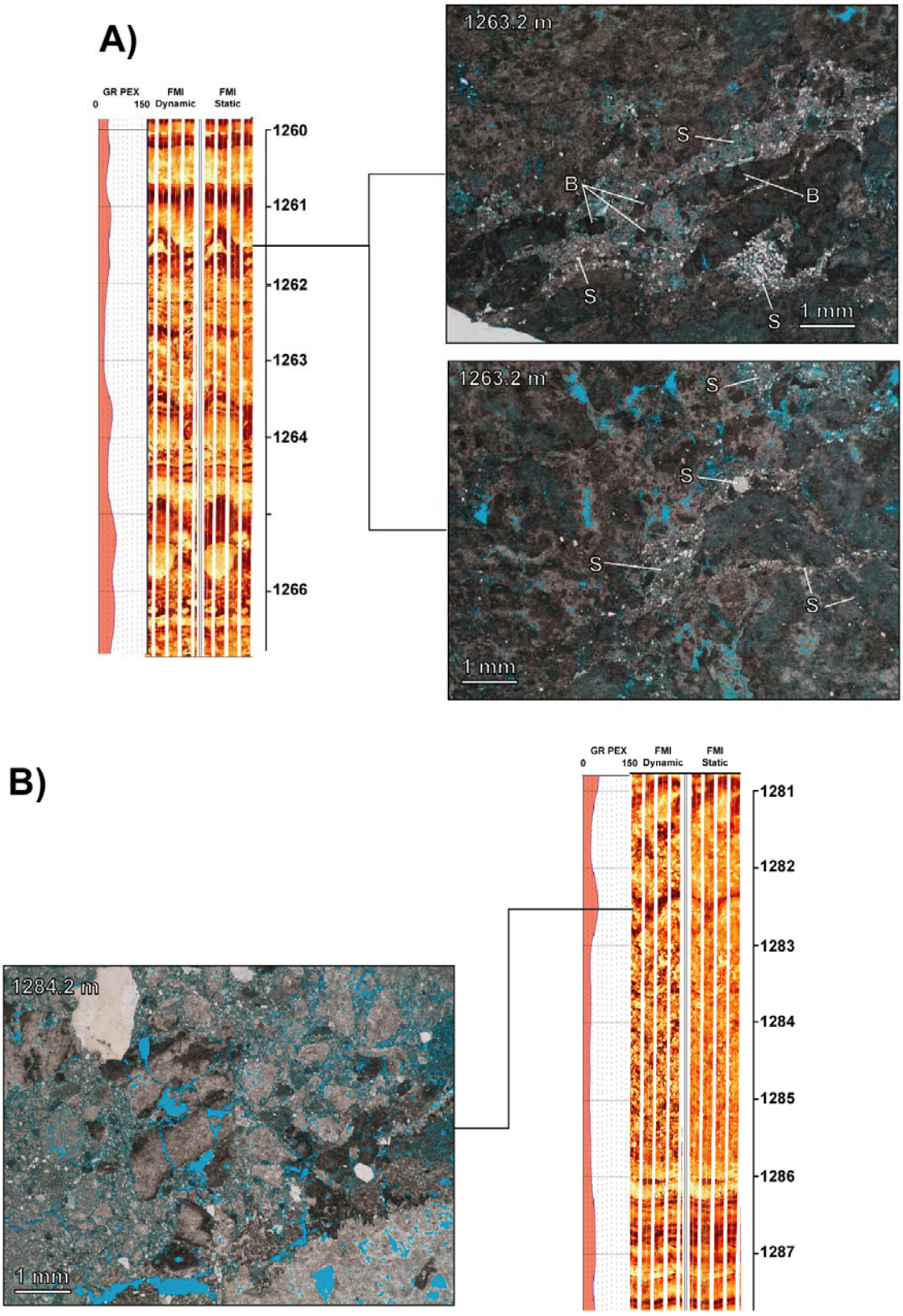

Fig.2.10. A, B. Thin section micrographs from the sidewall cores at 1263.2 m (log) and 1284.2 m (log) showing evidence for the karstification of the Ørn Formation. A) The 1260-1266 m log interval of a prominent fault zone that cuts across karstified strata, with vuggy porosity filled by dolosiltstones (S) and brecciated lithoclasts of the host carbonates (B). B) The FMI for the 1281-1287 m log interval is characterized by a brecciated character, and this interpretation is confirmed by the sidewall core from 1284.2 m, as pictured on the left.

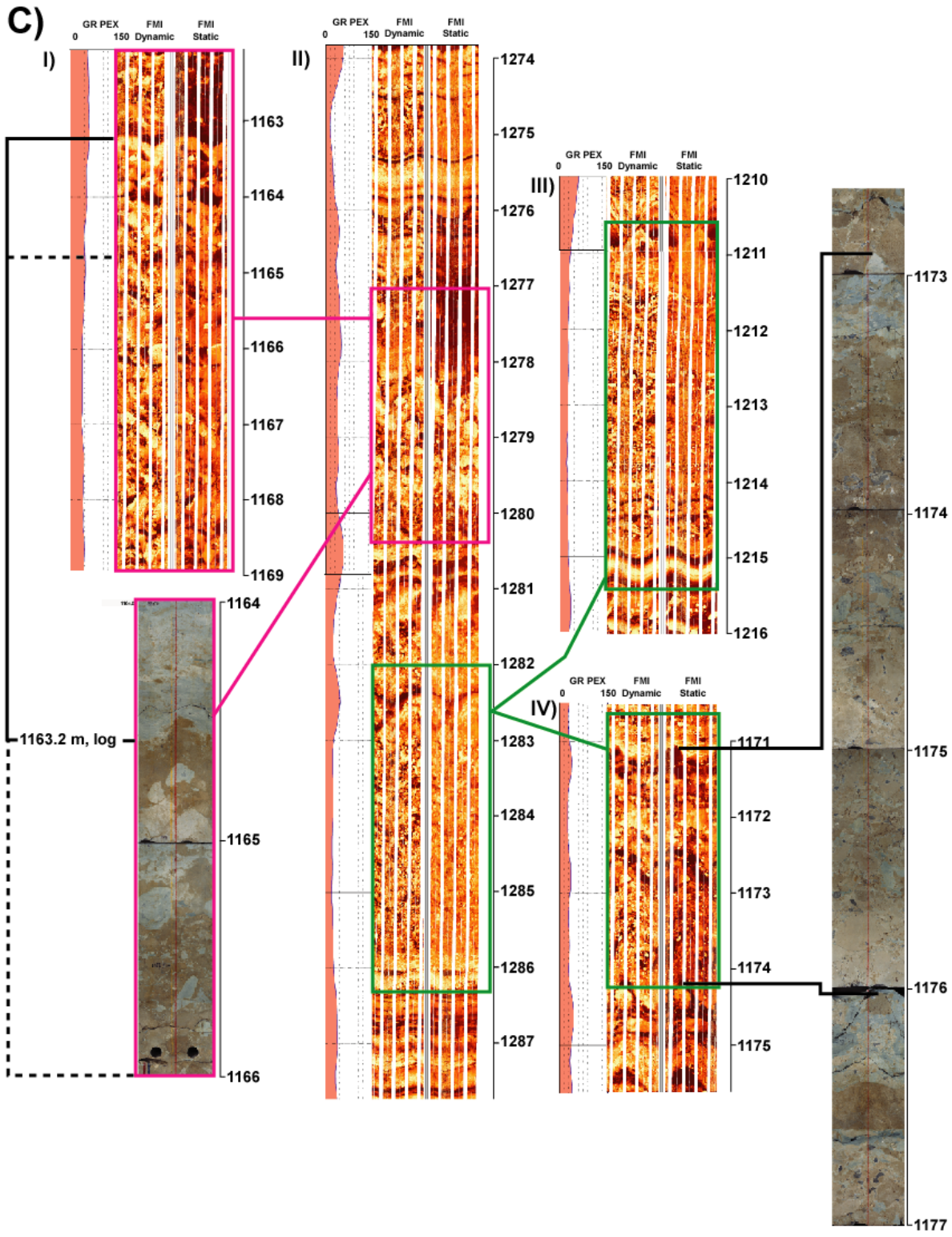

Fig.2.10. C. Illustration showing how an interval of karst within the Ørn Formation interpreted from the FMI data data (II, 1274-1287 m, log) has FMI textures directly comparable to the cored interval of the well. Such comparison (to the logs in I, III, IV) indicates that cavernous karstic porosity within the Ørn formation is sediment filled. Together, textural analysis of the FMI and the core data suggest that cavernous porosity is filled by both breccias and dolosiltstones (i.e. core photos from 1164-1166 m and 1173-1177 m at left and right, respectively). The early fill of cavernous porosity by sediments prevented cavern collapse/breakdown during burial.

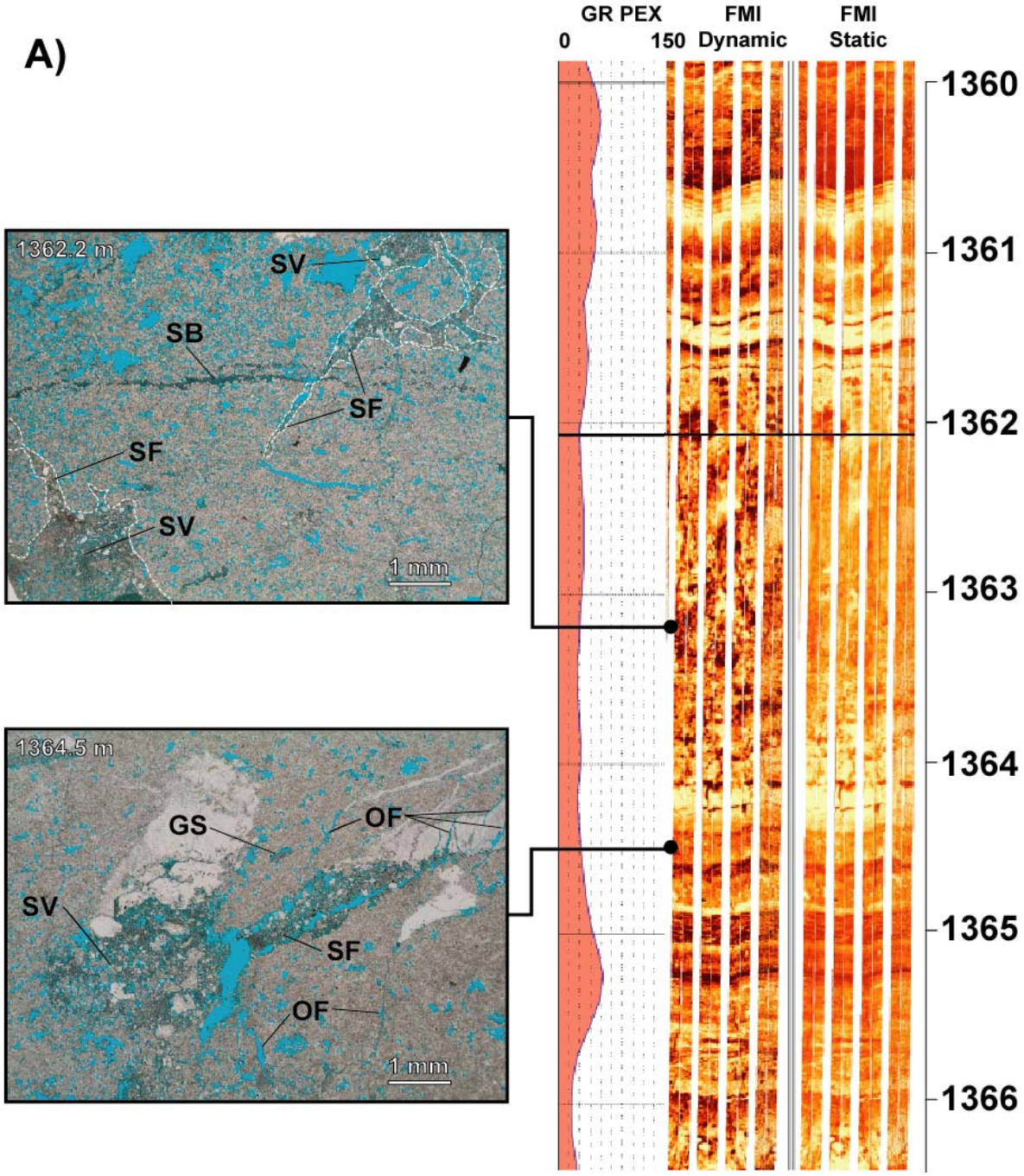

Fig.2.11. A. Evidence for karst within the Ørn Formation. Examples of SWC constraints on the interpretation of vuggy porosity from FMI images. The interval from 1361.7 m to 1364.7 m is characterized by vuggy porosity that appears to be controlled by both steep fractures and bedding (dark low resistivity areas in the FMI). The thin sections reveal the development of solution enlarged moldic pores, vugs (SV) fractures (SF) and laminae (after stylolites?). Some of this secondary porosity is filled by dolosiltstones with a siliciclastic content that can result in a low restivity signal in the FMI images. The vuggy and fracture porosity is in part sediment and/or cement filled and partly open (i.e. OF, lower photomicrograph). Also see Fig. 12 for futher detail on this interval.

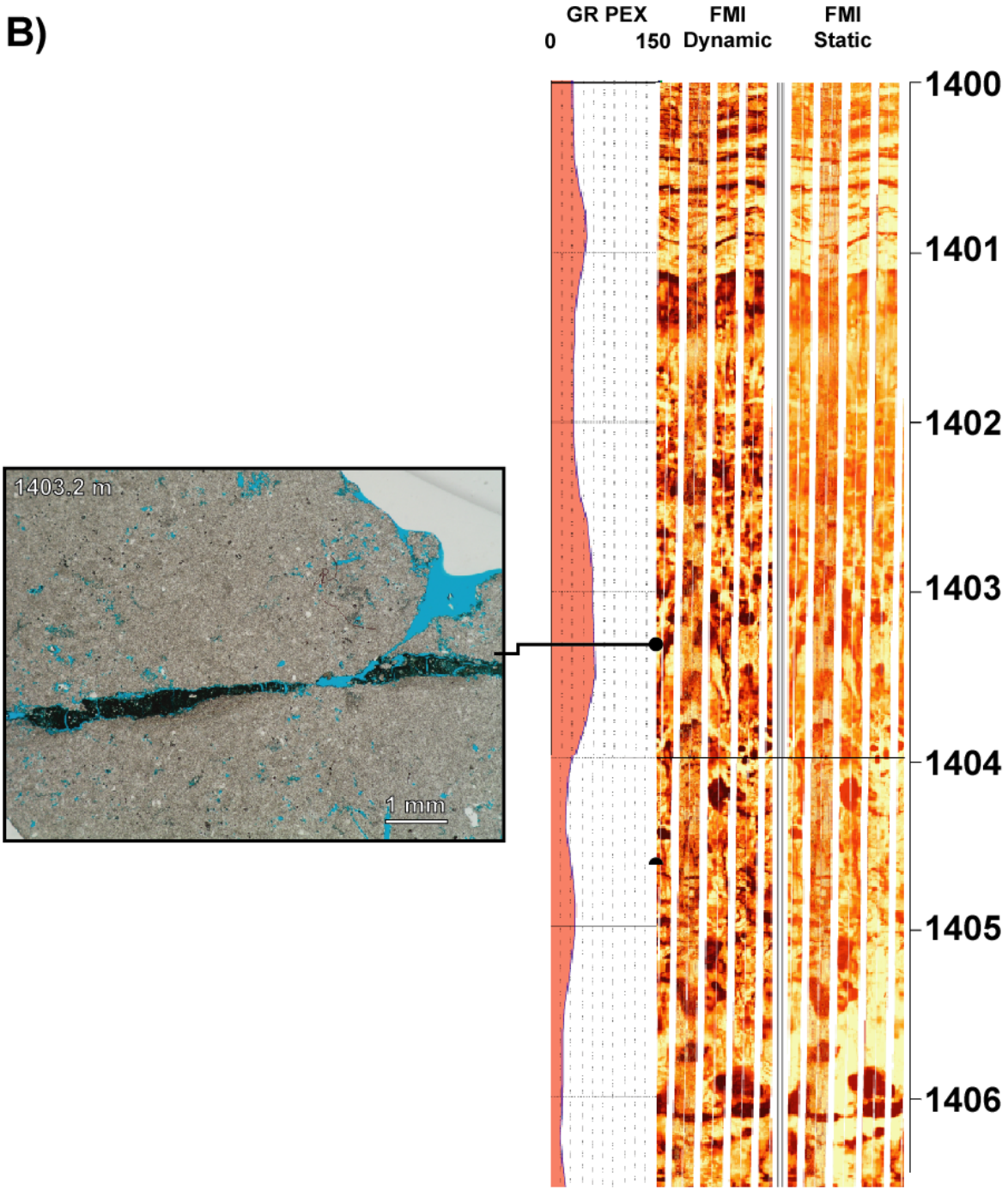

Fig. 2.11. B. Evidence for karst within the Ørn Formation. The 1401-1406 m interval appears to show well developed vuggy and fracture porosity (dark, low resistivity areas in the FMI). However, the SWC from 1403.2 m reveals that such porosity can be partly-completely filled by dolosiltstones. These dolosiltstones appear as a common fill of vuggy, moldic and fracture poriosity of SWC's taken from throughout the Ørn Formation, and are thought to be related to karst processes at the top Palaeozoic unconformity.

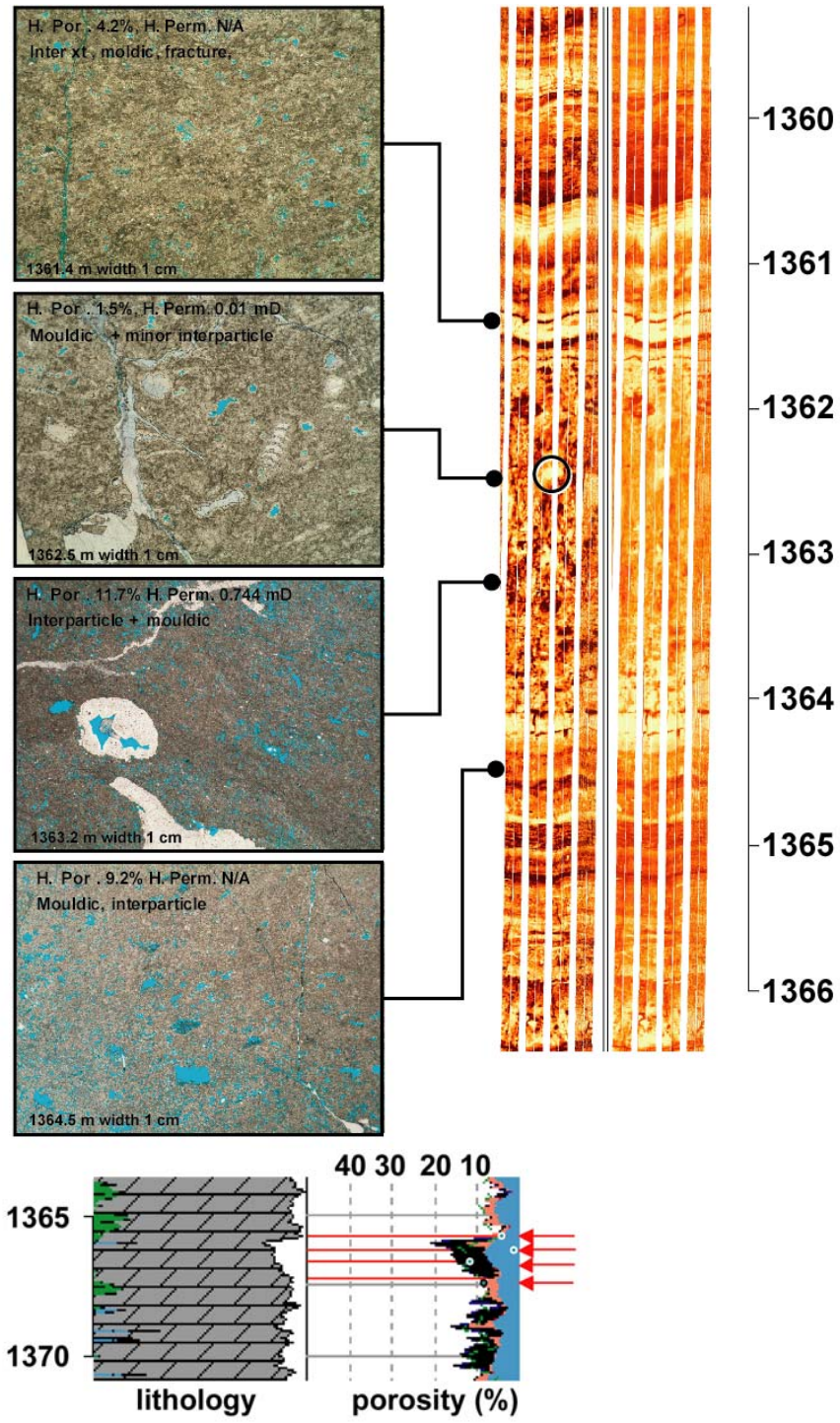

Fig.2.12. Thin section micrographs from SWC's taken to sample an interval characterized by an asymmetric gradual upward increase in porosity between 1361 m and 1365 m (log), with an abrupt decrease of porosity at its top. The prognosis was that this cycle would correspond to an upward-shallowing depositional cycle bounded above and below by flooding surfaces (and relatively deep water facies). The SWC data indicate that the main control on porosity variability is the distribution of secondary vuggy porosity that is in part filled by karst-related sediment (see Fig. 11A) rather than depositional facies variations. At 1362.5 m a significant discrepancy is observed between the CPI porosity value and that of the SWC, and is attributed to the presence of vuggy porosity, apparent in the FMI with the plug likely obtained from a high resistivity area, as circled. The four SWC's are characterized by moldic and intercrystalline porosity and contain hairline open fractures and partially-cemented fractures.

2.3 Biostratigraphy

The biostratigraphic evaluation of well 7220/6-1 (480m - 1537mMD RKB) was carried out on selective ditch cuttings, sidewall cores and core material by APT (2005). Micropalaeontological and palynological analyses form the basis for the biostratigraphic interpretation of the well. In total 87 ditch cuttings and 23 core samples were analysed for palynology (marine microplankton, spores and pollen), and 62 ditch cuttings samples and 11 core samples were analysed for micropalaeontology (foraminifera and ostracods). Thin sections were also specifically prepared for studies of fusulinids within the Gipsdalen Group from 19 ditch cuttings, 12 core samples (1153.3m-1191.4m) and 8 swc samples (1225m – 1485m).

Table 2.1 shows a summary of the chronostratigraphy and lithostratigraphy of the well. The interpretation is in accordance with Norsk Hydro's standard zonation for the Triassic interval. The age of the Early Permian - Carboniferous interval follows Davydov et al (in Gradstein et al., 2004: A Geologic Time Scale).

Problems with dating the Gipsdalen Group

It should be noted that there were problems in dating various levels within the Gipsdalen Group. Various problems were encountered by datings from cores, sidewall cores and cuttings. For example, datings in cores using fusulinids from the brecciated upper unit ('Fortet Member equivalent¨') suggest an early Asselian – latest Gzhelian age but these are present in derived clasts. Palynological dating of the matrix suggests a Middle Permian (Capitanian – Roadian) dating at least in the middle part (1205m).

There was generally poor recovery from sidewall cores near the well TD at 1540m and within the Falk Formation.

Other datings were based on ditch cuttings. These provide only the youngest possible age and are prone to down-hole caving. The oldest i.e. Moscovian age identified is present only as cavings within the underlying basement (at 1490m) and not *in situ* within the Falk Formation.

All sample depths quoted are mMD RKB.

2.3.1 Main Stratigraphic Conclusions

Biostratigraphic analyses started within the Late Triassic Snadd Formation. However, the two uppermost samples analysed at 480m and 490m were dominated by caved Pleistocene/Holocene microfossils and provide support for the presence of the Nordland Group within the well. These

samples also contain evidence of reworked (and caved) Late and Early Cretaceous and Permian palynomorphs and microfossils. This may provide indirect evidence that Cretaceous sediments draped the Loppa High prior to glacial erosion. There are no positive indications for either reworked early Cenozoic or Jurassic ages although this does not necessarily imply that these sediments were not present on the structure. The lack of these microfossils maybe due to unfavourable preservation. Regional evidence suggests uplift began during Oligocene/Miocene times.

The Ingøydjupet Group Snadd Formation, penetrated at 480m (log) contains a thick (657.5m) sequence of Middle - Late Triassic, early Ladinian –late Carnian sediments in this well. The regional intra-early Carnian seismic marker was identified and biostratigraphically calibrated with the upper part of the Snadd Formation. Sandstones of fluvial origin are developed below this marker within the early Carnian. The lowermost part of the Snadd Formation contains marginal marine mudstones that represent an early Ladinian transgression that unconformably overlies the Gipsdalen Group.

An unconformity is indicated between the Ingøydjupet Group, Snadd Formation and the Gipsdalen Group, Ørn Formation at 1137.5m (log).

Palynological analyses of the breccia infill at the top of the Gipsdalen Group indicate an Early Triassic, Induan age. The non-marine palynofloral assemblage suggests that sediments age equivalent to the Havert Formation (rather than Klappmys Formation) may have present on the structure before being subsequently transgressed and/or eroded by a sustained early Ladinian event.

As indicated in the overlying section, there were various problems with dating the Gipsdalen Group.
Datings based on palynology of the matrix sediment suggest a Middle Triassic (Capitanian – Roadian) age for at least the middle/lower part of the breccias (‘Fortet Member Equivalent’) at 1205m. Fusulinid foraminifera present in derived clasts based on core and FMI analyses at 1173.67m (uncorrected core) suggest a late Gzhelian age for the reworked material. The lack of younger microfossils from the Bjarmeland and Templefjorden Groups suggest these clasts are probably locally derived.
Influxes of the algae Botryococcus at 1154.5m (uncorrected core) and 1227m dc provide evidence of freshwater in the upper and lower parts of this unit.

Datings for the *in situ* carbonates of the Ørn Formation recognised from 1227.8m (log) indicate an age in the range early Asselian – latest Gzhelian with positive ages no younger than latest Gzhelian and Kazimovian based on marine fusulinids at 1307m dc and 1417m dc.

The mixed carbonate-clastic Falk Formation, penetrated at 1436.40m (log) is poorly dated. The sidewall cores at 1461.5m and 1480m proved barren of microfossils. An influx of sponge spicules at 1442m dc probably represents an indigenous microfauna but this lacks age significance. Regionally this formation has a Moscovian to Bashkirian age. Evidence for a Moscovian age is present as cavings at 1490m dc within the underlying basement and provides the oldest dating for the well.

The basement was penetrated at 1483.20m (log) prior to the well TD at 1540m.

BIOSTRATIGRAPHY			LITHOSTRATIGRAPHY			
PERIOD	STAGE	TOPS Depths m MDRKB	GROUP	FORMATION	MEMBER	LOG TOPS Depth m MDRKB
PLEISTOCENE/HOLOCENE	(present as cavings)	393.5 log	NORDLAND			
	UNCONFORMITY			UNCONFORMITY		
LATE TRIASSIC	late Carnian	480m log	INGØYDJUPET	SNADD		480.0m log
	early Carnian	570m				
MIDDLE TRIASSIC	late Ladinian	990m				
	early Ladinian	1120m				
	UNCONFORMITY			UNCONFORMITY		
EARLY TRIASSIC	Induan (infill into Permian fractures)	1137.5m log				
	UNCONFORMITY			UNCONFORMITY		
PERMIAN	(with derived clasts of Gzhelian age)	1137.50m log	GIPSDALEN	ØRN	Fortet Membr. Equiv.'	1137.5m log
MIDDLE PERMIAN	Capitanian - Roadian	1205m				
	?UNCONFORMITY			?UNCONFORMITY		
EARLY PERMIAN / LATE CARBONIFEROUS	early Asselian / latest Gzhelian	1227.8m log			Ørn Mbr.'	1227.8m log
LATE CARBONIFEROUS	late Gzhelian	1307m				
	Kazimovian	1417m				
	?UNCONFORMITY			?UNCONFORMITY		
	Indeterminate (Moscovian cavings within the basement)	1436.4m log		FALK		1436.4m log
	UNCONFORMITY			UNCONFORMITY		
INDETERMINATE		1483.2m log		BASEMENT		1483.2m log
						TD 1540m

Table 2.1 Chronostratigraphy and Lithostratigraphy

2.4 Petroleum geochemistry

For a more detailed petroleum geochemical evaluation of well 7220/6-1 is referred to the report: "Petroleum Geochemistry of well 7220/6-1", issued by Norsk Hydro Research Centre, Bergen. In the present report, a short summary is presented, however:

Realtime C1- nC5 measurement at the rig, as well as onshore C1- nC5 measurements of gas sampled in polythene gas bags suggest the following gross hydrocarbon zonation of the well:

- 500- 980 m: Traces of dry gas, consisting mainly of Methane. The traces are a mixture of diagenetic and thermogenic gases
- 980- 1137.5 m: Generally a wet (thermogenic) gas, grading towards an oil- like composition at the top of the reservoir at 1137.5 m
- 1137.5- 1430 m: Generally oil- hydrocarbons. Evaluation of shows indicates the presence of all components C1- C30+
- 1430 m- TD: Only traces of wet gas

The oil recovered in the MDT- water sample from 1184.5 mRKB had a measured density @surface of 29 ^{o}API. The oil seems to be somewhat biodegraded and the n-alkanes are affected in the whole C3- C30 carbon number range. However, iso- and cyclo- alkanes as well as C15+ biomarkers in general are hardly disturbed. According to the common 1-10 scale the degradation is consequently 1-2, which is classified as "light" biodegradation.

Based on biomarker signatures the oil has been correlated to the similar source rocks as being responsible for the Senilix- oil at the Southern part of the Loppa High (well 7120/2-1, DST4). These are the Mid/Lower Triassic anoxically deposited source rock intervals seen in several wells at the Loppa High and the Western Bjarmeland Platform.

In terms of terpanes and C15+ aromatics the Obelix oil appears to be somewhat less mature than the Senilix oil, but compared with NSO1 (Oseberg) both the terpane maturity and the aromatic maturity of the Obelix and Senilix oils seem significantly higher.

Fluid inclusion screening results are in considerable support of the macro hydrocarbon measurements indicating a threefold zonation:

520- 980 m: Mainly dry gas inclusions which are generally localised to carbonate cemented fine grained sandstones
1142- 1470 m: Generally oil inclusions in carbonate cement. Methane responses are at the highest in the subinterval 1140- 1220 m. Oil responses are at the highest in the subinterval 1142- 1400 m containing white fluorescent moderate gravity oil inclusions as well as live fluorescent oil stain. Highest inclusion abundance is seen in the interval 1160- 1400 m and suggests according to FIS that a paleo- column of oil also may have existed here at some time
1480- 1537 m: Mainly wet and dry gas inclusions, but still with some intermittent oil inclusions. Below 1450 m is seen increased concentrations of Helium suggesting sediment contributions from older arkosic rocks

Elevated acetic acid responses are reported at 1120 m, within the whole interval 1182- 1267 m and at 1365 m. According to FIS this may suggest pay in the proximity of the well profile. Somewhat elevated sulphur species are detected in the interval 1175- 1520 m, which FIS relates to “probably carbonate sourced petroleum” rather than bacterial or diagenetic processes.

No source rocks have been positively identified in well 7220/6-1. Although there were some intervals in the Ørn- and the Falk Formations of high gamma ray- responses, these turned out to be OM- barren when investigated by Rock Eval pyrolysis.

Vitrinite reflection measurements showed that the whole well profile is thermally immature, having Ro- values in the interval 0.40% < Ro < 0.60%. At the base of the Falk Fm the maturity has only just reached a state of very marginal maturity, hence no significant “in- situ” hydrocarbon generation can have taken place in well 7220/6-1.

3 Petrophysical evaluation

3.1 Discussion

The petrophysical evaluation covers the Gipsdalen Group carbonates in the Carboniferous System. The evaluation is based on all available well data including:

- MWD/LWD and extensive Wireline logs including nuclear magnetic resonance
- Conventional core measurements from whole core and sidewall cores
- Wireline formation tester pressures and fluid samples

The CPI interpretation is an integrated analysis of the conventional logs (density, neutron, sonic, resistivity, gamma ray, SP), nuclear magnetic resonance measurements (CMR), and core data. The CPI results show that the Gipsdalen group is water-bearing, but does contain significant amounts of residual hydrocarbon. The CPI results are confirmed by formation pressure and fluid sample analyses; the pressure measurements show that water is the continuous fluid phase, and most of the fluid samples indicate water (one of the nine samples did contain traces of oil).

Results from the petrophysical evaluation are summarised in Table 3.3-2 (zone averages), Figures 3.7-4 and 3.7.5 (CPI result plots), and Figure 3.7-6 (formation pressure analysis plot).

3.2 Petrophysical Evaluation input data and quality

All available well data were considered in the petrophysical evaluation; each data type, including quality considerations, are discussed in the following sub-sections:

3.2.1 LWD Logs

Baker Hughes Inteq provided MWD/LWD logging services as summarised in Table 3.2-1. There were some mechanical problems in the surface section as indicated in the Table, but overall there are complete and reasonable quality gamma ray and resistivity logs over most of the well interval. Some depth shifts are required to match the MWD/LWD data to the reference wireline logs; these are documented in the Logtek report covering the generation of the Composite logs. The LWD data were not used (not required) in the petrophysical evaluation.

MWD/LWD Services (Baker Hughes Inteq)	Run No.	Interval m. MD RKB	Hole Size	Mud Type	Remarks
MPR/DCP (Res./GR)	2	394-480	9 7/8" pilot	Sea W.	Hole was subsequently abandoned because it was not sufficiently vertical. Only mechanical services (no logs) in the replacement hole / hole openings.
MPR/DCP (Res./GR)	6	479-546	17.5"	WBM	
MPR/DCP (Res./GR)	7-8	546-1130	12.25"	WBM	
OTK (Res./GR)	9-11	1130-1540	8.5"	WBM	Cored intervals 1149-1167, 1167-1197.4 and 1197.4-1204.4m MD logged by reaming 171, 141 and 44 hours respectively after being drilled.

Table 3.2-1 LWD logging services

3.2.2 Wireline Logs

Schlumberger provided formation evaluation wireline services as summarised in Table 3.2-2 (Intermediate Logging over the top 60 metres of the reservoir) and Table 3.2-3 (TD logging which also repeated the interval covered by the intermediate logging). High quality data were recorded in all logging runs over the reservoir section where the hole deviation was less than 0.8 degrees, the hole size was generally close to bit size, and there was minimal tool sticking from the wireline-conveyed tool strings. However, there were difficulties to record formation pressures, especially in the Intermediate Logging (MDT Run 1A).

Wireline Services (Schlumberger)	Run No.	Interval m. MD RKB	Hole Size	Mud Type	Remarks
FMI/GR (Res.Images/GR)	1A	1123-1196	8.5"	WBM	First Wireline Run in the well - Depth Reference Log.
PEX (Dens./Neut./GR)	1A	1123-1196	8.5"	WBM	Dens./Neut./GR logged with 8" vertical resolution processing.
MDT with Dual Packer (Fm. Pressures & Sampling)	1A	1139-1192	8.5"	WBM	Dual Packer failed. Schlum presented total 34 pressure tests but only 8 successful, (20 tight, 3 supercharged and 3 lost seal). Most valid tests exhibit poor mobility (<10 mD/cp). Samples recovered at 1184.5m MD.

Table 3.2-2 Formation Evaluation Wireline services, Intermediate Logging

Wireline Services (Schlumberger)	Run No.	Interval m. MD RKB	Hole Size	Mud Type	Remarks
FMI/DSI/GR (Res.Images/Sonic/GR)	2B/A	1123-1537	8.5"	WBM	No Repeat due to FMI calipers not closing. DSI acquired in P&S, Upper & Lower Dipole and Stoneley modes; Compressional (DTCO) and Shear (DTSM) from Schlumberger wellsite processing of P&S and Upper Dipole respectively.
DSI/GR (Sonic/GR thru csg.)	2A	550-1123	9 5/8" csg.		DSI thru casing; poor quality above 817m MD. Processing as indicated above.
AIT/PEX (Res./Dens/Neut/GR)	2A/B	1123-1537	8.5"	WBM	Dens./Neut./GR logged with 8" vertical resolution processing.
UBI/HNGS (Son.Image/Sp.GR)	2A	1123-1534	8.5"	WBM	Spectral GR Potassium & Barite corrns not applied due to low content in mud.
CMR/GR (Mag. Resonance/GR)	2A	1123-1536	8.5"	WBM	Also acquired CMR static measurements at 9 depth stations.
MDT with Dual Packer (Fm. Pressures & Sampling)	2B	1150-1481	8.5"	WBM	Schlum presented total 27 pressure tests with 14 successful (including 4 from Dual Packer), 2 supercharged and 11 tight. Most valid tests exhibit poor mobility (<10 mD/cp). Samples recovered at 1151.5, 1338.0 and 1377.1m MD.
VSP	2A	729-1503	8.5"	WBM	Zero Offset VSP
MSCT (Sidewall Cores)	2A	1205-1485	8.5"	WBM	Attempted 53 cores in two runs. Recovered = 50 (3 empty on the first run).

Table 3.2-3 Formation Evaluation Wireline services, TD Logging

A primary objective of the resistivity and sonic image logs (FMI and UBI respectively) was to determine optimum locations for MDT pressure tests based on the interpretation of fractures, vugs and voids in the carbonate environment. These evaluations, performed by ENI and documented in a separate report, were not very successful in the Intermediate Logging but the failure of the Dual

Packer (which is designed for improving pressure test success rate in carbonate environments) was also a factor in the poor results. MDT data from both runs are discussed further in section 3.2.5.

Density, neutron and gamma ray measurements (PEX) were recorded with 8" vertical resolution processing and with high resolution sampling of 0.0508 metres/sample. This high resolution was maintained for the petrophysical evaluation calculations. The CPI evaluation used the complete reservoir section PEX data from the TD Logging, (the quality is as good as the Intermediate Logging in the upper section). High resolution resistivity (AIT) data were also recorded; two-foot vertical resolution measurements were used in the CPI evaluation. Sonic (DSI) compressional and shear data were recorded inside the 9 5/8" casing as well as in the open-hole section; the wellsite processing is good quality over the reservoir section. Nuclear magnetic resonance logging (CMR) included static measurements at nine depth stations for the additional evaluation of flushed zone hydrocarbon saturation. The spectral gamma ray log (HNGS) showed that a significant part of the gamma ray resonse is due to Uranium; consequently the Uranium corrected gamma ray (CGR) enabled better evaluation of shale content. The petrophysical evaluation was made using the wireline resistivity, density, neutron, sonic, nuclear magnetic resonance, spectral gamma ray and spontaneous potential measurements.

3.2.3 Composite Logs

Composite logs were made by Logtek in accordance with NPD requirements. One hybrid 'composite' log was made for the entire well, (hybrid of LWD and wireline), where the LWD data were depth shifted to match the reference wireline logs. Seven 'petrophysical composite' logs were also generated as summarised in Table 3.2-4:

Recall Log name	Depth Increment	Source Logs	Comments
COMPOSITE	0.1524	All	Merged Wireline & LWD data - primary log curves only
PETROPHYSICAL_COMP_1	0.1524	DSI/GR Run 2A	Merged cased-hole & open-hole DSI curves
PETROPHYSICAL_COMP_2	0.1524	AIT/PEX Run 2A/B	Standard resolution AIT/PEX curves
PETROPHYSICAL_COMP_3	0.0762	AIT Run 2A	High resolution AIT curves
PETROPHYSICAL_COMP_4	0.0508	PEX Run 2B	High resolution PEX curves
PETROPHYSICAL_COMP_5	0.1524	CMR/GR Run 2A	
PETROPHYSICAL_COMP_6	0.1524	HNGS Run 2A	
PETROPHYSICAL_COMP_7	0.1	LWD Runs 2-11	Merged LWD data
NOTES:			
- In the COMPOSITE Log, the Neutron curve was block shifted -4pu to account for the formation salinity correction (that was not applied during acquisition).			
- In the PETROPHYSICAL COMPOSITE Logs, the Neutron curves are according to the acquisition data (Neutron curves not corrected for formation salinity).			

Table 3.2-4 Composite and Petrophysical Composite logs

The petrophysical composite logs, containing depth matched log data over the reservoir section, are the data source for the CPI evaluation. The large number of petrophysical composite logs is mainly due to the effort to maintain data integrity of the high resolution curves (depth increments) for the CPI calculations. For detailed information on depth shifting and other aspects of the compositing procedures refer to the Logtek Composite logs Report.

3.2.4 Core Data

Three whole cores were cut in this well with very good recovery except that core #3 had to be pulled early due to jamming. Cores were depth shifted to match the wireline logs as summarised in Table 3.2-5; shifts were determined from correlations between core porosity and the density log.

Core No.	Reservoir Zone	Core Interval Recovered (Drillers Depth m. MD)	Recovery (%)	Depth Shift applied to Core (m.)	Core Interval Recovered (Log Depth m. MD)	Remarks
1	Fortet Mbr. Equiv.	1149.00-1166.50	97.2	-1.2	1147.80-1165.30	Good recovery but core #3 was pulled early due to jamming at 1204.4m MD (Drillers Depth).
2	Fortet Mbr. Equiv.	1167.00-1197.40	100.0	-1.7	1165.30-1195.70	
3	Fortet Mbr. Equiv.	1197.40-1204.40	100.0	-1.7	1195.70-1202.70	

Table 3.2-5 Whole core intervals, recovery and depth shifts

Sidewall cores were also acquired by wireline with Schlumberger's mechanical sidewall coring tool (MSCT) as summarised in Table 3.2-3. Two runs had to be made due to mechanical problems but the final recovery was excellent (53 attempted / 50 recovered). The sidewall cores did not require any depth adjustment to match the wireline logs.

Conventional core measurements were made on core plugs from both the whole cores and from the sidewall cores (refer Reslab Conventional Core Analysis report). However, only the whole core measurements were used for quantitative core-log comparisons in the petrophysical evaluation; results from the sidewall cores were only used qualitatively because these measurements are considered to be of a lower quality due to the possibility of mechanical damage during acquisition. In the CPI result displays, (Figures 3.7-4 and 3.7-5), whole core measurements are indicated with "X" symbols whereas sidewall core measurements are shown as "square" symbols.
The conventional core measurements include porosity, permeability and grain density. A SCAL programme has been initiated with Reslab but no petrophysical SCAL results are available at the time of this report. Consequently, several petrophysical parameters have been estimated based on previous experience in carbonate reservoirs. Cementation exponent 'm' is estimated at m=2.3 in the dolomitic limestone Fortet Equiv and Ørn members, and at m=2.0 in the sandier Falk member. The saturation exponent 'n' has been taken as the standard value of n=2.0. A porosity

overburden correction has not been applied due to the shallow depth carbonate environment, (it is expected that any correction will be very small).

3.2.5 MDT Pressures and Samples

Schlumberger's Modular Dynamic Tester (MDT) tool with Dual Packer option, (as an alternative to the large diameter probe), was used in both Runs 1A and 2B where both formation pressures and fluid samples were obtained. Pressure results from Run 1A are summarised in Table 3.2-6:

Depth		Test	File	Reservoir	Formation	Mud pressure	Mud pressure	Mobility	Remarks
MD RKB [m.]	TVD MSL [m.]	No.	No.	Zone	Pressure [bar]	Before [bar]	After [bar]	[mD/cp]	
1139.2	1114.1	13	97	Fortet Mbr. Equiv.		130.575	130.548		Lost Seal
1144.3	1119.2	12	96	Fortet Mbr. Equiv.		131.156	131.037		Dry Test
1146.3	1121.2	11	95	Fortet Mbr. Equiv.		131.246	131.250		Lost Seal
1148.8	1123.7	29	131	Fortet Mbr. Equiv.	110.800	131.320	131.300	2.15	ok
1149.1	1124.0	10	94	Fortet Mbr. Equiv.		131.633	131.546		Dry Test
1151.8	1126.7	20	112	Fortet Mbr. Equiv.	110.884	131.757	131.747	6.10	ok
1152.6	1127.5	9	93	Fortet Mbr. Equiv.		132.077	131.996		Dry Test
1155.5	1130.4	8	92	Fortet Mbr. Equiv.		132.540	132.353		Dry Test
1156.2	1131.1	28	130	Fortet Mbr. Equiv.		132.235	131.957		Dry Test
1157.2	1132.1	27	129	Fortet Mbr. Equiv.		132.784	132.135		Dry Test
1160.0	1134.9	7	91	Fortet Mbr. Equiv.		132.903	133.058		Dry Test
1163.0	1137.9	6	90	Fortet Mbr. Equiv.		133.323	133.237		Dry Test
1164.1	1139.0	19	111	Fortet Mbr. Equiv.		133.169	133.075		Dry Test
1164.9	1139.8	18	110	Fortet Mbr. Equiv.	120.890	133.360	133.140	1.00	Supercharged
1168.8	1143.7	26	128	Fortet Mbr. Equiv.		133.795	133.520		Dry Test
1171.0	1145.9	17	108	Fortet Mbr. Equiv.	121.247	134.172	133.867	0.07	Supercharged
1177.6	1152.5	24	125	Fortet Mbr. Equiv.		134.830	134.471		Dry Test
1177.8	1152.7	25	127	Fortet Mbr. Equiv.		134.764	134.567		Dry Test
1178.0	1152.9	16	107	Fortet Mbr. Equiv.		135.159	134.830		Dry Test
1184.5	1159.4	37	146	Fortet Mbr. Equiv.	115.400	135.610	115.400	23.00	ok
1184.6	1159.5	21	122	Fortet Mbr. Equiv.		135.699	135.176		Dry Test
1184.6	1159.5	4	88	Fortet Mbr. Equiv.	115.580	135.920	135.740	15.91	ok
1185.0	1159.9	36	145	Fortet Mbr. Equiv.		135.623	135.591		Dry Test
1185.0	1159.9	32	138	Fortet Mbr. Equiv.		135.737	135.587		Dry Test
1185.1	1160.0	22	123	Fortet Mbr. Equiv.		135.580	135.459		Dry Test
1185.5	1160.4	35	144	Fortet Mbr. Equiv.		135.754	135.601		Dry Test
1185.6	1160.5	23	124	Fortet Mbr. Equiv.	115.606	135.579	135.520	19.35	ok
1185.6	1160.5	30	136	Fortet Mbr. Equiv.		136.320	108.650		Dry Test
1186.1	1161.0	31	137	Fortet Mbr. Equiv.		135.819	135.837		Lost Seal
1186.5	1161.4	33	140	Fortet Mbr. Equiv.		135.912	135.837		Dry Test
1188.0	1162.9	15	106	Fortet Mbr. Equiv.	115.646	136.272	135.971	0.14	ok
1189.9	1164.8	2	86	Fortet Mbr. Equiv.	117.008	136.593	136.404	0.06	Supercharged
1191.8	1166.7	1	85	Fortet Mbr. Equiv.	115.922	137.158	136.751	16.27	ok
1191.8	1166.7	34	141	Fortet Mbr. Equiv.	115.760	136.940	115.760	4.61	ok

Table 3.2-6 MDT pressure tests, Run 1A

The Run 1A results are very disappointing with only eight potentially reasonable results from over thirty-four pressure test attempts. There were three seal failures, twenty tight tests and three super-charged results. All pressure tests were made with the large diameter probe due to problems with the Dual Packer. Note that all pressures indicated in Table 3.2-6 are from the CQG quartz gauge.

Better results were achieved in Run 2B, but this may also be associated with higher permeability (mobility) in the middle and lower reservoir sections. Formation pressure results from Run 2B are summarised in Table 3.2-7; there were fourteen successful tests, (including four acquired with the Dual Packer), from over twenty-seven attempts. There were eleven tight tests and two super-charged results. Note that all pressures indicated in Table 3.2-7 are from quartz gauges, but that the Dual Packer uses a physically separate gauge to the other (large diameter probe) tests.

Depth MD RKB [m.]	Depth TVD MSL [m.]	Test No.	File No.	Reservoir Zone	Formation Pressure [bar]	Mud pressure Before [bar]	Mud pressure After [bar]	Mobility [mD/cp]	Remarks
1150.0	1124.9	30	292	Fortet Mbr. Equiv.		128.950	128.920		Dry Test
1151.5	1126.4	43	322	Fortet Mbr. Equiv.	111.251				ok. Dual Packer
1184.6	1159.5	29	291	Fortet Mbr. Equiv.		132.770	132.690		Dry Test
1201.8	1176.7	28	290	Fortet Mbr. Equiv.	116.730	134.490	134.480	0.60	ok
1232.0	1206.9	37	304	Ørn Mbr.		137.720	137.660		Dry Test
1232.3	1207.2	40	305	Ørn Mbr.		137.820	137.980		Dry Test
1235.0	1209.9	41	314	Ørn Mbr.	120.763				ok. Dual Packer
1235.5	1210.4	42	316	Ørn Mbr.	120.780				ok. Dual Packer
1235.5	1210.4	24	289	Ørn Mbr.	121.960	138.040	138.150	0.60	Supercharged
1253.7	1228.6	19	288	Ørn Mbr.		140.000	140.010		Dry Test
1268.5	1243.4	17	287	Ørn Mbr.		141.620	141.600		Dry Test
1272.0	1246.9	16	286	Ørn Mbr.	124.520	142.000	141.990	9.90	ok
1288.4	1263.3	14	283	Ørn Mbr.		143.830	143.910		Dry Test
1289.5	1264.4	13	282	Ørn Mbr.		143.800	143.860		Dry Test
1302.5	1277.4	11	281	Ørn Mbr.		145.260	145.200		Dry Test
1316.5	1291.4	34	298	Ørn Mbr.		146.757	146.753		Dry Test
1321.5	1296.4	31	297	Ørn Mbr.		147.380	147.340		Dry Test
1336.0	1310.9	35	300	Ørn Mbr.	131.754		148.751		ok. Dual Packer
1338.0	1312.9	9	280	Ørn Mbr.	131.647	149.094	149.021	4.21	ok
1347.9	1322.8	8	279	Ørn Mbr.	132.732	150.091	150.086	2.46	ok
1363.1	1338.0	7	278	Ørn Mbr.	137.080	151.690	151.680	1.30	Supercharged
1377.1	1352.0	6	277	Ørn Mbr.	135.987	153.199	153.175	4.90	ok
1393.5	1368.4	5	276	Ørn Mbr.	137.956	155.013	154.919	0.98	ok
1422.2	1397.1	4	275	Ørn Mbr.	141.011	157.995	157.985	10.23	ok
1430.2	1405.1	3	274	Ørn Mbr.	142.144	159.012	158.671	1.63	ok
1465.0	1439.9	2	273	Falk Mbr.	145.767	162.698	162.669	87.92	ok
1480.5	1455.4	1	271	Falk Mbr.	147.567	164.461	164.403	3.79	ok

Note: The four pressure tests made with the Dual Packer utilise a different quartz gauge that does not provide a mobility assessment.

Table 3.2-7 MDT pressure tests, Run 2B

Nine fluid samples at four depth levels were recovered from Runs 1A and 2B as summarised in Table 3.2-8. Note that traces of oil were reported in the 10.5 litre sample at 1184.5 m MD RKB.

Depth MD RKB [m.]	Depth TVD MSL [m.]	Reservoir Zone	MDT Run No.	MDT Samples / Chamber Volumes	Fluid Analysis
1151.5	1126.4	Fortet Mbr. Equiv.	2B	2 x 450cc	Water
1184.5	1159.4	Fortet Mbr. Equiv.	1A	2 x 450cc + 1 x 10.5 litre	Water + traces of oil in the 10.5 litre sample
1338.0	1312.9	Ørn Mbr.	2B	1 x 10.5 litre	Water
1377.1	1352.0	Ørn Mbr.	2B	3 x 450cc	Water

Table 3.2-8 MDT samples

3.2.6 Corrections

Environment and invasion corrections to the log data were performed by Schlumberger during acquisition, and in most cases, the contractor's curves were used directly in the CPI evaluation. However, the neutron log was not corrected for formation salinity during acquisition, and so an additional shift of –4pu was required (in accordance with Schlumberger Chart Book corrections). The following curves, sourced from the appropriate petrophysical composite logs, were used in the CPI evaluation:

- Spectral gamma ray, corrected for hole size, mud weight and Uranium (curve 'HCGR')
- Density, corrected for bit size and mud weight (high resolution curve 'RHO8')
- Neutron, corrected for hole size, mudcake, borehole salinity, mud weight, pressure and temperature (high resolution curve 'HTNP' with –4pu shift for formation salinity)
- Resistivity Rt, invasion corrected from two-foot AIT (high resolution curve 'AHTRT')
- Resistivity Rxo, flushed zone resistivity from MCFL tool (high resolution curve 'RXO8')
- Sonic, wellsite processed 'DTCO', edited by Logtek in the COMPOSITE log (curve 'AC')
- Spontaneous potential (curve 'SP')
- Permeability, 'SDR' calculation from CMR porosity & T2 measurements (curve 'KSDR')

3.3 CPI Evaluation Method

The CPI interpretation is an integrated analysis of the conventional logs (density, neutron, sonic, resistivity, gamma ray, SP), nuclear magnetic resonance measurements (CMR), and core data. The CPI results show that the Gipsdalen group is water-bearing, but does contain significant amounts of residual hydrocarbon

The CPI calculation input parameters are summarised in Table 3.3-1; the CPI evaluation results are summarised in Table 3.3-2 (zone averages), and Figures 3.7-4 and 3.7.5 (CPI result plots).

3.3.1 Net Sand / Shale Volume

Net reservoir intervals were determined by applying a shale volume cut-off of 0.40 together with a permeability cut-off of 1 mD. Permeability was taken as the log-derived 'SDR' calculation from CMR porosity & T2 measurements, ('KSDR').

The above approach was taken because the common method of deriving a porosity cut-off based on core porosity versus core permeability relationships does not work very well in carbonate

reservoirs. The core porosity versus core permeability crossplot for all whole core samples is shown in Figure 3.7-1; there is large data scatter, especially in the vicinity of 1 mD permeability, indicating that a porosity cut-off would both exclude a lot of high permeability data points and also include a large amount of low permeability data. Incoherent porosity-permeability relationships are typical of carbonate reservoirs because there is no strong linkage between the two entities.

It is noted that there is often poor agreement between the log-derived permeability KSDR and core permeability, with the log values being generally higher (see last track in Figures 3.7-4 and 3.7-5). However, in this highly heterogeneous carbonate environment, the core plugs are considered to be less representative than the continuous evaluation of ‘free’ and ‘bound’ fluids that determine the CMR permeability. Net reservoir calculations may be considered an up-side result (optimistic) if the core permeabilities are in fact representative.

Shale volume 'VSH' was determined from a minimum of the Uranium corrected spectral gamma ray (HCGR) and the spontaneous potential (SP) log shale indicators. Linear relationships were applied for both indicators. Minimum and maximum parameter values were selected with the knowledge that most of the Dolomitic Limestone reservoir section contained no shale as such.

3.3.2 Porosity

Effective porosity PHIE was calculated by simultaneous solution with the other mineral volumes in the "Triple-mineral + porosity + shale" petrophysical model, based on the following equation:

PHIE + VMIN1 + VMIN2 + VMIN3 + VSH = 1

where VMIN1, VMIN2 and VMIN3 are the three mineral volumes. In this well, the three minerals were selected as Calcite, Dolomitic Limestone and Sandstone. The above equation contains four unknowns, (Shale volume VSH has already been calculated as described in section 3.3.1). The four unknowns are determined by simultaneous solution of the above equation together with the response equations of three independent log measurements. In this well, density, neutron and sonic log response equations were applied. For all three logs, end-point parameters are assigned for matrix (Calcite, Dolomitic Limestone and Sandstone), water, hydrocarbon, shale (wet) and dry shale. Both wet and dry shale parameters are needed so that total porosity PHIT can subsequently be calculated from:

PHIT = PHIE + (VSH x PHISHALE)

where 'PHISHALE' is the average of the density, neutron and sonic shale porosities.

The mean core grain density for all whole core samples is 2.79 g/cc, (refer Figure 3.7-2); this value was assigned as the matrix density of the predominant mineral in the reservoir section (Dolomitic Limestone). Several other parameter value iterations were performed to optimise the match between the calculated PHIE and core porosity; the final result is shown in Figure 3.7-3.

3.3.3 Water Saturation

The Indonesia equation was used to calculate effective water saturations (Swe and Sxoe) from the logs. Formation resistivity Rt, and flushed zone resistivity Rxo were taken as 'AHTRT' and 'RXO8' as previously described (refer section 3.2.6). The calculations were made using shale volume VSH and effective porosity PHIE (as described in sections 3.3.1 and 3.3.2 respectively).

Formation temperatures of 38^{o}C at 1150 m. MD RKB and 43^{o}C at 1485 m. MD RKB were assigned based on minor extrapolation of MDT Run 2B temperatures that were recorded over 81 hours after circulation. The deeper value was also confirmed by the maximum temperature from MSCT Run 2A (42^{o}C at 1485 m. MD RKB) that was recorded 121 hours after circulation.

Formation water resistivity was determined from conversion of the formation pressure gradient of 1.137 g/cc to salinity (190,000 ppm Nacl) which corresponds to an Rw of 0.035 ohmm at 38 ^{o}C (refer Table 3.4-1). This value is considered more reliable than the MDT sample measurements that show a wide range of lower salinity values, indicating some mud filtrate contamination. Mud filtrate resistivity Rmf of 0.695 ohmm at 21 ^{o}C was taken from the AIT Run 2A log heading value. Rmf is used with Rxo to calculate flushed zone effective water saturation Sxoe. Shale resistivity 'Rshale' was estimated at 5 ohmm from Rt log readings in the shalier intervals. A cementation exponent of 'm'=2.3 was applied except for in the sandier Falk Member where 'm'=2.0 was used. Default values were used for remaining parameters in the Indonesia equation, including the saturation exponent (n=2.0); a more specific value may be available when the SCAL is completed.

3.3.4 CPI input parameters and CPI results

The CPI input parameters discussed above in sections 3.3.1 - 3.3.4 are summarised in Table 3.3-1.

The CPI evaluation results are summarised in Table 3.3-2 (zone averages), and in Figures 3.7-4 and 3.7.5 (CPI result plots).

Calculation	Parameter description	Units	Fortet Mbr Equiv. - Falk Member 1137.5 - 1483.2 m. MD RKB
Shale volume	Gamma ray (HCGR) minimum value	GAPI	35
	Gamma ray (HCGR) maximum value	GAPI	100
	Spontaneous potential (SP) minimum value	MV	-320
	Spontaneous potential (SP) maximum value	MV	-260
"Triple-mineral + porosity + shale" model parameters	Density matrix value for Calcite	G/CC	2.71
	Neutron matrix value for Calcite	FRAC	0
	Sonic matrix value for Calcite	US/F	49
	Density matrix value for Dolomitic Limestone	G/CC	2.79
	Neutron matrix value for Dolomitic Limestone	FRAC	0.005
	Sonic matrix value for Dolomitic Limestone	US/F	44
	Density matrix value for Sandstone	G/CC	2.65
	Neutron matrix value for Sandstone	FRAC	-0.02
	Sonic matrix value for Sandstone	US/F	56
	Density fluid value for water	G/CC	1.14
	Neutron fluid value for water	FRAC	1.0
	Sonic fluid value for water	US/F	190
	Density fluid value for hydrocarbon	G/CC	0.7
	Neutron fluid value for hydrocarbon	FRAC	1.0
	Sonic fluid value for hydrocarbon	US/F	195
	Density shale (wet) value	G/CC	2.55
	Neutron shale (wet) value	FRAC	0.35
	Sonic shale (wet) value	US/F	90
	Density dry shale value	G/CC	2.65
	Neutron dry shale value	FRAC	0.20
	Sonic dry shale value	US/F	56
Water Saturation (Indonesia equation)	Formation temperature (^{o}C) at depth 1 (m. MD RKB)	DEGC	38 ^{o}C @ 1150 m MD RKB
	Formation temperature (^{o}C) at depth 2 (m. MD RKB)	DEGC	43 ^{o}C @ 1485 m MD RKB
	Formation water resistivity 'Rw'	OHMM	0.035 @ 38 ^{o}C
	Mud filtrate resistivity 'Rmf'	OHMM	0.695 @ 21 ^{o}C
	Shale resistivity 'Rshale'	OHMM	5.0
	Cementation factor 'a'		1.0
	Cementation exponent 'm'		2.3 / 2.0 **
	Saturation exponent 'n'		2.0
	Indonesia equation parameter 'ISILT'		0
	Indonesia equation parameter 'CVSH'		1
Net Reservoir	Permeability (KSDR) cut-off value	MD	> 1
	Vshale (VSH) cut-off value	FRAC	< 0.40
Net Pay	Water saturation (SWE) cut-off value	FRAC	< 0.50
** Cementation exponent 'm' = 2.3 in Fortet Member Equiv. and Ørn Member; m = 2.0 in Falk Member			

Table 3.3-1 CPI input parameters

Well 7220/6-1	Top		Base		Thickness (TVD)			Porosity		Sw	K (ari)	K (geo)
	MD	TVD	MD	TVD	Gross	Net	N/G	log	core	log	core	core
Zone:	RKB [m]	MSL [m]	RKB [m]	MSL [m]	[m]	[m]	[frac]	[1] [frac]	[2] [frac]	[3] [frac]	[4] [mD]	[5] [mD]
Fortet Mbr. Equiv.	1137.50	1112.44	1227.80	1202.74	90.30	64.28	0.712	0.133	0.138*	0.792	13.4*	0.9*
Ørn Member	1227.80	1202.74	1436.40	1411.33	208.59	153.70	0.737	0.098	***	0.739	***	***
Falk Member	1436.40	1411.33	1483.20	1458.13	46.80	5.79	0.124	0.095	***	0.838	***	***
Total	1137.50	1112.44	1483.20	1458.13	345.69	223.77	0.647	0.108	**	0.760	188*	**

Key:

[1]	Log derived effective porosity PHIE - arithmetic average, thickness weighted.
[2]	Whole Core helium porosity PHIH - arithmetic average.
[3]	Log derived effective water saturation SWE - arithmetic average, porosity and thickness weighted.
[4]	Whole Core klinkenberg corrected horizontal air permeability KHAC - arithmetic average.
[5]	Whole Core klinkenberg corrected horizontal air permeability KHAC - geometric average.
*	Core data values may not be representative due to insufficient core coverage in the zone.
**	Core data values not reported because they are not representative of the zone.
***	Core data values not reported because there are no whole core data in the zone.

Table 3.3-2 Zone averages for log and core data over net reservoir intervals

3.4 Fluid System – Formation pressure analysis and fluid samples

The formation pressure interpretation and a summary the MDT fluid sample results are shown in Figure 3.7-6. The pressures from MDT Run 1A, Run 2B large diameter probe, Run 2B Dual Packer, and the fluid sample results all demonstrate that only water is present as the continuous phase. All pressure data are plotted, including the supercharged points (three from Run 1A, and two from Run 2B). There is also evidence of minor supercharging on several other low mobility tests from Run 1A. The four Dual Packer formation pressures (black stars) all plot slightly above the interpreted fluid gradient line which is based primarily on the Run 2B large diameter probe measurements; this is quite acceptable, since the Dual Packer pressures were measured with a separate quartz gauge.

The water gradient from the pressure analysis is 1.137 g/cc. This density was the basis for the Rw value used in the CPI evaluation. Conversion from fluid density to Rw is shown in Table 3.4-1:

Fluid	Gradient from MDT Depth/Pressure plot		Conversion from Density to Salinity (at 115 bar & 38°C)	Conversion from Salinity to Resistivity (at 38°C)
	[bar/m]	[g/cc]		
Water	0.1115	1.137	190,000 ppm Nacl	0.035 ohmm

Table 3.4-1 Water gradient from pressure interpretation and equivalent salinity / Rw

3.5 Formation Pressure Analysis and Electrical Log Interpretation

The CPI interpretation is an integrated analysis of the conventional logs (density, neutron, sonic, resistivity, gamma ray, SP), nuclear magnetic resonance measurements (CMR), and core data. The CPI results show that the Gipsdalen group is water-bearing, but does contain significant amounts of residual hydrocarbon.

There is excellent agreement between PHIE from the CPI, and CMR effective porosity 'CMRP' (CMR measurements are shown in green colour on the CPI result plots in Figures 3.7-4 and 3.7.5); both of the log porosities also agree quite well with the core porosity.

The CMR flushed zone saturation static measurements 'SWCMR' (green tadpoles) also agree well with the CPI formation saturation 'SWE', giving further evidence that the hydrocarbons are residual. The CPI does occasionally shows minor indications of moveable hydrocarbons, but these are most likely associated with hole rugosity effects on the micro-resistivity measurements. The clearest indication from the CPI concerning fluid content is the persistently high value of BVW (bulk volume of water) over the entire reservoir section, (refer Figure 3.7-6).

The CPI results are confirmed by the formation pressure and fluid sample analyses; the pressure measurements show that water is the continuous fluid phase, and most of the fluid samples indicate only water (one of the nine samples did contain traces of oil).

4 Post Site Survey for Well 7220/6-1

4.1 Summary:

This report contains the Post Site Survey Report for Well 7220/6-1. The results are based on:

- 2D high-resolution reflection seismic (NH0372)
- 3D reflection seismic (SG9810 and NH0372)
- LWD logs (resistivity and gamma)
- Shallow Drilling Barents Sea 1985, (IKU Petroleum Research, Report No. 21.3405.00/01/85)
- Site Survey at Location 7220/6-1 (Hydro Report No. NH-01215768)

4.2 Key words:

Stratigraphy, shallow gas, sand layers, LWD logs (resistivity and gamma)

4.3 Well Data

1 Distance from rig floor to sea level: 25m

2 Water depth (MSL): 368.5m

3a Setting depth for conductor (m RKB): 454m

3b Leak Off / Formation Integrity Test (g/cc): N/A

4a Setting depth (m RKB TVD) for casing on which BOP mounted: 476m

4b Formation Integrity Test (g/cc): 1,47sg

5 Depth (m RKB TVD & Two Way Time) to formation/section/layer tops:

Intra Quaternary 446m (554ms) (Uncertain depth due to casing)

Intra Lower Quaternary 479m (589ms) (Uncertain depth due to casing)

Base Quaternary /

Top Triassic: 496m (606ms)

Note:

No chrono stratigraphic information was obtained in the top-hole section of the well (from seabed down to 479m RKB TVD). Consequently, the interpretation of the different formations in this area is based on the LWD logs, seismic character and previous work.
Mud logging commence at 479m RKB TVD.

6 Depth interval (m RKB TVD & Two Way Time) and age of sand bodies shallower than 1000m under the seabed. Note, which layers if any contain gas:

N/A

7 By what means is the presence of gas proven:

The well was drilled with returns to seabed from sea floor to 479 m before setting 20" casing at 476 m RKB TVD. Hence, no data exists on background gas levels from this interval. Still, no gas-related incidents were reported. Below 479 m RKB MD gas analyses were accomplished using flame ionisation detectors (FID) with gas measured as percentage methane (C1) equivalent in air, and chromatographic analyses expressed in parts per million.

8 Composition and origin of gas:

N/A

9 Describe all measurements taken in gas bearing layers:

N/A

4.4 Seismic DATA

10 Given depth and extent of any gas blanking ("gass-skygging"), seismic anomalies etc.:
Observations: Reflection seismic anomalies are present along an Intra Quaternary level as well as in the Triassic strata below, but none occur at Location. Further, there are no indications for the presence of natural gas hydrates in the seismic data (e.g. no bottom simulating reflection - BSR).
Interpretation: No shallow gas warning was issued for the well.

11 Note any indication of gas originating from deeper levels. Give description in cases where gas comes from deeper layers:

12 How does the interpretation of the site survey correspond to the well data with respect to?

12a Shallow Gas:

No shallow gas was observed in the well.

12b Shallow Water Flow:

N/A

12c Sand Bodies:

No sand layers were predicted and no sand layers were observed in the Quaternary interval.

12d Boulders:

No boulders were observed in the seismic data, but from the shallow drilling it was concluded that a certain amount of gravel and boulders should be expected. No boulders were encountered.

12e Unconformities (depths in metres RKB (TVD)):

Horizon	Prognisis (P; m)	Observation (O; m)	O-P (m)
Base Pleistocene	492 ± 10m	496m	4m (deeper)

The differences between the anticipated and observed depths are within the uncertainty limits, and the difference is most likely caused by erroneous interval velocities.

12f Correlation to Nearby Wells:

N/A

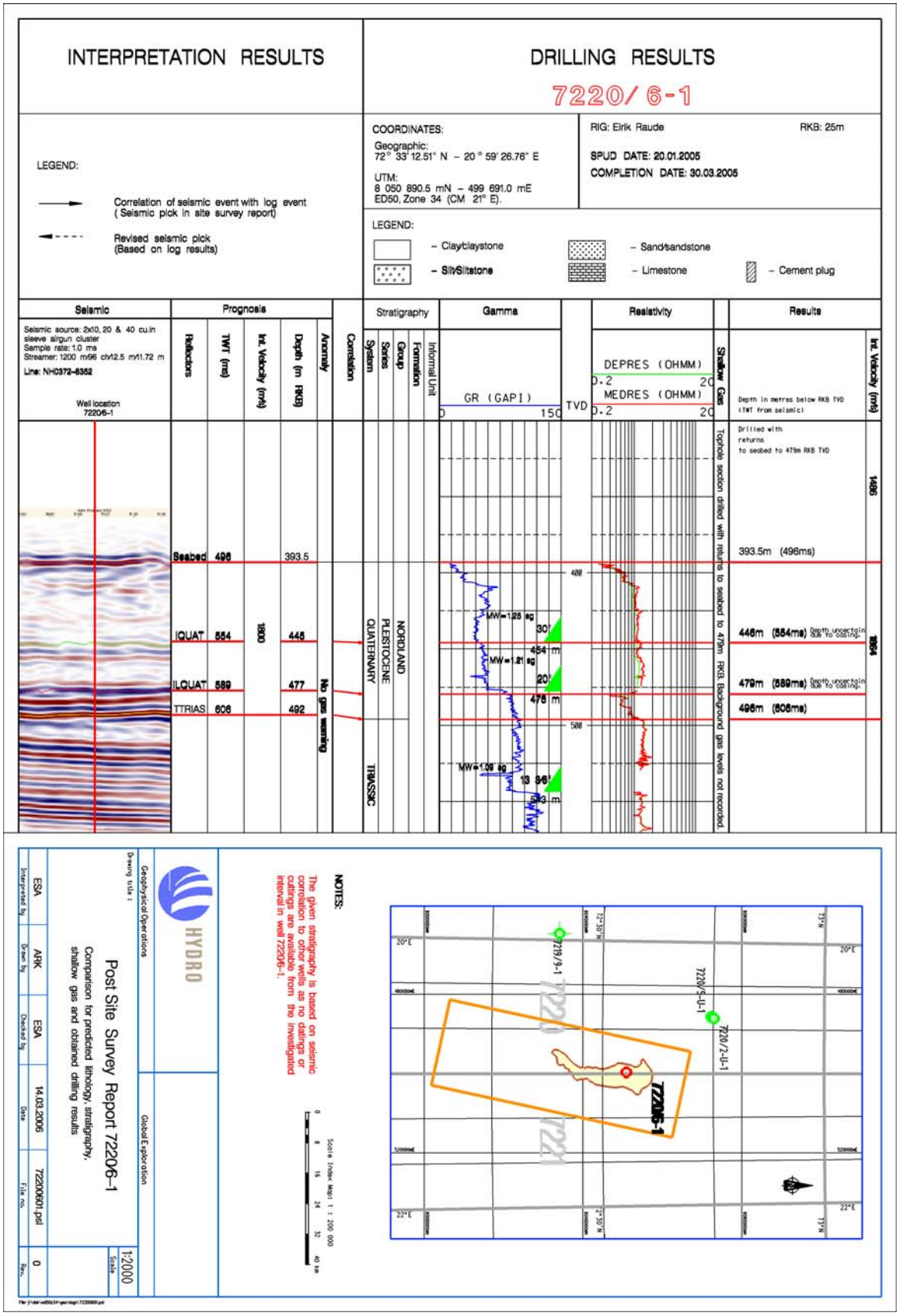

Fig.,4.1. Post site survey Correlation Panel

CONFIDENTIAL

REPORT
Hydro Oil & Energy
Operations
Eirik Raude rig team

Title:	**Final Well Report 7220/6-1** **Section B - Drilling**	No.	:
		Rev.	: 0
		Page	: B-1 of 72
		Date	: 2006-01-17

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CONTENTS section B

1 Operations and experiences 3
2 Transit and positioning 3
3 9 7/8” pilot hole 3
4 36" section 4
5 26” section 5
6 17 1/2" section 6
7 12 1/4 section 7
8 8 1/2” section 8
9 Plug and Abandonment 10

TABLES

General Information on well B-12
Daily reports on well B-13
Time Distribution B-34
Downtime on well B-36
Hole Deviation B-43
Bit Record B-51
Bottom Hole Assemblies B-52
Casing and Tubing consumption B-57
Cement Slurry Report B-58
Cement Consumption per Job B-60
Total Consumption of Cement Additives B-61
Daily Mud Properties; Rheology properties B-62
Daily Mud Properties; Other properties B-65
Mud Additive Consumption B-68
Logging Summary B-70

FIGURES

Actual Drilling Curve B-41
Time Distribution Pie B-42
Pore Pressure, Formation Integrity, Mud Density and Overburden Gradient B-45
Formation Integrity Test at 20” Casing Shoe B-46
Leak Off Test at 13 3/8” Casing Shoe B-47
Leak Off Test at 9 5/8” Casing Shoe B-48
Abandonment Status B-49
Anchor pattern B-50

1 Operations and experiences

All depths are referenced to RKB, 25 m above MSL. Seabed was located at 368.5 m below MSL, 393.5m RKB.

The semi submersible drilling rig "Eirik Raude" drilled the 7220/6-1 well on the license 225 on the Loppa High in the Barents Sea.

The well was spudded at 04:15 hrs on the 20th of January. The 7220/6-1 well completed the P&A work on the 30th of March 2005 at 06:00 hrs.

Total time used on the well was 73 days (1752 hours), of which 44.8 days (1076 hours) were operational time (61.2 %). For detailed time breakdown see pages B-18 through B-39. Accumulated downtime; 38.8%.

2 Transit and positioning

The rig left its previous well location on the Troll field around midnight on the 10th of January. Due to bad weather conditions in the North Sea, the rig then went to Mongstad for unloading/back loading before the transfer to the Barents Sea. On the 11th of January at 15:00 hrs the rig left Mongstad.

Eirik Raude arrived the new well location 18th of January 2005 at 06:45 hrs. Serious problems were experienced when setting anchors. Changed the fluke angle with apparent success, as the seabed was substantially softer than anticipated. Worked to achieve a final tension test of 240 tons on each anchor. The well was spudded at 04:15 hrs on the 20.01.05

Total time used for mobilization for well 7220/6-1 was 84.5 hours. This includes back loading/loading at Mongstad (39 hrs), anchor handling and installation of four transponders on the seabed.

3 9 7/8" pilot hole

NPD regulations say that exploration wells in areas with restricted information shall be drilled to 20" / 18 5/8" casing setting depth first with a 9 5/8" or smaller pilot hole, irrespective of shallow gas warnings given or not.

The pilot hole was drilled to 417mMD, while moving the rig repeatedly in order to drill a completely vertical hole. At this depth, a sudden drop in pump pressure occurred after connection. With the ROV, it was observed that the pipe had come apart at approximately 390mMD. The 19m of BHA left in the hole was successfully recovered with a 17 ¾" overshot and basket grapple. A new BHA (same bit, new MWD) was run in hole, and the well was drilled to the planned TD at 480mMD, more or less at the boundary between the Quaternary and Triassic deposits. It was imperative not to drill further into the underlying Triassic rocks, as the presence of thin sand stringers/minor gas/oil could not be completely ruled out. A survey was run for every stand.

TD (MD, TVD)	480 m	480 m
Total time consumption	56	
Operational time (hrs, %)	14	25 %
Downtime (hrs, %)	42	75 %

Bit no	Bit name	Bit type	Bit meters	Rotating hours	Effective ROP, m/hr	Pull reason
1	MXB20DX	ISRT	24	2.6	9.3	DP twist off
1RR	MXB20DX	ISRT	85	6.9	12.3	Planned TD

4 36" section

Drilling

The pilot hole had confirmed no drilling hazards in the Quaternary section. Seabed was tagged with the 36" BHA and the hole was drilled to 412 m. First survey showed 3.37^{o} inclination. Alternated between reaming and minor shift of rig position in order to get back into drilling a vertical well. Drilled to 416 m. Inclination varied from 1.6^{o} to 4.7^{o} while the rig was again moved around and the hole section reamed several times. Drilled on to 431 m, and got several surveys in excess of 7^{o} with no improvements through reaming and rig moving. Pulled out of the hole again. The bit was completely balled up.

Decided to drill a 17 ½" pilot hole.

A new 17 ½" bit was put in the new BHA, the rig was moved 20 m east and the section was drilled to 462 mMD, slow drilling due to increasing rig heave. Surveys were taken every 5 m, and maximum inclination was 1.25^{o} observed at 446 mMD. This BHA was then pulled out and the bit was changed out again for the hole opening.

The hole was then opened to 36" (36"-26" two stage hole opener and 17 ½" bit) down to 455 mMD (17 ½" hole to 461 m MD), circulated clean and preparations for conductor running initiated.

TD (MD, TVD)	455 m	455 m
TD 30" casing (MD, TVD)	454 m	454 m
Total time consumption	162.5 hrs	
Operational time (hrs, %)	63 hrs	38.8 %
Downtime (hrs, %)	99.5 hrs	61.2 %

This also includes drilling of the 17 1/2"" pilot hole.

Bit no	Bit name	Bit type	Bit meters	Rotating hours	Effective ROP, m/hr	Pull reason
2	MXC3T09DDT 17 ½"	MITO	38	7.7	4.9	Incl. too high
	Standard 36" HO	HO				
3	MXST31 17 ½"	MILL	69	24.5	2.8	Planned TD
2 RR	MXC3T09DDT 17 ½"	MITO	48	7.6	6.3	Planned TD
	02GMODC HO	HO				

The hole was displaced to 1.25 sg mud, prior to run the conductor.

30" Conductor

Ran the Conductor to 454 m without hole problems, but ROV failure caused a longer running time than planned for. Filled every stand with seawater. The cementation was carried out as an inner string job. Cemented with 12.3 m^3 of 1.44 sg lead slurry and 26.6 m^3 of 1.95 sg tail slurry. Displaced the cement with 8.3 m^3 seawater. Cement observed at surface.

5 26" section

TD 26" (MD, TVD)	479 m	479 m
TD 20" casing (MD, TVD)	476 m	476 m
Total time consumption	212.5 hrs	
Operational time (hrs, %)	91 hrs	42.8 %
Downtime (hrs, %)	121.5 hrs	57.2 %

Drilling

The section was drilled using a 26" Hughes Christensen GTXCM03 bit. Top of cement was encountered at 449 mMD. The bit drilled 17 m in 2.63 hours, with an average ROP of 6.5 m/hr. There was no directional MWD tool in the in the BHA as the section was very short.

Bit no	Bit name	Bit type	Bit meters	Rotating hours	Effective ROP, m/hr	Pull reason
4	GTXCM03	ISRT	17	2.63	6.5	Planned TD

The section was drilled with seawater, and high viscosity pills were pumped on each connection to assist hole cleaning. The hole was displaced to 1.20 sg mud before pulling out.

20" Surface casing

No resistance was encountered when running the casing. Weather conditions caused serious delay in the casing running. The cementation was carried out with a two-plug system. The casing was cemented with 12 m^3 of 1.44 sg lead slurry and 23 m^3 of 1.95 sg tail slurry. Displaced the cement with 15.2 m^3 of seawater. Top of cement reached seabed.

BOP

The BOP and riser were run and landed without incidents. During the operation, several days were spent WOW.

6 17 1/2" section

TD (MD, TVD)	546 m	546 m
TD 13 3/8" casing (MD, TVD)	543 m	543 m
Total time consumption	186 hrs	
Operational time (hrs, %)	109 hrs	41.1 %
Downtime (hrs, %)	76 hrs	58.9 %

Drilling

Top of cement was tagged at 449m. Cement and 3m of new formation was drilled. An FIT test was performed, giving a FIT of 1.16 sg equivalent mud density. A 17 ½" Hughes Christensen MXT305H bit and down hole motor assembly with an AutoTrak assembly was used to drill the 67m of new formation in 5.1 hours, with an average ROP of 13.2 m/hr. At 546 mMD, the BOP low fluid alarm went off. A leak valve in the BOP was identified. It was decided to pull out of hole and accept this depth as setting depth for the 13 3/8" casing.

Bit no	Bit name	Bit type	Bit meters	Rotating hours	Effective ROP, m/hr	Pull reason
5	MXT305H	BIT	67	5.1	13.2	BOP leakage

The section was drilled with 1.09 sg Glydril mud.

.

13 3/8" Intermediate casing

Ran and landed the 13 3/8" casing according to plan. Experienced blockages in cement hose, and had to flush/clean before able to pump cement. Used the double plug system.
Pumped 8.1 m^3 of 1.9 sg slurry and displaced with 9.5 m^3 of 1.09 sg seawater. Set and pressure tested seal assembly. Pumped slug before pulling out of hole.

Pulled BOP and riser for inspection and repair. Performed all necessary pressure tests before resumed drilling.

7 12 1/4 section

TD (MD, TVD)	1130 m	1130 m
TD 9 5/8" casing (MD, TVD)	1124 m	1124 m
Total time consumption	283 hrs	
Operational time (hrs, %)	136 hrs	48.1 %
Downtime (hrs, %)	147 hrs	51.9 %

Drilling

A FIT test was performed after drilling 3 m of new formation, giving a LOT of 1.39 sg equivalent mud density.
This section was drilled with a 12 ¼" Hughes Christensen MXC09DX bit and the BHI VertiTrak system for securing the drilling of a vertical well. Total drilling hours was 43.5 hr, with an average ROP of 13.4 m/hr. Repeated problems with the cuttings handling system were experienced, and the mud had to be diluted before proper clean out was possible.
(A slurryfication of the drilled cuttings; mixing into a new mud phase, was carried out as a consequence of the zero discharge performance.)
At 748 m, observed mud losses at slip joint packer. Proved to be broken air hoses supplying air pressure to the slip joint packer. The incident caused a temporary stop in operations demanded by the authorities. A risk assessment on discharge barriers was carried out, and operations could continue after a three days delay.
Drilling continued to 1130 mMD, which was set as TD based on a 70m uncertainty on top reservoir prognosed at 1207 mMD.
Some drag, max 20 ton, was experienced during the first 100 m pulling out. Went down to TD again and found no problems while pulling out.

Bit no	Bit name	Bit type	Bit meters	Rotating hours	Effective ROP, m/hr	Pull reason
6	MXC09DX	ISRT	584	43.5	13.4	Planned TD

The section was drilled with first 1.09 sg Glydril mud and weighted up to 1.21 sg during drilling.

9 5/8" casing

The casing was run and cemented with the shoe at 1124m MD (1124 mTVD). The double plug system was used on this job.

The casing was cemented with 13.1 m^3 of 1.90 sg cement slurry, and displaced cement with 24.6 m^3 of 1.21 sg Glydril mud using the rig pumps.

8 8 1/2" section

TD (MD, TVD)	1540m MD	1540m TVD
Total time consumption, drilling	549.5	
Operational time (hrs, %)	495.5 hrs	90.2 %
Downtime (hrs, %)	54 hrs	9.8 %

Drilling

The BHI VertiTrak system was also used for this section, except in the cored intervals and the final bit run, which stretched from 1428m to final TD at 1540m. Two drill bits were used, the first drilled to 1149m and was pulled due to decision on start coring.

Bit no	Bit name	Bit type	Bit meters	Rotating hours	Effective ROP, m/hr	Pull reason
7	MXRS18CDDT	ISRT	19	3	6.3	Coring
8	Core bit MCT	COR	18	6	3	Full core
8rr	Core bit MCT	COR	30	8.5	3.5	Full core
9	Core bit SC226	COR	7	4	1.8	Jamming
7rr	MXRS18CDDT	ISRT	224	26	8.6	MWD fail
10	MXB-DP28CHDX2	BIT	112	11.8	9.5	Final TD

The shoe track with cement and 3m of new formation was drilled out with the 1.21 sg Glydril mud. Performed leak off test to 93 bars, equivalent to 2.05 sg. Before drilling ahead, the hole was displaced to 1.14 sg Drilplex mud. This mud has extreme shear strength, and the idea was that the mud would help prevent/cure anticipated serious mud losses through a potentially heavily fractured reservoir. Mud weight was kept as low as possible to minimize losses. Had drilling break at 1148m, flow checked and drilled another meter. No gas peaks at bottoms up. With the present uncertainties in depth conversion, the top of the reservoir at 1148m MD was very close to the max estimated upward location. Decision was made to start coring. Interpretation of logs suggests Top reservoir at 1137 m.
Two cores were cut (a total of 48 m), followed by the running of an intermediate suite of wire line logs. In line with the logging program, the following logs were run;

1.GR-FMI
2. PEX
3. GR-MDT

The dual packer on the MDT tool failed, and sampling was carried out through the probe. No conclusive data came out of this pressure logging session, and it was decided to cut one more core. This jammed off after 7 m of coring (1197 m–1204 m). Shows descriptions from the upper part of the reservoir indicate some live oil, but only water was produced during the primary MDT fluid analysis.
Experienced repeated problems with air bubbles in the mud, and consequently problems in monitoring the active pits. Defoaming treatment was necessary.
Drilling was resumed, and normal drilling continued to 1428 m when the bit had to be pulled due to planned BOP test.
The drilling was continued, and the “Top basement” was suggested at approximately 1483 mMD based on the MWD/cuttings interpretations. Drilling went on to 1492 m, when losses to formation were observed. Performed flow checks, and observed no losses while static well. Varied the flow rate from 1700 lpm to 300 lpm with apparently the same loss rate of 130 lpm. Performed dynamic flow check by boosting riser with 1000 lpm, well stable. A number of minor fractures within the basement section were later observed on the wire line logs. Drilling continued to 1540 m, which was decided to fulfill the obligations as final TD (50m into the basement section).
TD wire line logging was carried out according to plan, with an addition of CMR and drilled sidewall cores. The following logs were run;

1. FMI-DSI
2. 2. PEX-AIT-SP
3. UBI-GPIT
4. CMR-HNGS
5. GR-MDT
6. VSP
7. MSCT (Mechanical Sidewall Coring Tool)

This time the MDT logging provided sufficient pressure points resulting in a clear water gradient through the upper 150m of the reservoir. The CPI plot suggests oil saturations up to 50% in narrow zones, but there is apparently very poor communication through the reservoir section, and these saturations could simply be the result of minor amounts of trapped oil while the majority has leaked out a long time ago.

9 Plug and Abandonment

P&A activities (hrs)	212 hrs	
Operational time (hrs, %)	167 hrs	78.8 %
Downtime (hrs, %)	45 hrs	21.2 %

The P&A activities include injection of slop/Drilplex mud, setting of cement plugs/mechanical plug, cutting and retrieval of casings/well head and pulling of BOP/riser and anchors.

Following the injection of slop/mud produced during drilling of the well, three cement plugs were set in open hole with top of last cement plug planned to reach 100 m into the 9 5/8" casing for safe testing. The use of three plugs was a result of Hydro best practice recommending maximum 200 m plug lengths. LiteCRETE slurry was used as it was available due to a planned but not carried out potential 7" liner job.

Plug # 1a; Pumped 4.5 m^3 spacer. Pumped 8 m^3 1.42 sg cement slurry followed by 1.5 m^3 spacer and set cement plug from 1540 m to 1347 m. No losses to formation.

Plug # 1b; Pumped 4.5 m^3 spacer. Pumped 6 m^3 1.42 sg cement slurry followed by 1.5 m^3 spacer and set cement plug from 1347 m to 1199 m. No losses to formation.

Plug # 1c; Pumped 4.5 m^3 spacer. Pumped 7 m^3 1.42 sg cement slurry followed by 1.5 m^3 spacer and set cement plug from 1199 m to 1024 m. No losses to formation. This cement plug covered the transition from open hole into cased hole.

When trying to tag and test the cement, found pressure to leak off at 32 bars, and no indications of cement while running in to 1074m. Made preparations for a new cement job using ordinary class G cement, placing string at 1073 m.

Plug # 1d, second attempt; Pumped 4.5 m^3 fresh water spacer. Pumped 5.5 m^3 1.90 sg G cement slurry followed by 2.8 m^3 fresh water spacer and set cement plug from 1073 m to 923 m.

Tagged cement at 965m and sat down 10 ton weight on cement plug. Tested cement plug against shear rams 170 bars for 10 minutes.

Cut 9 5/8" casing at 540 m and pulled free applying 30 ton over pull. Sat 13 3/8" mechanical bridge plug at 537 m. Cut 13 3/8" casing at 456 m and pulled casing loose applying 45 ton over pull. Made preparations to set top cement plug to seal off between 13 3/8" casing cut and 20" casing. Ran cement stinger to top of plug, pulled back 2m and started to pump spacer.

Plug # 2, surface plug; Pumped 4.5 m^3 drill water spacer. Pumped 13.6 m^3 of 2.05 sg G cement tail slurry followed by 0.3 m^3 drill water spacer. Displaced with seawater to set cement plug from 537 m to 415 m. 30 hrs of WOC were allowed before hard cement was tagged and the rig proceeded to prepare for leaving the location.

Pulling BOP and riser.

Attempted to cut and retrieve 20” and 30” casing with wellhead at 398 m. Was not able to pull the wellhead. Located a new cut at 397 m and completed the operation. Anchors were pulled while cutting casing, and the rig went off contract on the 30.03.2005 at 06:00 hrs.

GENERAL INFORMATION

Well : 7220/6-1 **PO** : 1

Field : OBELIX **Country** : NORWAY **Wellbore Type :** WELL
Licence : PL 225 **Installation** : EIRIK RAUDE
UTM zone : 34 **Central Median** : 21' E **Horiz. Datum:** ED50

Location coordinates:		Surface	Target
UTM	**North [m]:**	8050890.5	
UTM	**East [m]:**	499691	
Geographical	**North :**	72 33'12.74"	
Geographical	**East :**	20 59'26.04"	

Water Depth: 368.5 **m** **Reference Point Height:** 25.0 **m**
Formation at TD: BASEMENT at 1483 m MD

Operator: NORSK HYDRO PRODUKSJON AS **Share:** 29.00 **%**

Partners: STATOIL ASA **Share:** 40.00 **%**
ENI NORGE AS 31.00 **%**

Total depth (RKB) : 1540.0 **m MD** 1539.9 **m TVD**

TIME SUMMARY

Start Time : 10.01.2005 00:00:00
Spudding date : 20.01.2005
Abandonment date : 30.03.2005

Main operation	Hours	Days	%
MOBILIZATION	45.0	1.9	2.6
DRILLING	609.0	25.4	34.8
FORMATION EVALUATION MWD	1.0	0.0	0.1
FORMATION EVALUATION LOGGING	160.5	6.7	9.2
FORMATION EVALUATION CORING	113.5	4.7	6.5
PLUG AND ABANDONMENT	143.5	6.0	8.2
DOWNTIME MOBILIZATION	65.5	2.7	3.7
DOWNTIME DRILLING	539.5	22.5	30.9
DOWNTIME FORM. EVAL. LOGGING	4.0	0.2	0.2
DOWNTIME FORM. EVAL. CORING	18.5	0.8	1.1
DOWNTIME PLUG AND ABANDONMENT	47.5	2.0	2.7
Sum:	**1747.5**	**72.8**	

Hole and casing record

Hole	Track	Depth [m MD]	Casing/Tubing	Track	Depth [m MD]
36"		454.0	30"		454
26"		479.0	20"		476
17 1/2"		546.0	13 3/8"		543
12 1/4"		1130.0	9 5/8"		1124
8 1/2"		1540.0			

Well status: Permanently abandoned Exploration Well

CONTRACTORS:

Mwd/Lwd Contractor : BAKER HUGHES INTEQ
Rig Contractor : OCEAN RIG ASA
Wireline Logg Contractor : SCHLUMBERGER OFFSHORE SERVICES LTD

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 1 **Date:** 10.01.2005

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0.00 sg

Stop time	Description
14:00	Rig heading for Mongstad. End of well 31/2-L-23 H at 23:36 hrs.
23:59	Unloaded Skandi Admiral, Northern Corona and Northern Clipper.

Daily report no : 2 **Date:** 11.01.2005

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0.00 sg

Stop time	Description
06:00	Unloaded Skandi Admiral, Northern Corona and Northern Clipper.
15:00	Unloaded Skandi Admiral. Unloaded/backloaded Northern Corona.
23:59	Rig in transit to Obelix

Daily report no : 3 **Date:** 18.01.2005

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0.00 sg

Stop time	Description
07:00	No operation.
09:00	Arrived at location of Obelix at 0645 hrs. (500 m off location). Rig on contract. Rig over well center at 0653 hrs. Performed fire, muster and medical evacuation drill.
18:00	Unloaded cargo from Skandi Admiral. Commenced anchor operations assisted by Northern Corona and Scandi Admiral. Started picking up 9 7/8" BHA. Repaired Hydra Racker.
23:59	Anchor operations.

Daily report no : 4 **Date:** 19.01.2005

Midnight depth : m MD **Estimated PP:** sg **Mud weight:** 0.00 sg

Stop time	Description
06:00	Tensioned anchor #4, #8, #2, #6 to 220 ton. Anchor #5 and #7 slipped during pretensioning at 140 ton and 190 ton respectively.
15:00	Resetting anchor #5 and #7 and worked to tension test all anchors to 220 ton. Negative. Anchor #1 and #3 slipped.
23:30	Changed flute angle from low to medium angle on anchors #1 and #3. Worked to obtain a final tension test of all anchors to 240 ton.
23:59	Tested MWD prior to spudding.

Daily report no : 5 **Date:** 20.01.2005

Midnight depth : 417 m MD **Estimated PP:** sg **Mud weight:** 0.00 sg

Stop time	Description
00:30	Moved rig over location.
02:30	Had MWD decoding problems. Trouble shoot and rectified software problem.
03:30	RIH to 391 m. Placed 4 ea marker buys on the sea floor for hole position control, using ROV. Had pre spud meeting including relevant personnel.
04:30	Spudded the well at 0415 hrs. Tagged sea floor at 394.2 m, corrected for tide. Drilled 9 7/8" pilot hole to 404 m.
05:00	Repositioned marker buys using the ROV.
10:00	Drilled 9 7/8" pilot hole to 417 m, at reduced drilling rate, while taking MWD inclination check shots. Adjusted rig position to reduce hole angle.
15:30	Noticed sudden pump pressure drop after connection. ROV observed that the string had bent over and had come apart at 390 m. Pulled out and confirmed 19 m of the bottom hole assembly was left in the hole. Laid out damaged string stabilizer.
23:59	Made up BHA #2, 11.75" overshot dressed with basket grapple and extension sub, and ran in to 390 m, above the fish.

Daily report no : 6 **Date:** 21.01.2005

Midnight depth : 417 m MD **Estimated PP:** sg **Mud weight:** 1.05 sg

Stop time	Description
00:30	Latched on to fish while being guided by the ROV.
06:00	Pulled out. Retrieved the fish, and released fish from the grapple. Laid out fish and overshot.
08:00	Picked up and made up new 9 7/8" pilot assembly including new MWD.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 6 **Date:** 21.01.2005

Midnight depth : 417 m MD **Estimated PP:** sg **Mud weight:** 1.05 sg

Stop time	Description
08:30	Had tool box talk prior to running in using manual rig tongs.
12:00	Ran in to 386m using manual tongs. Observed with the ROV.
17:00	Repaired jaws of the iron roughneck.
18:30	Lowered string to 392m. Moved rig 10m south while observing the BHA by the ROV. Tagged seabed at 394.1m, corrected for tide. Adjusted position of marker buys to new location.
19:00	Drilled 9 7/8" hole from sea floor to 404m.
20:30	Corrected position of marker buys using the ROV.
21:30	Drilled and surveyed pilot hole to 417 m.
23:59	Drilled and surveyed pilot hole to 443 m.

Daily report no : 7 **Date:** 22.01.2005

Midnight depth : 417 m MD **Estimated PP:** sg **Mud weight:** 1.25 sg

Stop time	Description
06:00	Continued drill and survey 9 7/8" pilot hole to TD at 480m. Checked depth by the ROV. Circulated the hole clean. Flow checked.
07:30	Displaced the hole by pumping 4.6 m3 1.25 sg mud. Pulled out of the hole to the sea floor while pumping 0.4 m3 mud. Continued pulling out of the hole to 378 m.
10:00	Trouble shoot problem on iron roughneck.
12:30	Pulled out of the hole.
13:30	Laid down MWD/MPR.
18:00	Had tool box talk. Picked up and ran 36" hole opener assembly
21:30	Ran in with BHA to 383 m. Marked the pipe for depth reference.
22:30	Tagged sea bed. Drilled 36" hole to 402 m.
23:59	Repositioned marker buys, took surveys and adjusted the rig position.

Daily report no : 8 **Date:** 23.01.2005

Midnight depth : 431 m MD **Estimated PP:** sg **Mud weight:** 1.25 sg

Stop time	Description
00:30	Logged hole position with regards to the rig position using the ROV.
05:30	Drilled 36" hole from 402 m to 412 m. Survey showed 3.37 deg inclination. Reamed the interval 397-408 m.
08:30	Moved rig 10 m north. Resumed reaming 397-408 m. Attempted to ream to bottom. Took weight at 408 m. Worked to get to bottom.Pumped and displaced 2 ea pills of 5 m3 to clean the hole
12:00	Drilled 36" hole 412-416 m. Attempted to ream the interval. Had excessive torque at 413 m. Pumped and displaced 2 ea 5m3 1.25 sg pills to clean the hole. Had surveys over the interval of 403-415 m of up to 4.7 deg.
13:30	Worked and reamed 403-415 m. Moved rig 8 m south. Continued work and ream the section. Had surveys up to 1.6 deg.
14:00	Pumped 13 m3 1.25 sg high viscous drilling fluid and spotted the same around the BHA while making connection.
19:00	Drilled 36" hole to 431 m. Reamed the section. Surveys showed up to 7.4 deg inclination.
21:30	Reamed the interval 429-415 m and took several surveys. Had surveys up to 7.0 deg. Moved the rig 3 meters 230 deg. Repetitive surveys showed no improvements. Moved the rig 3 m 230 deg. Repeated surveys with no improvements. Had surveys of up to 7.0 deg.
23:59	Pulled out to change BHA.

Daily report no : 9 **Date:** 24.01.2005

Midnight depth : 428 m MD **Estimated PP:** sg **Mud weight:** 1.25 sg

Stop time	Description
03:30	Pulled out and laid down stabilizer, hole opener, MWD and bit. Cleared drill floor.
07:00	Had tool box meeting. Picked up and made up 17 1/2" pilot hole assembly.
08:00	Waited on 17 1/2" bit to arrive from Polar Pioneer.
11:00	Had tool box talk. Made up bit on to the BHA and ran in to 305 m.
11:30	Ran in to 386 m, observing with the ROV.
12:30	Tested well test stand pipe manifold in the derrick to 100 bar/5 min, 690 bar/15 min.
13:00	Moved rig 20 m East.
14:00	ROV moved marker buys around the BHA for location control.
16:00	Tagged sea bed at 393.5 m. Took MWD survey. Washed down to 398.5 m with no rotation. Corrected position of the marker buys. Washed down to 401 m with no rotation.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 9 **Date:** 24.01.2005

Midnight depth : 428 m MD **Estimated PP:** sg **Mud weight:** 1.25 sg

Stop time	Description
22:30	Continued drilling 17 1/2" hole to 427 m. Took surveys every 5 m. Had max hole inclination of 0.8 deg. Spotted 4 m3 1.25 sg hi-visc mud during connection at 420 m.
23:30	Stopped rotation and pumping, and worked string 417-427 m, while ROV attempred to check the strings position in the hole. No success due to poor visibility on bottom.
23:59	Continued drilling 17 1/2" hole to 428 m. Had max hole inclination 0.9 deg.

Daily report no : 10 **Date:** 25.01.2005

Midnight depth : 462 m MD **Estimated PP:** sg **Mud weight:** 1.21 sg

Stop time	Description
07:00	Drilled 17 1/2" hole from 428 m to 447 m. Slow penetration due to increasing heave of the rig.
08:00	Reamed the stand, took inclination surveys and made connection.
12:00	Drilled 17 1/2" hole to 462 m. Reamed one stand and took inclination surveys.
12:30	Reamed the section and displaced a 5 m3 high viscous pill around. Pumped 8 m3 1.25 sg mud.
16:30	Pulled out from 462 m to 410 m. Pumped 2 m3 1.25 sg mud and displaced to the bit. Continued pulling out to surface.
19:00	Had tool box talk. Laid down stabilizers, pony collar and MWD.
23:00	Had tool box talk. Picked up and made up 36" hole opener assembly. Cleared the rig floor.
23:59	Wait on weather to run 36" Bha.

Daily report no : 11 **Date:** 26.01.2005

Midnight depth : 462 m MD **Estimated PP:** sg **Mud weight:** 1.21 sg

Stop time	Description
06:00	Waited on weather to run 36" Bha.
09:30	Performed prejob meeting and ran in the hole with the holeopner assembly to 387 m.
10:00	Performed MWD test.
22:30	Waited on weather . Rig heave ± 4 m, dropping of to 2,5 m at the end of the period.
23:00	Performed survey with the bit at 8 m above the seabed. Read 0,36 degree. Ran into the pilot hole and washed down to firm formation at 408 m. 26" holeopner at 402,5 m. Performed check survey. Read 0,76 degree at 393 m.
23:59	Opened up the pilot hole to 36" from 393,5 m to 407,5 m with the 17 1/2" bit at 414 m.

Daily report no : 12 **Date:** 27.01.2005

Midnight depth : 462 m MD **Estimated PP:** sg **Mud weight:** 1.21 sg

Stop time	Description
05:00	Drilled 36" hole from 407,5 m to 431 m.
08:30	Drilled 36" hole to 455 m.
09:00	Circulated 15 m3 pill around. Displaced the hole with 60 m3 1.25 mud.
09:30	Pulled out to 402 m. The hole was in good condition.
10:00	Flow-checked the hole while observing with the ROV, OK.
10:30	Ran back to bottom with the 36" holeopner at 455 m. No fill was observed.
11:00	Circulated old mud out with seawater and displaced the hole with 55 m3 1,25 sg mud.
11:30	Pulled out of the hole to 403 m. Displaced the rest of the hole with 5 m3 1.25 sg mud.
12:00	Pulled out to 307 m.
15:30	Pulled out and laid down the BHA.
16:00	Removed excess equipment and cleaned the rig floor.
17:00	Performed SJA (Safe Job Analyse) and pre-job meeting prior to runing 30" casing.
19:00	Picked up and ran the 30" shoe joint , tested the float, ran 3 x 30" joints and the 30 " housing.
22:00	Changed out the handling equipment and ran the 5 1/2" inner string. Connected the 30" running tool to the housing.
23:59	Lowered the housing through the rotary table and stared to install the bull's eye assembly to the same.

Daily report no : 13 **Date:** 28.01.2005

Midnight depth : 462 m MD **Estimated PP:** sg **Mud weight:** 1.21 sg

Stop time	Description
01:00	Installed the bull's eye assembly to the 30" housing.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 13 **Date:** 28.01.2005

Midnight depth : 462 m MD **Estimated PP:** sg **Mud weight:** 1.21 sg

Stop time	Description
04:00	Ran the 30" casing string on 5 1/2" DP down to 385 m.
04:30	Positioned the rig and stabbed the 30" casing into the 36" hole. Ran in the hole to 410 m.
10:00	Had an electrical problem with the ROV. Pulled the ROV to surface for repare.
10:30	Ran in the hole with the 30" casing to 454 m.
11:30	Continued to wait on the ROV before commencing the cement job.
12:00	ROV repositioned marker bouys and cross checked the depth from seabed to top of the 30" housing. Checked the bull's eyes, OK.
12:30	Performed pre-job meeting and SJA prior to the cement job.
13:30	Pressure tested the cement line to 150 bar. Pumped 20 m3 sea water with rig pumps at 1500 LPM.
15:30	Pumped 12,3 m3 1,44 sg lead slurry followed by 26,6 m3 1,95 sg tail slurry. Displaced the same with 8,3 m3 seawater.
23:59	Waiting on cement to set up.

Daily report no : 14 **Date:** 29.01.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.21 sg

Stop time	Description
02:00	Waited for cement to set up.
03:00	Released the 30" housing running tool and pulled the stinger out of the 30" casing.
05:00	Pulled out of the water with the 30" casing running string.
07:30	Laid down the 30" cement stand. Made up the 20" cement stand.
08:00	Performed pre-job meeting and SJA prior to make up the 26" BHA.
10:30	Made up the 26" BHA.
11:00	Ran in with the BHA to 390 m.
11:30	Had to waited for the ROV before the BHA could enter the wellhead housing.
12:30	Stabbed into the 30" housing and ran in the hole to top of the cement at 449 m.
15:30	Drilled firm cement from 449 m, shoe at 454 m and cleaned out the rathole down to 462 m. Reamed through shoe track several times. Pumped 5 m3 bentonite sweep.
18:30	Drilled 26" hole from 462 m to 479 m.
19:00	Pumped 5 m3 sweep around and performed a flow while observing with the ROV.
20:30	Pulled out of the hole to 467 m. Waited 1hr, ran back in the hole and observed no fill on bottom.
21:30	Displaced the hole to 40 m3 1,2 sg mud and pulled out to 415 m. Pumped 10 m3 1.2 sg mud to top up the hole.
23:59	Pulled out of the hole to 27 m.

Daily report no : 15 **Date:** 30.01.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.21 sg

Stop time	Description
01:00	Racked the BHA back in the derrick.
01:30	Performed pre job meeting prior to start rigging up the 20" casing equipment.
02:30	Troubleshoot the 20" casing elevator. Changed position of the hydtaulic hoses. Crew continued to rig up casing tong.
04:00	Rigged up and funtion tested the 20" casing equipment.
23:59	Waiting on weather to run 20" casing. Performed preventive maintenance, housekeeping and general rig maintenance. Pressure tested the choke and the kill manifold.

Daily report no : 16 **Date:** 31.01.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.21 sg

Stop time	Description
23:59	Waiting on weather. Changed out pony seals on mud pumps 1 and 2. Pressure tested 2 x grey valves to 35 bar/5 min and 345 bar/10 min. Pressure tested the standpipe to 345 bar. Serviced crown block and top drive. Drifted 20 stands of 5 1/2" DP. Performed preventive maintenance, general maintenance and housekeeping. Replaced aft brake cylinder on the drawwork.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 17 **Date:** 01.02.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.21 sg

Stop time	Description
04:00	Waiting on weather to run 20" casing
04:30	Performed pre-job safety meeting prior to run 20" casing.
07:30	Picked up and ran shoe joint, intermediate joint and the float joint. Checked the shoe and the float. Continued to run 20" casing to 78 m.
09:00	Changed to 5,5" handling equipment. Picked up and installed the 18 3/4" wellhead. Removed the auto slips and the 20" bowls. Installed master bushings.
10:00	Ran 20" casing on 5 1/2" DP to 389 m.
11:00	Positioned the rig over the well and entered the 30" housing with the 20" casing shoe.
12:00	Ran in and landed the 20" casing. Washed the last 5 m to bottom. Observed no fill. Performed 25 ton overpull test.
12:30	Performed pre-job and safety meeting prior to cement job.
13:30	Pumped 20 m3 sea water with the rig pumps. Pressure tested the cement lines to 150 bar. Pumped 5 m3 sea water and dropped the dart for the bottom plug.
19:30	Attempted to transfer cement from the cement silo C to the cement day tank with no success. Attempted to transfer cement in manual mode without success. Attempted to transfer cement from silo C to silo B with no success. Decision was made to mix lead slurry with cement from silo A and use all cement in silo B for tail slurry.
21:00	Mixed and pumped 12 m3 1,44 sg lead slurry followed by 23 m3 1,95 sg tail slurry.
22:00	Displaced the cement with 15,2 m3 seawater. Bumped the plug and tested the 20" casing to 70 bar for 10 min. Bled down pressure and checked for backflow for 10 min.
22:30	Released the wellhead running tool and pulled the cement stinger above the wellhead.
23:59	Pulled out of the water with the running string.

Daily report no : 18 **Date:** 02.02.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.09 sg

Stop time	Description
00:30	Laid down the wellhead running tool and cleaned the rigfloor.
02:00	Laid down the 26" BHA.
07:30	Prepared to run the BOP.
08:00	Held pre-job meeting prior to run the BOP and riser.
10:00	Re-arranged risers on the riser deck.
14:00	Made up double riser joints. Skidded the BOP under rotary and made up to double riser joints.
16:30	Launched BOP from carrier and ran through splash zone.
19:00	Pressure tested kill/choke lines to 35/400 bar, 5/10 min.
23:59	Ran the BOP and riser to 252 m.

Daily report no : 19 **Date:** 03.02.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.09 sg

Stop time	Description
01:00	Changed out broken cap screws on the spider dogs.
05:30	Ran BOP and riser from 252 m to 352 m.
07:30	Pressure tested kill and choke lines to 35/400 bar, 5/10 min.
09:30	Picked up and installed the slip joint and RIH to 374 m.
11:30	Installed handling joint. Engaged slip joint into tention ring, retracked slip joint dogs, removed safety slings and lowered down slip joint.
12:00	Pulled back landing joint, replaced safety slings and disengaged slip join dogs.
12:30	Pulled back slip joint, closed spider dogs and land off weight in spider with 50 tons left on drilline.
23:59	Waiting on weather. Sea to rough for close stand by.

Daily report no : 20 **Date:** 04.02.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.09 sg

Stop time	Description
06:00	Waiting on weather. Sea too rough for close stand by.
23:59	Waited on weather. Sea too rough for close stand by.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 21 **Date:** 05.02.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.09 sg

Stop time	Description
10:00	Waited on weather. Sea too rough for close stand by.
10:30	Time out for safety, day crew.
20:00	Waited on weather. Sea too rough for close stand by.
20:30	Time out for safety, night crew.
23:59	Waited on weather. Sea too rough for close stand by.

Daily report no : 22 **Date:** 06.02.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.09 sg

Stop time	Description
07:00	Waited on weather. Sea too rough for close stand by.
08:30	Engaged tensioner ring dogs into slip joint, attached safety slings and lowered down to the moon pool area.
15:30	Installed choke, kill, booster, glycol and MUX lines.
16:00	Removed safety slings and prepared BOP for landing.
17:00	Pressure tested choke and kill lines to 40/400 bar, 5 min.
17:30	Moved the rig over the wellhead.
19:00	Adjusted rig position and landed the BOP. Latched wellhead connector and took 25 ton overpull test.
19:30	Unlocked slip joint inner barrel and stroke out same.
20:30	Pressure tested choke line to 80 bar/2 min. Closed shear ram and pressure tested the wellhead connector to 70 bar/10 min.
21:30	Picked up and installed diverter, installed inclinometer to same.
23:59	Rigged down BOP/riser handling equipment.

Daily report no : 23 **Date:** 07.02.2005

Midnight depth : 479 m MD **Estimated PP:** sg **Mud weight:** 1.09 sg

Stop time	Description
03:30	Continued laying down BOP/riser handling equipment.
04:30	Made up cement stand.
07:30	Picked up and made up 17 1/2" bottom hole assembly.
08:30	Layed out MWD due to thread damage.
09:30	Picked up and made up new MWD.
10:30	Up-loaded data to MWD and scribelined to motor.
14:00	Continued to make up 17 1/2" bottom hole assembly and ran in hole to 94 m.
15:30	Made service on top drive and travelling assembly, and checked for loose items. Installed new saver sub.
16:00	Troubleshot on diverter due to malfunction on valve.
16:30	Ran in the hole with 17 1/2" BHA on 5 1/2" drill pipe to 324 m.
17:00	Replaced O-ring on diverter auto sequence switch.
18:00	Continued to run in hole from 324 m to 440 m with 17 1/2" BHA.
19:00	Displaced the well to 1,09 sg mud with 3000 lpm.
19:30	Lined up to displace kill and choke lines.
20:00	Stopped displacing kill and choke lines due to emergency drill and no radio communications.
21:00	Displaced kill and choke lines to 1,09 sg mud.
22:30	Washed down from 339 m and tagged cement at 449 m.
23:59	Drilled hard cement from 449 m to 459 m.

Daily report no : 24 **Date:** 08.02.2005

Midnight depth : 546 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.09 sg

Stop time	Description
01:30	Continued drilling out cement from 459 m to 473 m.
03:00	Circulated and conditioning mud prior to drilling out shoe.
03:30	Drilled cement and shoe from 473 m to 476 m. Cleaned out rat hole.
04:00	Drilled new formation from 479 m to 482 m
04:30	Circulated bottom up prior to take leak off test.
05:30	Performed leak off test to 1,16 sg equivalent mud weight.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 24 **Date:** 08.02.2005

Midnight depth : 546 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.09 sg

Stop time	Description
08:00	Cleaned out cement debris from shale shut.
11:00	Drilled 17 1/2" hole from 482 m to 511 m.
12:30	Cleaned out shale shute, meanwhile circulated hole with 3000 lpm.
18:00	Drilled 17 1/2" hole from 511 m to 546 m.
19:00	Observed low level alarm on BOP.
23:30	Monitored BOP on trip tank. Investigated leakage on BOP.
23:59	RIH to 545 m and circulated with 3000 lpm, 73 bar.

Daily report no : 25 **Date:** 09.02.2005

Midnight depth : 546 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.09 sg

Stop time	Description
02:30	Circulated hole clean with 3500 lpm, 80 bar.
07:30	Pulled out of hole with 17 1/2" BHA from 546 m to 32 m. Racked back 5 1/2" drill pipe in the derrick.
08:00	Downloaded MWD.
09:30	Racked back in the derrick MWD and motor.
12:00	Made up wear bushing running tool and ran in hole. Washed BOP and wellhead area. Engaged running tool to wear bushing with 10 ton and pulled free with 7 ton overpull.
13:00	Pulled out of hole with the wearbushing.
14:30	Cleaned rig floor and rigged up to run 13 3/8" casing.
20:00	Ran 13 3/8" casing to 150 m. Thread locked shoe, intermediant joint and float joint.
21:00	Changed to 5 1/2" drill pipe handling equipment. Picked up and made up 13 3/8" hanger.
22:00	Cleaned rig floor and rigged up to run 13 3/8" casing on 5 1/2" drill pipe landing string.
23:59	Ran in hole with 13 3/8" casing on 5 1/2" drill pipe landing string to 390 m.

Daily report no : 26 **Date:** 10.02.2005

Midnight depth : 546 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.09 sg

Stop time	Description
01:30	Continued running 13 3/8" casing on 5 1/2" drill pipe from 390 m to shoe depth at 543 m.
03:30	Set down 20 ton on casing and circulated even mud weight in and out.
04:30	Prepared to cement 13 3/8" casing.
05:30	Installed new cement hose.
12:00	Circulated hole with 1000 lpm, 11 bar.
14:00	Flushed and pressure tested cement line to 250 bar.
16:00	Mixed and pumped 8,1 m3 1,90 sg cement slurry.
17:30	Set seal assembly by rotating string with 5,5 turns. Observed the string dropped. Pressure tested seal assembly to 35/345 bar, 5/10 min.
20:00	Layed down the cement stand. Pumped slug and pulled out of the hole with 13 3/8" landing string / running tool.
20:30	Layed down the casing running tool and made up wear bushing running tool.
22:00	Ran in hole with wear bushing. Engaged wear bushing and pulled the running tool free with 12 ton overpull.
23:00	Displaced choke, kill, booster lines and riser to sea water.
23:59	Pulled out of hole with wear bushing running tool. Layed down the same.

Daily report no : 27 **Date:** 11.02.2005

Midnight depth : 546 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.09 sg

Stop time	Description
04:00	Rig up riser handling equipment and prepared to pull the BOP and riser.
05:30	Pulled and layed down the diverter.
07:00	Picked up the landing joint.
12:00	Installed the landing joint to the slip joint. Unlocked wellhead connector at 09:30 hrs and pulled the BOP clear of the wellhead.
23:00	Layed out the landing and slip joints. Pulled the BOP and riser from 353 m to surface.
23:59	Landed the BOP on the carrier at 23:00 hrs, secured and disconnect from riser.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 28 **Date:** 12.02.2005
Midnight depth : 546 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.09 sg

Stop time	Description
02:00	Moved the BOP to parking position and secured.
09:00	Inspected and repaired the BOP.
16:00	Inspected and repaired the BOP.
19:00	Inspected and repaired the BOP. Removed new bolts from 9 shuttle valves and replaced in varius valves. Replaced 72 end cap bolts and 36 outlet flange bolts.
23:00	Pressure tested BOP on the stump to 20/345 bar, 5/10 min.
23:59	Pressure tested BOP on the stump to 20/345 bar, 5/10 min .

Daily report no : 29 **Date:** 13.02.2005
Midnight depth : 546 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.09 sg

Stop time	Description
03:00	Pressure tested BOP on the stump to 20/345 bar, 5/10 min .
06:00	Pressure tested BOP on the stump to 20/345 bar, 5/10 min.
13:30	Pressure tested BOP on the stump to 20/345 bar, 5/10 min.
16:30	Skidded the BOP below rotary. Stabbed and made up double riser to BOP. Lowered BOP through splash zone at 16:15 hrs.
23:59	Ran BOP and riser from 46 m to 305 m.

Daily report no : 30 **Date:** 14.02.2005
Midnight depth : 546 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.09 sg

Stop time	Description
03:00	Continued to run BOP and riser from 305 m to 375 m.
04:00	Installed test cap and pressure tested kill/choke/glycol and condiut lines.
06:00	Picked up and installed the slip joint. Installed clamps on the same.
07:30	Picked up landing joint. Latched same to the tention ring and installed safety slings.
13:00	Installed goosenecks and MUX saddles to the slip joint.
14:00	Pressure tested kill/choke/glycol lines to 20/345 bar, 5/10 min. Pressure tested conduit lines to 345 bar/10 min.
16:00	Positioned rig and landed BOP at 15:37 hrs. Set down 25 ton and latched the well head connector.
17:00	Closed the shear ram and pressure tested the wellhead connector to 200 bar.
18:00	Layed out landing joint and cleaned drillfloor.
19:00	Picked up and installed diverter. Layed out diverter running tool.
21:30	Rigged down riser handling equipment. Rigged up drilling bails and elevators.
23:00	Made up 12 1/4" bottom hole assembly and ran in the hole to 150 m.
23:30	Performed diverter drill and confirmed valves operating correctly.
23:59	Ran in hole with 12 1/4" bottom hole assembly on 5 1/2" drillpipe to 320 m.

Daily report no : 31 **Date:** 15.02.2005
Midnight depth : 663 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.20 sg

Stop time	Description
01:00	Continued running in hole with 12 1/4" bottom hole assembly and tagged cement at 502 m with 5 ton.
02:00	Set up the Vertitrack, circulated with 3000 lpm, 85 bar, 30 rpm and attempted to drill cement.
03:00	Circulated and conditioned mud.
06:00	Set up the Vertitrack and drilled firm/soft cement to 515 m. Drilled float collar and firm cement from 515 m to 540 m.
06:30	Drilled shoe and 3 m new formation from 546 m to 549 m.
08:00	Circulated and condition mud prior to leak off test.
09:00	Performed leak off test to 1,39 sg equivalent mud weight. Pumped 120 l with 100 l in return.
18:30	Drilled 12 1/4" hole from 549 m to 663 m.
23:59	Cleaned screw conveyors and buffer tanks due to blocked cutting handling system.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 32 **Date:** 16.02.2005

Midnight depth : 748 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
02:00	Circulated and conditioned mud while unblocking and cleaning out cuttings handling equipment.
08:30	Drilled 12 1/4" hole from 663 m to 748 m.
09:00	Investigated mud losses at slip joint packer. Found that the air hoses, supplying air pressure to the slip joint packer, had come apart at quick disconnect fittings on the packer.
11:00	Pulled out from 748 m to 348 m at reduced rate, while filling the hole through the kill line.
12:00	Closed shear rams and monitor well on kill line.
23:59	Waited on weather to repair slip joint packer.

Daily report no : 33 **Date:** 17.02.2005

Midnight depth : 748 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
12:00	Waited on weather to repair slip joint packer.
23:59	Waited on weather to repair slip joint packer.

Daily report no : 34 **Date:** 18.02.2005

Midnight depth : 748 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
10:00	Waited on weather to repair slip joint packer.Task force working to re-identify potential 'spill sources' around the rig. Crew trained on H2S safety equipment on the drill floor. Cleaned mud pits. Assisted emptying drain collection tanks.
18:00	Repaired slip joint packer energizing system. Simultaneously pulled out the BHA. Downloaded MWD and racked BHA back in the derrick. Task force working to re-identify potential spill sources' around the rig.
23:59	Waited on evaluation of barrier risk assessment. Cleaned and flushed mud pits and performed preventive mainenance.

Daily report no : 35 **Date:** 19.02.2005

Midnight depth : 748 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
12:00	Hazid/Hazop and risk assessment on discharge barriers. Performed general rig maintenance. Checked torques on make up and break out catheads against load cell. Cleaned reserve pits and cleaned around moon pool area.
15:00	Hazid/Hazop and risk assessment on discharge barriers. Performed general rig maintenance and PM's. Cleaned around moonpool area.
15:30	Hazid/Hazop and risk assessment on discharge barriers. Filled up riser pumping 7.1 m3, and tested slip joint packer.
23:59	Hazid/Hazop and risk assessment on discharge barriers. Performed general rig maintenance and preventive mainenance. Cleaned around moonpool area. Cleaned pump room and drill floor. Calibrated crown mounted compensator. Repaired valves in the bulk transfer system.

Daily report no : 36 **Date:** 20.02.2005

Midnight depth : 748 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
07:30	Hazid/Hazop and risk assessment on discharge barriers. Performed general rig maintenance. Completed the repairs on bulk barite transfer system. Cleared and tidy tools from drilling areas. Commenced PM's on rig floor utility winches.
08:30	Hazid/Hazop and risk assessment on discharge barriers. Picked up, service broke and laid out cemend head from previous section. Made up new cement head into stand, and racked back in the derrick.
15:00	Hazid/Hazop and risk assessment on discharge barriers. Performed general rig maintenance. Completed repairs on barite transfer system valves. Cleared and tidy tools and equipment from drilling areas. Performed PM on rig floor utility winches.
23:59	Hazid/Hazop and risk assessment on discharge barriers. Rigged up and pulled diverter. Started to replace upper diverter seal.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 37 **Date:** 21.02.2005

Midnight depth : 763 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
08:30	Hazid/Hazop and risk assessment on discharge barriers. Replaced upper flow line seal on diverter, and installed diverter. Installed drill pipe in rotary and function tested diverter and slip joint packer lower seal. Made signs for isolation valves on hydraulic apliancies in the moonpool area.
12:00	Hazid/Hazop and risk assessment on discharge barriers. Rigged down diverter handling equipment. Tested cat heads using load cell to calibrate same.
13:30	Hazid/Hazop and risk assessment on discharge barriers. Circulated riser with 71 m3 at reduced rate due to polymer lumps in the mud.
15:00	Hazid/Hazop and risk assessment on discharge barriers. Made up and ran in hole with 12 1/4" Vertitrack BHA.
16:00	Ran in hole with 12 1/4" bottom hole assembly to 377 m.
17:00	Replaced bursted hydraulic hose on the top drive pipe handler.
19:30	Opened shear rams and ran in hole to 550 m.
22:30	Washed down from 550 m to 739 m. Reamed down from 739 m to 748 m to tag bottom. Circulated bottom up and checked for H2S prior to connection at TD.
23:59	Drilled 12 1/4" hole from 749 m to 763 m.

Daily report no : 38 **Date:** 22.02.2005

Midnight depth : 1107 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
12:00	Drilled, logged and surveyed 12 1/4" hole from 763 m to 937 m.
23:59	Drilled, logged and surveyed 12 1/4" hole from 937 m to 1107 m.

Daily report no : 39 **Date:** 23.02.2005

Midnight depth : 1130 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
02:00	Drilled to 1130 m.
04:00	Circulated the hole clean, while reciprocating the string.
05:30	Flow checked and pulled out of the hole from 1130 m to1008 m. Had increasing drag of up to 20 ton overpull several spots. Worked the pipe.
11:00	Pulled out of the hole while pumping.
12:00	Circulated the hole clean and flow checked.
14:00	Ran in to TD. The hole was OK.
15:30	Circulated bottom up.
18:30	Flow checked and pulled out of the hole from 1130 m to 1009 m. Slugged the pipe and pulled out to 521 m.
21:00	Flow checked and pulled out of the hole from to 521 m to 147 m.

Daily report no : 40 **Date:** 24.02.2005

Midnight depth : 1130 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
00:30	Removed excess equipment after BHA handling and cleared the drill floor.
04:00	Picked up and ran wear bushing retrieving tool/jetting assembly. Jetted the BOP and well head area. Landed in wear bushing and attempted to retrieve wear bushing several times with no success.
05:30	Jetted well head. Latched on to the wear bushing and retrieved same. Jetted the BOP.
09:00	Pulled out and retrieved the wear bushing. Laid down retrieving tool and jetting tool.
14:00	Had tool box talk. Rigged up and tested the cement hose. Changed out 1020 bar cement hose to 2" jumper hose, and flushed the same.
20:30	Had tool box talk. Picked up, tested and ran 9 5/8" shoe track. Continued running casing to 543 m.
23:59	Continued running 9 5/8" casing to 690 m.

Daily report no : 41 **Date:** 25.02.2005

Midnight depth : 1130 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
01:00	Picked up and ran remaining casing. Ran a total of 58 joints.
02:00	Changed to drill pipe elevators. Picked up and made up casing hanger assembly into the string.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 41 **Date:** 25.02.2005

Midnight depth : 1130 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
04:00	Rigged down casing running equipment and changed to 5.5" drill pipe slips.
07:30	Ran casing on 5.5" landing string to 1111 m. Filled casing every 5 stands. Picked up and installed cement head. Ran in and landed casing at 1124 m.
09:00	Circulated and conditioned the hole prior to cementing.
10:00	Had tool box talk. Rigged up cementing hose and pressure tested the cementing rig-up to 345 bar.
11:30	Attempted to pressure test against Lo-Torque valve on cementing head without success. Traced problem to a leaking valve on cement unit. Rectified the problem.
14:00	Checked line up of mud pumps and checked pit volume. Pumped 11.5 m3 spacer using rig pump and released the dart. Pumped 5 m3 fresh water and sheared bottom plug using cement pump. Mixed and pumped 13.1 m3 1.90 sg cement slurry. Released the second dart and sheared the top plug pumping 5 m3 fresh water. Displaced cement and bumped the plug - pumped 24.6 m3 1.21 sg mud using the rig pumps.
14:30	Pressure tested the casing 345 bar for 10 minutes.
15:00	Set and tested the seal assembly to 345 bar for 10 minutes.
18:00	Flushed and cleaned cement unit. Flushed kill and choke lines.
21:30	Lined up and tested the BOP (35 bar/5 min and 345 bar/10 min) on yellow pod. Function tested BOP on blue pod.
23:59	Sheared casing running tool and pulled the tool to surface. Laid down running tool and cement head.

Daily report no : 42 **Date:** 26.02.2005

Midnight depth : 1130 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
01:00	Cleared the drill floor. Changed bailes and removed power tong and frame.
03:00	Made up, ran and landed wear bushing in the well head.
04:00	Pressure tested Upper Pipe Ram to 35 bar for 5 minutes and 345 bar for 10 minutes. Function tested Upper Pipe Ram from the blue pod.
05:00	Sheared out of wear bushing at 15 ton pull. Pulled out and laid down wear bushing running tool.
09:30	Had tool box talk. Laid out 12 1/4" BHA from the derrick.
10:00	Repaired hydraulic leak on the iron roughneck.
11:30	Laid down 14 joints heavy weight drill pipe and 1 joint of drill pipe.
12:00	Cleared the drill floor of excess equipment.
15:30	Had tool box talk. Picked up 8.5" BHA from deck.
16:30	Changed out mud saver sub to saver sub.
17:30	Picked up 8 lengths of 6.5" drill collars.
18:00	Pressure tested top drive and mud hose (35 bar/5 min and 345 bar/10 min).
19:00	Attended Hydro 8.5"well control method and kick detection meeting.
21:30	Continued testing top drive and stand pipe manifold (35 bar/5 min and 345 bar/10 min). Changed back to mud saver sub. Prepared TIW and Grey valve for testing.
23:59	Had tool box talk. Picked up 8 1/2" BHA including 5" drill pipe from deck.

Daily report no : 43 **Date:** 27.02.2005

Midnight depth : 1130 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
04:30	Picked up and ran 5" drill pipe from deck.
05:00	Rigged up and ran in to 709 m on 5.5" drill pipe.
07:00	Performed trip drill and choke drill with night crew.
09:30	Cleaned pits prior to taking onboard drillplex premix.
11:30	Ran in hole to 1054 m. The bit took weight inside the casing while running in. Racked back one stand.
16:30	Took slow circulation rate, and performed extended choke drill with day drill crew. Performed diverter drill, and function test of valves. Circulated to ensure integrity of drill floor system.
17:00	Washed down from 1054 m to 1067 m.
18:30	Had uneven mud properties blinding shakers. Shut down, and increased flow rate in steps.
19:00	Washed down from 1067 m to 1080 m.
21:00	Performed choke drill using both choke and kill lines.
23:59	Drilled shoe track.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 44 **Date:** 28.02.2005
Midnight depth : 1130 m MD **Estimated PP:** 1.03 sg **Mud weight:** 1.21 sg

Stop time	Description
01:00	Cleaned out rat hole and drilled 3 m new formation to 1133 m.
02:30	Circulated and conditioned the hole prior to the LOT.
03:30	Pulled up inside the casing to 1118 m. Closed Upper Annular Preventer, tested cementing lines 200 bar and performed a Leak Off Test to 93 bar, equivalent to 2.05 sg mud density.
14:00	Cleaned pits and continued to prepare Drillplex mud for displacement. Circulated and conditioned mud while preparing Drillplex mud for displacement.
16:30	Had tool box meeting. Displaced the well to 1.14 sg Drillplex mud.
23:59	Commenced cleaning the four mud processing pits. Continued mixing Drillplex mud.

Daily report no : 45 **Date:** 01.03.2005
Midnight depth : 1130 m MD **Estimated PP:** 1.09 sg **Mud weight:** 1.14 sg

Stop time	Description
08:00	Cleaned pits and mixed 1.14 sg Drillplex mud.
13:00	Mixed Drillplex mud in the pits. Circulated the well and boosted the riser. Reciprocated the string between 1112 m and 1083 m.
14:30	Took slow circulation rates.
15:30	Completed mixing mud and circulated the well.
16:30	Drilled 8 1/2" hole from 1133 m to1136 m.
17:00	Had increase in the trip tank mud level due to leak from diverter. Rectified problem.
19:30	Drilled 8 1/2" hole 1136 m to 1148 m. Experienced a drilling break.
21:30	Shut in the well and obserevd for pressure - negative. Circulated bottom up through the choke and flow checked, had no flow. Opened the annular.
22:00	Drilled 8 1/2" hole to 1149 m.
23:59	Circulated the well while discussing further plans with the onshore office.

Daily report no : 46 **Date:** 02.03.2005
Midnight depth : 1149 m MD **Estimated PP:** 1.09 sg **Mud weight:** 1.14 sg

Stop time	Description
02:30	Performed 10-10-10 test. Circulated bottoms up - saw no distinct increase in gas reading. Performed 1 stand dummy trip. Circulated bottom up - saw no distinct increase in gas reading.
04:00	Flow checked, slight increase observed in the trip tank. Circulated bottoms up and flow checked - OK.
04:30	Repaired drain hose on the hydraulic mud bucket.
08:00	Pumped out of the hole from 1149 m to 681 m.
11:00	Flow checked the well prior to pulling the BHA through the BOP. Slight increase in the trip tank due to mud foaming. Circulated well on the booster pump while adding defoaming agent to the trip tank.
12:00	Repaired upper gripper head on Hydraracker.
14:30	Pumped out of the hole from 681 m to 380 m.
15:30	Attempted to flush choke and kill line. Pressured up to 170 bar to clear choke line and to 220 bar to clear kill line. Displaced both lines to fresh mud.
19:00	Pulled out of the hole to 27 m.
19:30	Dumped MWD tool.
20:00	Pulled out and racked back the rest of the BHA.
20:30	Cleaned the rig floor.
21:00	Performed safety and pre-job meeting prior to pick up core assembly.
23:59	Picked up core assembly and installed inner barrel.

Daily report no : 47 **Date:** 03.03.2005
Midnight depth : 1149 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
01:30	Made up inner barrel and spaced out the same.
02:30	Picked up one single DC and installed float sub.
03:30	Changed out hydraulic valve for drawwork emergency brake.
06:00	Ran in the hole with core barrel to 220 m.
07:00	Changed handling equipment to 5". Pumped through the core barrel.
08:30	Ran in the hole to 650 m.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 47 **Date:** 03.03.2005

Midnight depth : 1149 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
10:00	Picked up and ran in with 15 joints of 5" DP.
12:00	Ran in the hole to 1138 m.
14:30	Spaced out and tagged the bottom at 1149 m. Circulated bottoms up.
15:00	Dropped the ball. The ball seated with 5 bar pressure increase.
21:00	Cut core from 1149 m to 1167 m.
22:00	Stopped coring at 1167 m. Broke off the core, picked up 6 m and ran back to 1/2 m above the bottom. Pumped out of the hole to 1114 m.
22:30	Flow checked the hole.
23:59	Pulled out of the hole with the core to 900 m.

Daily report no : 48 **Date:** 04.03.2005

Midnight depth : 1183 m MD **Estimated PP:** 1.07 sg **Mud weight:** 1.14 sg

Stop time	Description
00:30	Pulled out of the hole to 818 m.
01:00	Changed to 5" handling equipment.
02:00	Pulled out of the hole to 630 m.
02:30	Flow checked at the BOP.
07:30	Pulled out of the hole with the corebarrel to 21 m.
08:00	Held toolbox meeting and reviewed the Safe Jab Analysis prior to pulling the core barrel to surface.
10:00	Pulled the core barrel to surface. Checked same for H2S gas, negative.Laid out inner barrels and checked the core head.
13:00	Redressed the core barrel to be able to core 30 m.
14:30	Ran in the hole to 220 m.
17:00	Changed to 5" handling equipment and ran in the hole with the core barrel to 830 m.
18:30	Changed to 5 1/2" handling equipment and ran in the hole to 1120 m.
19:30	Broke circulation and washed down to bottom at 1167 m. No fill was observed.
20:30	Pulled and spaced out the string for coring. Dropped the ball and observed 7 bar pressure increase when seated.
23:59	Cored from 1167 m to 1183 m.

Daily report no : 49 **Date:** 05.03.2005

Midnight depth : 1197 m MD **Estimated PP:** 1.07 sg **Mud weight:** 1.14 sg

Stop time	Description
05:00	Cored from 1183 m to 1197 m.
06:00	Pumped out of the hole with the core to 1103 m. Flow checked at the shoe.
08:00	Pulled out of the hole to 830 m.
10:00	Flow checked the well due to unstable trip tank. Broke circulation. Flow checked the well - OK.
15:30	Pulled out of the hole with the core to 34 m.
16:00	Performed tool box meeting and reviewed the Safe Job Analysis prior to pulling the core barrel to surface.
18:30	Picked up and laid down 5 inner barrels with core. Checked the core for H2S - negative.
20:00	Performed tool box meeting and reviewed the Safe Job Analysis prior to using rig tongs to lay out the outher core barrel.
20:30	Cleaned and cleared the rig floor.
21:00	Performed tool box meeting and reviewed the Safe Job Analysis prior to rigging up wireline equipment.
23:00	Rigged up wireline equipment and the toolstring.
23:59	Performed tool box meeting and ran in the hole with logging tools to 900 m.

Daily report no : 50 **Date:** 06.03.2005

Midnight depth : 1197 m MD **Estimated PP:** 1.07 sg **Mud weight:** 1.14 sg

Stop time	Description
00:30	Ran in the hole to bottom at 1197 m. Logged GR-FMI from bottom into the shoe at 1124 m. Logged repeat section.
01:00	Pulled out of the hole with the logging tools.
02:00	Laid down the logging tools.
03:30	Rigged up PEX tool string.
04:30	Ran in the hole with the PEX tool string to bottom at 1197 m.
05:00	Logged with PEX from 1197 m to into the 9 5/8" shoe at 1124 m. Logged repeat section

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 50 **Date:** 06.03.2005

Midnight depth : 1197 m MD **Estimated PP:** 1.07 sg **Mud weight:** 1.14 sg

Stop time	Description
07:00	Pulled out of the hole and rigged down the PEX string.
09:00	Rigged up GR-MDT tool string.
11:00	Ran in the hole to bottom at 1197 m.
19:00	Logged as per program, was not able to take samples.
19:30	Pulled out of the hole with the logging tools to 100 m.
20:00	Performed tool box meeting prior to pulling logging tools to surface.
20:30	Pulled out and checked logging tool for H2S - negative.
21:30	Function tested the MDT tool at surface. Fixed the problem causing sampling problems.
22:30	Ran in the hole with the tool string to 1100 m.
23:00	Shut the well in due to increase in active mud system. The increase came from a leaking valve in reserve tank 'B'. Opened the well up and flowchecked.
23:59	Continued to run in the hole and prepared for sampling.

Daily report no : 51 **Date:** 07.03.2005

Midnight depth : 1197 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
01:30	Attempted several times to start sampling. Failed due to packer not seated.
03:30	Performed pressure points with the probe.
11:30	Performed sampling with the probe.
14:30	Pulled out of the hole with the MDT and laid down the tool string.
15:30	Rigged down logging equipment
16:00	Serviced the block, topdrive and the dolly retract system.
16:30	Performed tool box meeting prior to making up core barrel assembly.
18:30	Picked up and made up 8 1/2" outher barrel assembly.
19:00	Prepared inner core barrels and aluminium liners with steam due to frostiness.
20:00	Performed toolbox meeting and reviewed the Safe Job Analysis to use rig tongs. Changed out the core head.
23:30	Made up the inner barrel assembly and spaced out the same.
23:59	Ran in the hole with the core assembly to 124 m.

Daily report no : 52 **Date:** 08.03.2005

Midnight depth : 1197 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
02:30	One cam roller of 84 g fell down on the setback area. Stopped the work and investigated the incident. Found a cam roller missing from the tail arm gripping head on the Hydraracker. Installed a new one.
04:00	Ran in the hole with the core barrel to 270 m.
10:30	Attempted to brake circulation was unable to pump through the top drive. Possible ice plug in the mudhose, topdrive. Cleared ice plug in the top drive.
19:00	Worked with Iron roughneck alignment problems. Adjusted alignment bar, installed spacer on the bar, recalibrated roughneck and function tested the same.
22:00	Ran in the hole with the core assembly to 840 m.
23:00	Spaced out and function tested the BOP.
23:59	Spaced out the string for coring, changed handling equipment to 5 1/2" and ran in the hole to 900 m.

Daily report no : 53 **Date:** 09.03.2005

Midnight depth : 1204 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
00:30	Ran in the hole to 1100 m.
02:00	Broke circulation and washed down to bottom at 1197 m. The hole was good.
03:30	Circulated bottoms up.
04:00	Dropped the ball and seated the same with 7 bar extra pressure.
08:00	Cored 8 1/2" hole from 1197 m to 1204 m.
09:00	The core jammed off at 1204 m. Flowchecked the well.
12:00	Pumped out of hole to 1124 m with 600 lpm. Flowchecked the well at the casing shoe.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 53 **Date:** 09.03.2005

Midnight depth : 1204 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
18:30	Pumped out of hole with 600 lpm from 1124 m to 660 m. Flowchecked the well before BHA entered the BOP. Pulled out of hole from 660 m to 236 m.
21:00	Pulled out of hole with the coring assembly to 49 m. Racked back BHA in the derrick.
23:59	Layed out circulation sub and 5 empty inner core barrels.

Daily report no : 54 **Date:** 10.03.2005

Midnight depth : 1204 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
01:00	Layed down one full inner core barrel. Recovered 6.5 m core.
04:00	Layed out outher core barrels and cleaned the rig floor.
08:00	Made up 8 1/2" bottom hole assembly.
10:30	Ran in hole with 8 1/2" bottom hole assembly to 250 m. Picked up and made up 3 x 6 3/4" new drill collars on the way in.
13:00	Ran in hole with 8 1/2" bottom hole assembly on 5" drill pipe to 850 m.
14:00	Changed to 5 1/2" drill pipe handling equipment. Filled pipe, circulated and conditioned mud.
14:30	Ran in hole with 8 1/2" bottom hole assembly on 5" x 5 1/2" drill pipe to 938 m.
17:00	Circulated and conditioned the mud.
19:00	Noticed 15 bar pressure drop, increase in active pits and reduction in flow out. Found air bubbles mixed into the mud system. Pumped treated mud down drill string and regained normal pressure.
21:30	Circulated and conditioned mud.
23:59	Ran in hole with 8 1/2" bottom hole assembly from 938 m to 1140 m.

Daily report no : 55 **Date:** 11.03.2005

Midnight depth : 1396 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.15 sg

Stop time	Description
01:00	Reamed from 1140 m to 1204 m and logged coring interval.
03:00	Drilled 8 1/2" hole from 1204 m to 1222 m.
03:30	Recorded Slow Circulating Rate up annulus.
11:00	Drilled 8 1/2" hole from 1222 m to 1293 m.
12:00	Lost MWD signals. Attempted several times to restart MWD without success.
12:30	Prepared to pull out of hole. Circulated hole, observed 5 bar pressure increase, MWD start pulsing.
23:59	Drilled 8 1/2" hole from 1293 m to 1396 m.

Daily report no : 56 **Date:** 12.03.2005

Midnight depth : 1428 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.15 sg

Stop time	Description
05:00	Drilled 8 1/2" hole from 1396 m to 1425 m.
07:00	Resat MWD and drilled 8 1/2" hole from 1425 m to 1428 m.
07:30	Circulated the hole clean.
16:00	Pumped out of hole from 1428 m to 1124 m. Continued pull out of hole to 250 m. Flowchecked at the shoe and BOP.
17:30	Continued to pull out of hole and racked back 8 1/2" BHA.
18:00	Cleaned the rig floor.
20:30	Made up 3 stands 5" HWDP with jet sub below and ran in hole with same. Made up BOP test tool.
22:30	Ran in the hole with BOP test string. Washed the BOP and wellhead area on the way in. Landed off BOP test tool in the BOP.
23:59	Performed BOP pressure test.

Daily report no : 57 **Date:** 13.03.2005

Midnight depth : 1428 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
06:00	Pressure tested the BOP on blue pod (35/345 bar, 5/10 min) and function tested on yellow pod.
10:00	Pulled out of hole with the BOP test tool.
13:00	Rigged up and pressure tested kelly hose and IBOP.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 57 **Date:** 13.03.2005

Midnight depth : 1428 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
14:00	Made up 8 1/2" bottom hole assembly.
15:00	Changed out bursted hydraulic hose on link assembly for top drive.
18:00	Continued make up 8 1/2" bottom hole assembly.
18:30	Surface tested the MWD tool.
23:30	Ran in hole with 8 1/2" bottom hole assembly on 5" drill pipe to 366 m.
23:59	Attempted to flush kill and choke lines, pressured up to 180 bar without success.

Daily report no : 58 **Date:** 14.03.2005

Midnight depth : 1429 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
03:30	Attempted to defrost kill and choke lines by adding glycol and alternating pressure up kill and choke lines to 100 bar. At the same time heated lines in the moon pool area.
07:00	Slipped and cut drill line.
13:00	Continued to defrost kill and choke lines by adding glycol and alternating pressure up kill and choke lines. At the same time heated choke and kill surface lines . Both ice plugs melted at 12:50 hrs. Flushed kill and choke lines with 10 m3 mud each.
16:00	Ran in hole with 8 1/2" bottom hole assembly from 366 m to 875 m.
16:30	Changed dies in the iron roughneck.
17:30	Ran in hole with 8 1/2" bottom hole assembly from 875 m to shoe at 1124 m.
18:00	Filled the string and circulated andconditioned mud.
18:30	Ran in hole from 1120 m to 1193 m, worked tight spots on the way in. Took 9 ton weight at 1193 m.
23:30	Established reaming parameters and reamed down from 1193 m to TD at 1428 m had no fill on bottom.
23:59	Drilled in bit.

Daily report no : 59 **Date:** 15.03.2005

Midnight depth : 1429 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
11:00	Drilled 8 1/2" hole from 1429 m to 1519 m. Observed mud loss to the formation.
11:30	Circulated the hole clean.
12:00	Flowchecked the well for 15 min, observed no static loss. Pumped with 500 lpm, lost 1,3 m3 to the formation whitch is equivalent to 130 lpm. Redused flowrate to 300 lpm, the loss rate remained the same.
12:30	Performed dynamic flowcheck by boosting riser with 1000 lpm, well was stable.
13:30	Increased flowrate to 1700 lpm and prepared to start drilling, observed 59 bar pressure compared to 81 bar from previous off bottom pressure. Took slow circulation rate and compared with previous slow circulation rate. Had same equivalent pressure loss.
14:00	Circulated and conditioned mud, the pump pressure was very fluctuating. Found air bubbles in the drilling fluid. Put 2 precharge pumps to mud pumps and the pressure stabilized.
17:30	Drilled 8 1/2" hole from 1519 m to 1537 m.
18:30	Circulated and conditioned the mud due to air bobbles.
19:00	Drilled to 1540 m (TD of the well) in order to be able to break connection.
20:00	Circulated the hole clean.
20:30	Pumped out off hole to 1450 m. Lost power to the drilling switchboard.
21:30	Had black out on one main generator.
23:59	Pumped out off hole from 1540 m to 1134 m.

Daily report no : 60 **Date:** 16.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
06:30	Flowchecked at the shoe and pulled out off hole with 8 1/2" bottom hole assembly. Racked back same in derrick.
07:00	Dumped MWD data.
07:30	Cleaned the rig floor and prepared for wireline logging.
08:00	Rigged up wireline surface equipment and logging string.
09:30	Ran in hole with FMI-DSI to shoe at 1124 m.
11:30	Logged down to TD with FMI-DSI.
13:00	Logged up to shoe with FMI-DSI.
14:00	Pulled out of hole with the logging tools.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 60 **Date:** 16.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
15:00	Rigged down FMI-DSI logging tools.
17:30	Rigged up SP-AIT-PEX logging tools.
18:00	Ran in hole with SP-AIT-PEX logging tools.
19:00	Ran in hole with SP-AIT-PEX logging tools.
20:30	Correlated logging tools and logged up to shoe with SP-AIT-PEX.
21:00	Logged repeat section to 1220 m.
21:30	Ran in hole to TD.
22:00	Logged up to shoe with SP-AIT-PEX.
23:30	Pulled out with the logging tools to surface.

Daily report no : 61 **Date:** 17.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
01:30	Rigged down logging tool..
04:00	Rigged up and tested UBI-GPIT logging tools.
05:00	Ran in hole with UBI-GPIT logging tools to the 9 5/8" casing shoe.
06:00	Lost tention on tool string while running in hole. Most likely caused by not having sufficient weight on the tool string. Pulled out off hole with logging tools.
07:30	Adjusted top bow spring. Installed HNGS to give extra weight on the logging tool string.
08:00	Ran in hole to the shoe at 1124 m.
08:30	Continued to run in hole to 1534 m.
11:00	Logged up 1464 m. Experienced stick slip while logging with 400 ft/hr. Ran in hole to 1534 m and logged up to the shoe with 800 ft/hr.
11:30	Ran in hole to 1225 m and performed repeat log with 400 ft/hr, observed stick slip. Stopped logging and ran up to top reservoir at 1135 m.
12:00	Attempted to log down with 400 ft/hr. Stopped logging at 1166 m, due to to much stick slip.
14:00	Pulled out off the hole and rigged down logging equipment.
15:00	Rigged up a new logging tool string, CMR-HNGS.
16:00	Ran in hole to shoe with CMR-HNGS logging tools.
17:00	Ran in hole to 1534 m.
18:00	Logged up to 1477 m. Negative tuning up to 1478 m.
18:30	Waited on request from shore about parameters.
22:00	Logged up from 1534 m to shoe at 1124 m.
22:30	Ran in hole to 1534 m and start correlation log.
23:59	Logged up to 1465 m.

Daily report no : 62 **Date:** 18.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.14 sg

Stop time	Description
02:30	Logged up with CMR-HNGS logs from 1465 m to 1170 m.
03:00	Pulled out off hole with logging tools.
04:30	Rigged down logging string.
07:30	Rigged up logging string for MDT logging.
08:00	Ran in hole with MDT logging tools to shoe at 1124 m.
08:30	Ran in hole with MDT logging tools to TD at 1540 m.
23:59	Performed formation tests according to program.

Daily report no : 63 **Date:** 19.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.15 sg

Stop time	Description
10:30	Performed pressure points readings and recovered fluid samples.
11:00	Pulled out of hole with MDT logging tools due to packer falure.
13:00	Rigged down sample chambers.
15:30	Rigged up MDT logging tools.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 63 **Date:** 19.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.15 sg

Stop time	Description
16:30	Tested tool and ran in hole to 1235 m.
23:59	Performed pressure points readings and recovered fluid samples.

Daily report no : 64 **Date:** 20.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.15 sg

Stop time	Description
05:30	Performed pressure points readings and recovered fluid samples.
06:30	Pulled out of hole with logging string.
08:00	Rigged down MDT logging tools.
10:30	Rigged up and tested VSP survey tools.
12:00	Ran in hole with VSP survey tools.
14:30	Correlated tools and performed VSP surveys.
15:00	Pulled out off hole with VSP survey tools.
18:30	Made up mechanical sidewall coring tool, MSCT.
19:00	Ran in hole with MSCT tool to the casing shoe at 1124 m.
23:30	Performed 36 sidewall cores.
23:59	Pulled out off hole with MSCT.

Daily report no : 65 **Date:** 21.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.15 sg

Stop time	Description
03:00	Tested the tool on surface. Found stuck core inside the fill up tube. Removed stuck core and replaced the bit. Tested MSCT tool on surface.
03:30	Ran in hole with MSCT tool.
06:30	Performed 16 sidewall cores.
07:00	Pulled out off hole with the MSCT tool.
09:30	Rigged down MSCT tools and cleaned the rig floor.
14:30	Picked up and made up 27 joints 3 1/2" cement stinger while running in hole to 260 m.
19:00	Changed to 5 1/2" drill pipe handling equipment and ran in hole with 3 1/2" x 5 1/2" drillpipe to 1538 m.
19:30	Broke circulation and circulated with 1000 lpm.
23:59	Closed upper annular. Established injection rate in step to 2000 lpm with 75 bar pump pressure. Injected slops, slurry, drillplex water based mud and sea water. Injected a total off 440 m3

Daily report no : 66 **Date:** 22.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
05:00	Continued injecting with 1600 - 2500 lpm with 60 - 85 bar pump pressure. Injected slurry, driplex mud and sea water into formation. Injected a total off 580 m3.
10:00	Continued injecting with 2000 lpm with 70 - 85 bar pump pressure. Injected slurry, driplex mud and wash water into formation. Injected a total of 296 m3.
10:30	Flowchecked, the well was static.
12:00	Made up cement joint and set a cement plug from 1540 m to 1347 m. Broke out the cement joint and pulled up slowly to 1347 m. Estimated top of cement is 1347 m.
16:00	Made up cement joint and set a cement plug from 1347 m to 1199 m. Broke out cement joint and pulled out slowly to 1199 m. Estimated top of cement is 1199 m.
19:00	Made up cement joint and set a cement plug from 1199 m to 1024 m. Broke out cement joint and pulled out slowly to 900 m. Estimated top of cement is 1024m.
20:00	Installed 2 sponge balls, made up top drive and pumped down one string volum.
23:00	Pulled out of hole with cement stinger.
23:59	Made up 8 1/2" bit and ran in hole to 86 m.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 67 **Date:** 23.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
02:30	Ran in hole 8 1/2" bottom hole assembly to 977 m.
06:30	Waited on cement.
09:00	Ran in hole to test the cement. Took up to 4 ton max weight over the interval 1025-1033 m. Continued run in to 1044 m, without taking weight. Pulled out to 1020 m, and circulated and conditioned the hole.
10:30	Racked back one stand drill pipe and installed cementing single. Hooked up cement pump and attempted to pressure test cement plug. The pressure leaked off at 32 bar.
13:30	Re-torqued bolts on the compensator in the crown, that had been found to be loose during previous routine inspection.
14:00	Laid out cement single and ran in to 1074 m. Saw no indications of cement while running in.
16:30	Pulled out and racked back the 8 1/2" string in the derrick.
19:00	Ran in hole with cementing string. Installed side entry sub and rigged up for cementing. Placed the string at 1073 m. Had tool box talk on the rig floor and tested lines 200 bar.
20:00	Set a ballanced cement plug from 1073 m to 923 m.
23:30	Pulled out to 850 m. Dropped a drill pipe dart and pumped one drill pipe volume of mud. Pulled and racked back the cementing string in the derrick. Cleared drill floor. Had tool box talk.
23:59	Picked up and racked back casing cutting equipment in the derrick.

Daily report no : 68 **Date:** 24.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
05:00	Waited on cement. Picked up and racked back casing cutting and retrieving assemblies and 4 stands 8" drill collars in the derrick.
07:30	Ran in hole with 8 1/2" bit to 920 m to load test the cement plug.
09:00	Waited on cement. Greased blocks and carried out preventive mainenance.
09:30	Ran in hole from 920 m to 935 m, attempted to tag the cement plug without success. Pulled out of the hole from 935 m to 862 m. Broke circulation and pumped through the string.
12:00	Waited on cement.
15:00	Ran in hole and load tested the cement plug with 10 ton at 965 m. Pulled out of the hole. Laid out 3 stands 6 3/4" drill collars, jars and bit.
15:30	Tested the cement plug against the shear ram to 170 bar for 10 minutes.
19:30	Ran in hole with wear bushing retrieving tool. Washed the BOP and well head area and attached to the wear bushing. Pulled free with 25 ton over pull. The wear bushing hung up at the upper annular preventer on the way out, worked wear bushing through. Pulled and retrieved the wear bushing and laid out wear bushing retrieving tool..
23:59	Made up and ran 9 5/8" casing cutter assembly. Closed upper annular preventer and cut the casing at 540 m. Checked for pressure, opened upper annular preventer and flow checked. Pulled out with the casing cutting assembly to the rig floor.

Daily report no : 69 **Date:** 25.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
01:00	Cleared rig floor and installed PS30 slips.
03:00	Ran in hole with 9 5/8" casing spear assembly. Landed spear in the 9 5/8" casing, closed the annular preventer and pulled the casing free applying 30 ton over pull.
04:00	Circulated bottom up through the choke. Opened the the annular and flow checked.
08:00	Pulled free and laid down 11 joints 9 5/8" casing.
11:30	Made up 13 3/8" mechanical plug, and ran in hole. Dropped the ball and set the packer at 537 m. While pressure testing the packer the pressure dropped at 100 bar. An attempt to retest the packer failed. Suspected a leak between 13 3/8"/20" seal assembly. Ran back in and set down 8 ton on packer at 537 m.
14:00	Pulled out above the BOP, closed the shear ram and attempted to test the packer without success. Pulled out and laid down the setting tool.
16:30	Picked up and ran in hole with 13 3/8" cutting assembly. Landed in well head, closed upper annular preventer and cut 13 3/8" casing at 456 m. Checked for pressure, opened the upper annular preventer and flow checked.
18:00	Pulled out and laid out 13 3/8" cutter assembly and 9 5/8" spear.
21:00	Picked up and ran in hole with 13 3/8" spear. Landed in the well head, closed the annular and pulled the casing free with 45 ton over-pull. Checked for pressure, opened upper annular preventer and flow checked.
23:59	Pulled 13 3/8" casing to surface.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 70 **Date:** 26.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
03:00	Retrieved and laid down 5 joints 13 3/8" casing and hanger. Rigged down casing handling equipment.
05:00	Ran in hole with 3 1/2" slotted cement mule shoe on 5 1/2" drill pipe from surface to top of the retainer.
07:00	Displaced kill, choke, booster line and riser to sea water.
08:00	Rigged up to cement. Had tool box talk. Tested cement lines 200 bar.
09:00	Set a top cement plug from 540 m to 418 m.
09:30	Pulled out of the cement to 402 m and circulated one pipe volume at 2500 lpm.
12:00	Pulled out of hole with the cement stinger to surface while washing the BOP and riser. Laid out the cementing stinger.
14:30	Laid down marine swivel and cementing assembly. Cleared and cleaned rig floor.
19:30	Had tool box talk. Installed diverter running tool. Pulled and laid down the diverter.
22:30	Picked up riser handling tool and landing joint and made up to inner barrel. Collapsed the inner barrel and disconnected the BOP. Moved the rig 40 m off location.
23:59	Positioned the tension ring to connect safety slings and lowered to working height. Commenced the removal of the goose necks.

Daily report no : 71 **Date:** 27.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
04:00	Continued retrieving riser and BOP. Adjusted clock forward, 0200-0300, due to start of 'summer time'.
06:00	Latched tension ring into divider housing and released same from the slip joint.
06:30	Laid out the landing joint and slip joint.
12:30	Pulled the riser and BOP from 343 m to 68 m. Changed gantry crane hooks and continued to pull riser and BOP from 68 m to 46 m.
14:30	Pulled out and landed BOP on the carrier. Disconnected double of riser and pulled clear. Tied up MUX cable to BOP stump and skidded the BOP towards park position. Laid down double of riser.
18:00	Rigged down riser equipment.
22:00	Waited on weather to pull anchors.
22:30	Waited on weather to pull anchors.
23:59	Waited on weather to pull anchors.

Daily report no : 72 **Date:** 28.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
03:00	Waited on weather to pull anchors.
05:30	Waited on weather to pull anchors.
08:30	Waited on weather to pull anchors.
09:00	Waited on weather to pull anchors.
16:00	Waited on weather to pull anchors.
19:00	Anchor handling.
20:00	Anchor handling.
21:00	Anchor handling.
23:00	Anchor handling.
23:59	Anchor handling.

Daily report no : 73 **Date:** 29.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
03:30	Anchor handling.
06:00	Anchor handling.
09:30	Anchor handling.
11:30	Anchor handling.
13:30	Anchor handling.
15:00	Attempted to pull well head. Tool came off well head at 185 ton overpull. Latched back on to well head. Pulled casing free at 210 ton overpull. The shock when the well head came loose caused the bulls eye clamp to come free of the well head, and caused damage to top drive hydraulic systems.
16:00	Laid out 3 singles to allow for repair of the top drive hydraulics.

DAILY REPORT

Well: 7220/6-1 **PO:** 1

Daily report no : 73 **Date:** 29.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
23:00	Repaired top drive fittings and checked for further damage. Changed out the main hydraulic hoses on the top drive. Changed out damaged top drive lube oil pump motor.
23:30	Picked up 1 stand drill pipe and stabbed back into the well head.
23:59	Engaged MOST tool and started to lock tool to well head using ROV.

Daily report no : 74 **Date:** 30.03.2005

Midnight depth : 1540 m MD **Estimated PP:** 1.05 sg **Mud weight:** 1.20 sg

Stop time	Description
02:30	The ROV arm malfunctioned. Pulled out for repaired and ran back with the ROV.
06:00	Locked the MOST tool to the well head and pulled it out of the sea floor at 03:20 hrs. Continued pulling the cut off well head to surface. Rig 500 m off location at 05:45 hrs. End of Obelix 30/3-2005 at 05:45 hrs. Rig transferred to Statoil.
06:30	
07:00	

TIME DISTRIBUTION

Well: 7220/6-1 **PO:** 1 **Rig:** EIRIK RAUDE **Depth:** 1540.0 **m MD**

All sections

Operations	Hours	%	Hours	%	Acc. total
MOBILIZATION					
MOVING	2.0	0.11			
MOORING; RUNNING ANCHORS	21.5	1.23			
MOORING; PULLING ANCHORS	21.5	1.23			
Sum.			45.0	2.58	45.0
DRILLING					
BHA HANDLING/TESTING	54.5	3.12			
EQUIPMENT TEST	7.5	0.43			
MWD HANDLING/TESTING/SURVEYING	1.0	0.06			
TRIPPING IN CASED HOLE	36.5	2.09			
TRIPPING IN OPEN HOLE	33.0	1.89			
DRILLING	143.0	8.18			
OTHER	18.5	1.06			
WELLHEAD EQUIPMENT INSTALLATION	3.0	0.17			
REAMING	5.0	0.29			
CIRC. AND COND. MUD/HOLE	78.5	4.49			
WIPER TRIP	9.0	0.52			
SURVEYING	2.5	0.14			
CASING HANDLING/TESTING	42.0	2.40			
RUNNING CASING IN CASED HOLE	7.5	0.43			
RUNNING CASING IN OPEN HOLE	17.5	1.00			
DRILLING OUT OF CASING	3.0	0.17			
PRIMARY CEMENTING	29.5	1.69			
TRIPPING FOR CEMENT JOB	5.0	0.29			
DRILLING OUT CEMENT PLUG	10.5	0.60			
FORMATION STRENGTH TESTING	4.5	0.26			
BOP HANDLING	50.5	2.89			
BOP RUNNING/RETRIEVING	2.5	0.14			
BOP TESTING	32.0	1.83			
WELLHEAD EQUIPMENT HANDLING	7.0	0.40			
RIG MAINTENANCE	2.0	0.11			
SLIP AND CUT DRILLING LINE	3.5	0.20			
Sum.			609.0	34.85	654.0
FORMATION EVALUATION MWD					
LOGGING WITH MWD	1.0	0.06			
Sum.			1.0	0.06	655.0
FORMATION EVALUATION LOGGING					
LOGGING	29.5	1.69			
LOGGING EQUIPMENT HANDLING/TESTING	40.0	2.29			
FORMATION TESTER	49.0	2.80			
SIDEWALL CORING	7.5	0.43			
TRIPPING IN CASED HOLE	23.0	1.32			
TRIPPING IN OPEN HOLE	4.5	0.26			
VERTICAL SEISMIC	2.5	0.14			
OTHER	4.5	0.26			
Sum.			160.5	9.18	815.5
FORMATION EVALUATION CORING					
BHA HANDLING/TESTING	18.0	1.03			
TRIPPING IN CASED HOLE	42.0	2.40			
CORING EQUIPMENT/CORE HANDLING	14.0	0.80			

TIME DISTRIBUTION

Well: 7220/6-1 **PO:** 1 **Rig:** EIRIK RAUDE **Depth:** 1540.0 **m MD**

All sections

Operations	Hours	%	Hours	%	Acc. total
FORMATION EVALUATION CORING					
TRIPPING IN OPEN HOLE	7.5	0.43			
OTHER	5.5	0.31			
CORING	19.5	1.12			
CIRC. AND COND. MUD/HOLE	7.0	0.40			
Sum.			113.5	6.49	929.0
PLUG AND ABANDONMENT					
OTHER	45.0	2.58			
CIRC. AND COND. MUD/HOLE	9.5	0.54			
TRIPPING FOR CEMENT JOB	18.0	1.03			
BOP RUNNING/RETRIEVING	27.5	1.57			
SET CEMENT PLUG	10.5	0.60			
SET/RELEASE MECHANICAL PLUG	6.0	0.34			
TRIPPING OF CASING CUTTING EQUIPMENT	0.5	0.03			
CUT CASING/WELLHEAD	5.0	0.29			
CASING RETRIEVING	21.5	1.23			
Sum.			143.5	8.21	1072.5
DOWNTIME MOBILIZATION					
WAITING	48.0	2.75			
OTHER	17.5	1.00			
Sum.			65.5	3.75	1138.0
DOWNTIME DRILLING					
EQUIPMENT FAILURE AND REPAIR	170.5	9.76			
WAITING	262.0	14.99			
CEMENTING	8.5	0.49			
FISHING	30.5	1.75			
OTHER	68.0	3.89			
Sum.			539.5	30.87	1677.5
DOWNTIME FORM. EVAL. LOGGING					
EQUIPMENT FAILURE AND REPAIR	4.0	0.23			
Sum.			4.0	0.23	1681.5
DOWNTIME FORM. EVAL. CORING					
EQUIPMENT FAILURE AND REPAIR	12.0	0.69			
OTHER	6.5	0.37			
Sum.			18.5	1.06	1700.0
DOWNTIME PLUG AND ABANDONMENT					
EQUIPMENT FAILURE AND REPAIR	14.0	0.80			
WAITING	22.0	1.26			
CEMENTING	1.0	0.06			
OTHER	10.5	0.60			
Sum.			47.5	2.72	1747.5
Reported time (100.0 % of well total 1747.5 hours) :					1747.5

DOWNTIME REPORT All installations

Installation: ER **Well:** 7220/6-1 **PO:** 1

Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
10.01.2005	4	48.0	Waiting on weather					RIG MOVE/SKIDDI				
19.01.2005	1	17.5	Other	OCEAN RIG ASA		Anchors slipped during pretention to 220 ton. Changed flute angle on two anchors. Reset and tension tested all anchors 240 ton.		RIG MOVE/SKIDDI				
20.01.2005	2	2.0	Equipment failure	BAKER HUGHES INTEQ	BAKER HUGHES INTEQ	Had MWD decoding problems. Contacted Baker onshore and had software sent out to fix problem.	SERVICE EQUIPMENT/SYS	DRILLING	MWD/LWD	374.15	Other logging equipment	
20.01.2005	3	20.0	Other	OCEAN RIG ASA		After connection the string was found to have come apart 3 m above the sea floor. This was observed by the ROV. String was retrieved and the 19 m fish was was retrieved.		DRILLING				
21.01.2005	3.1	15.5	Other	NORSK HYDRO A/S		Moved the rig and drilled new 9 7/8" pilot hole		DRILLING				
21.01.2005	5	5.0	Equipment failure	OCEAN RIG ASA	HYDRALIFT	Iron roughneck failed.	PIPE HANDLING EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTOI	342.00	Drillfloor Tubular Handling	
22.01.2005	6	2.5	Equipment failure	OCEAN RIG ASA	HYDRALIFT	The iron roughneck had software problems. Repaired same.	DRILL FLOOR EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTOI	317.00	Other Drill Floor Eq./Syst.	
23.01.2005	8	50.0	Other	NORSK HYDRO A/S		Pulled out with 36" BHA due to high angle, drilled 17 1/2" pilot hole to 463 m and opened to 36".		DRILLING				
24.01.2005	8.3	1.0	Waiting for materials/equip	NORSK HYDRO A/S		Waited on a 17 1/2" bit from Polar Pioneer	DRILLSTRING/DO EQUIPMENT	DRILLING	OTHER	355.01	Bit	
25.01.2005	8.1	23.5	Waiting on weather					DRILLING				
28.01.2005	9	6.5	Equipment failure	OCEANEERING A/S	OCEANEERING A/S	Electrical problems with the ROV.	SERVICE EQUIPMENT/SYS	CASING	ROV	375.02	ROV	

DOWNTIME REPORT All installations

Installation: ER **Well:** 7220/6-1 **PO:** 1

Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
29.01.2005	10	0.5	Equipment failure	OCEANEERING A/S	OCEANEERING A/S	Re-terminated the ROV tether.	SERVICE EQUIPMENT/SYS	DRILLING	ROV	375.02	ROV	
30.01.2005	12	48.0	Waiting on weather					CASING				
01.02.2005	13	6.0	Equipment failure	OCEAN RIG ASA	OCEAN RIG ASA	Not able to transfer cement from cement silo C to cement day tank.	MUD AND BULK SYSTEMS	CEMENTING	DRILLING CONTRACTOI	321.00	Bulk Storage/Trans	
03.02.2005	14	1.0	Equipment failure	OCEAN RIG ASA	VARCO BJ OIL TOOLS	Changed out broken cap screws on spider dogs.	PIPE HANDLING EQUIPMENT/SYS	BOP INSTALLATIOI AND TESTING	DRILLING CONTRACTOI	344.00	Slips and Spider	
03.02.2005	15	66.5	Waiting on weather					BOP INSTALLATIOI AND TESTING				
07.02.2005	16	1.0	Equipment failure	BAKER HUGHES INTEQ	BAKER HUGHES INTEQ	Damaged threads on MWD tool.	SERVICE EQUIPMENT/SYS	DRILLING	MWD/LWD	372.19	Surface data read out equipment	
07.02.2005	17	1.0	Equipment failure	OCEAN RIG ASA	VETCO AIBEL AS	Malfunction on valve for the diverter.	WELLCONTROL EQUIPMENT/SYS	DRILLING	DRILLING FLUID	334.00	Diverter w/ Control System	
08.02.2005	18	103.0	Equipment failure	OCEAN RIG ASA	CAMERON NORGE	Leakage on shear ram unlock shuttle.	WELLCONTROL EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTOI	331.00	BOP Stack	
10.02.2005	19	8.5	Other	OCEAN RIG ASA		Blocked cement hose caused by hard/old cement.		CEMENTING				
15.02.2005	20	7.5	Equipment failure	OCEAN RIG ASA	OILTOOLS A/S	Repaired Oiltool cutting handling equipment.	SERVICE EQUIPMENT/SYS	DRILLING	CUTTINGS REMOVAL SYSTEM	370.00	Other Service Equipment/Sy	

DOWNTIME REPORT All installations

Installation: ER **Well:** 7220/6-1 **PO:** 1

Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
16.02.2005	21	3.5	Equipment failure	OCEAN RIG ASA	OCEAN RIG ASA	The Upper Slip Joint Packer is energized by air pressure through a hose. The Lower Slip Joint Packer can be energized by air pressure or by BOP Fluid as required, also through a hose from the rig. Both Hoses was found to have come apart out in the Moon Pool at the Slip joint Packer. This caused the Packer to leak a total of 4 m3 mud.	MISCELLANEOUS EQUIPMENT/SYS	DRILLING	RIG UTILITIES	380.00	Miscellaneous equipment, systems and services	
16.02.2005	21.1	46.0	Waiting on weather					DRILLING				
18.02.2005	21.2	84.5	Other	OCEAN RIG ASA				DRILLING				
24.02.2005	24	1.5	Other	DRIL-QUIP		The retrieval of the well head wear bushing failed at first attempt. The well head was jetted again, and the wear bushing was successfully retrieved.		WELLHEAD AND GUIDEBASE OPERATIONS				
25.02.2005	25	1.5	Equipment failure	SCHLUMBERGI CEMENT	BJ SERVICES	During pressure testing of cementing rig-up, a leak was traced back to a valve on the Dowell cement unit.	SERVICE EQUIPMENT/SYS	CEMENTING	CEMENTING	371.01	Cement: Unit/pipe	
26.02.2005	26	0.5	Equipment failure	OCEAN RIG ASA	HYDRALIFT	Repaired hydraulic leak on Iron Roughneck.	DRILL FLOOR EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTOI	317.00	Other Drill Floor Eq./Syst.	

DOWNTIME REPORT All installations

Installation: ER **Well:** 7220/6-1 **PO:** 1

Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
01.03.2005	27	0.5	Equipment failure	OCEAN RIG ASA	OCEAN RIG ASA	Had increase in trip tank while drilling. Picked off bottom, functioned shaker, trip tank valves several times. Located mud seeping from diverter into trip tank.	DRILL FLOOR EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTOI	317.00	Other Drill Floor Eq./Syst.	
02.03.2005	29	0.5	Equipment failure	OCEAN RIG ASA	HYDRALIFT	Repaired mud bucket drain hose	DRILL FLOOR EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTOI	317.00	Other Drill Floor Eq./Syst.	
02.03.2005	28	1.0	Equipment failure	OCEAN RIG ASA	HYDRALIFT	Repaired upper gripper head	PIPE HANDLING EQUIPMENT/SYS	DRILLING	DRILLING CONTRACTOI	342.00	Drillfloor Tubular Handling	
02.03.2005	31	1.0	Other	OCEAN RIG ASA		Attempted to flush choke and kill. Both frozen up		DRILLING				
03.03.2005	30	1.0	Equipment failure	OCEAN RIG ASA	CONTIENTAL EMSCO	Changed leaking valve on drawwork	HOISTING EQUIPMENT	CORING	DRILLING CONTRACTOI	303.00	Traveling Equipment	
06.03.2005	32	2.0	Equipment failure	SCHLUMBERGI OFFSHORE SERVICES LTD	SCHLUMBERG OFFSHORE SERVICES LTD	Malfunction MDT logging tool.	SERVICE EQUIPMENT/SYS	LOGGING	ELECTRIC LOGGING	374.02	Formation Tester (RFT)	
06.03.2005	33	0.5	Equipment failure	OCEAN RIG ASA	OCEAN RIG ASA	Increase in active volume due to valve leaking. Shut in well.	MUD AND BULK SYSTEMS	LOGGING	DRILLING CONTRACTOI	323.00	Mud Additive System	
07.03.2005	34	1.5	Equipment failure	SCHLUMBERGI OFFSHORE SERVICES LTD	SCHLUMBERG OFFSHORE SERVICES LTD	Not able to collect samples.	SERVICE EQUIPMENT/SYS	LOGGING	ELECTRIC LOGGING	374.02	Formation Tester (RFT)	
08.03.2005	35	2.5	Equipment failure	OCEAN RIG ASA	HYDRALIFT	84 g roller bearing fell down from 4 m. Repaired same	PIPE HANDLING EQUIPMENT/SYS	CORING	DRILLING CONTRACTOI	341.00	Vertical Pipe Handling	
08.03.2005	36	6.5	Other	OCEAN RIG ASA		Ice plug in mud surface system.		CORING				
08.03.2005	37	8.5	Equipment failure	OCEAN RIG ASA	HYDRALIFT	Repaired the Iron roughneck alignment problem.	PIPE HANDLING EQUIPMENT/SYS	CORING	DRILLING CONTRACTOI	342.00	Drillfloor Tubular Handling	
11.03.2005	38	1.5	Equipment failure	BAKER HUGHES INTEQ	BAKER HUGHES INTEQ	Lost MWD signals.	DRILLSTRING/DO EQUIPMENT	DRILLING	MWD/LWD	357.02	MWD/LWD	
12.03.2005	39	13.0	Equipment failure	BAKER HUGHES INTEQ	BAKER HUGHES INTEQ	Disruption in signals from MWD.	DRILLSTRING/DO EQUIPMENT	DRILLING	MWD/LWD	357.02	MWD/LWD	

DOWNTIME REPORT All installations

Installation: ER **Well:** 7220/6-1 **PO:** 1

Startdate	#	Sum hrs	Downtime Type	Responsible Contractor	Manufacturer	Short description	Equipment Type	Activity	Service Type	NSFI Code	NSFI Type	Serial Number
13.03.2005	40	1.0	Equipment failure	OCEAN RIG ASA	MARITIME HYDRAULICS A/S	Hydraulic hose on tilt assembly for top drive bursted.	DRILLSTRING/DO EQUIPMENT	DRILLING	DRILLING CONTRACTOI	357.01	Drillstring Motor	
13.03.2005	41	10.0	Equipment failure	OCEAN RIG ASA	OCEAN RIG ASA	Blocked kill and choke lines most likely caused by frost.	MUD AND BULK SYSTEMS	DRILLING	RIG UTILITIES	325.00	Mud Supply(incl. HP mudpumps)	
14.03.2005	43	0.5	Equipment failure	OCEAN RIG ASA	OCEAN RIG ASA	Changed dies in iron roughneck.	DRILL FLOOR EQUIPMENT/SYS	DRILLING	RIG UTILITIES	317.00	Other Drill Floor Eq./Syst.	
15.03.2005	45	3.0	Other	MI NORGE		Air in mud.		DRILLING				
15.03.2005	44	1.0	Equipment failure	OCEAN RIG ASA	NEBB	Blackout on main generator.	MISCELLANEOUS EQUIPMENT/SYS	DRILLING	RIG UTILITIES	650.00	Rig Power Supply	
23.03.2005	49	11.5	Other	NORSK HYDRO A/S		The cement plug no 3, 1199-1024 m, was attempted tested. The plug did not test. A new plug was set 1073-923 m.		PLUG AND ABANDONMEI				
23.03.2005	48	3.0	Equipment failure	OCEAN RIG ASA	HYDRALIFT	Bolts that had come loose, were discovered during routine inspection. These were re-tighened and secured.	HOISTING EQUIPMENT	PLUG AND ABANDONMEI	DRILLING CONTRACTOI	302.00	Crown Block (w/ Top-Mounted Heave Comp.)	
27.03.2005	50	22.0	Waiting on weather					PLUG AND ABANDONMEI				
29.03.2005	51	11.0	Equipment failure	OCEAN RIG ASA	HYDRALIFT	The top drive jumped when the well head came loose. The shock caused extensive damage to components of the hydraulic system on the top drive.	DRILL FLOOR EQUIPMENT/SYS	PLUG AND ABANDONMEI	DRILLING CONTRACTOI	317.00	Other Drill Floor Eq./Syst.	
Sum:		675.0										
Total Sum:		675.0										

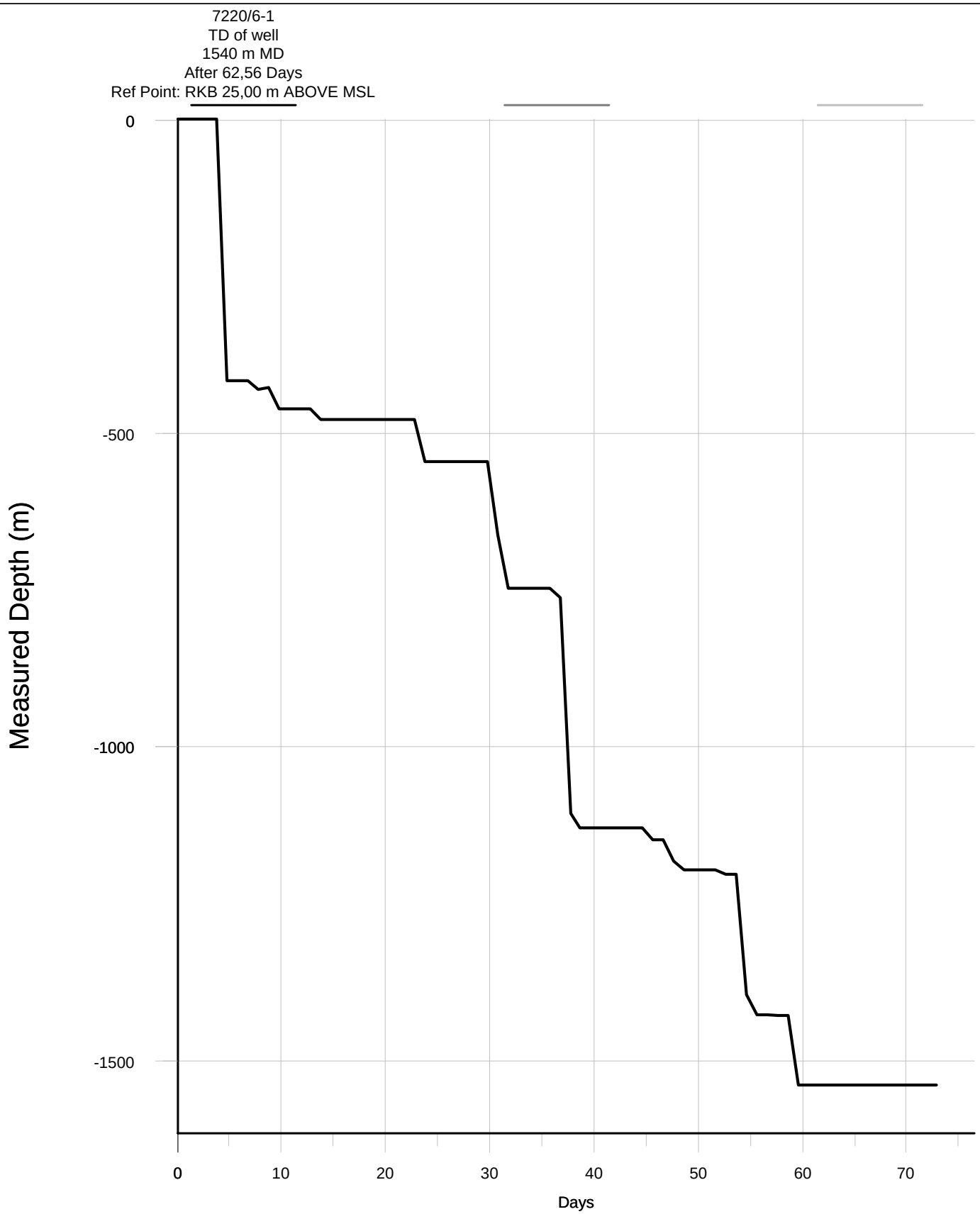


Figure 1		MD Drilling Curve	**HYDRO**

2006-03-29

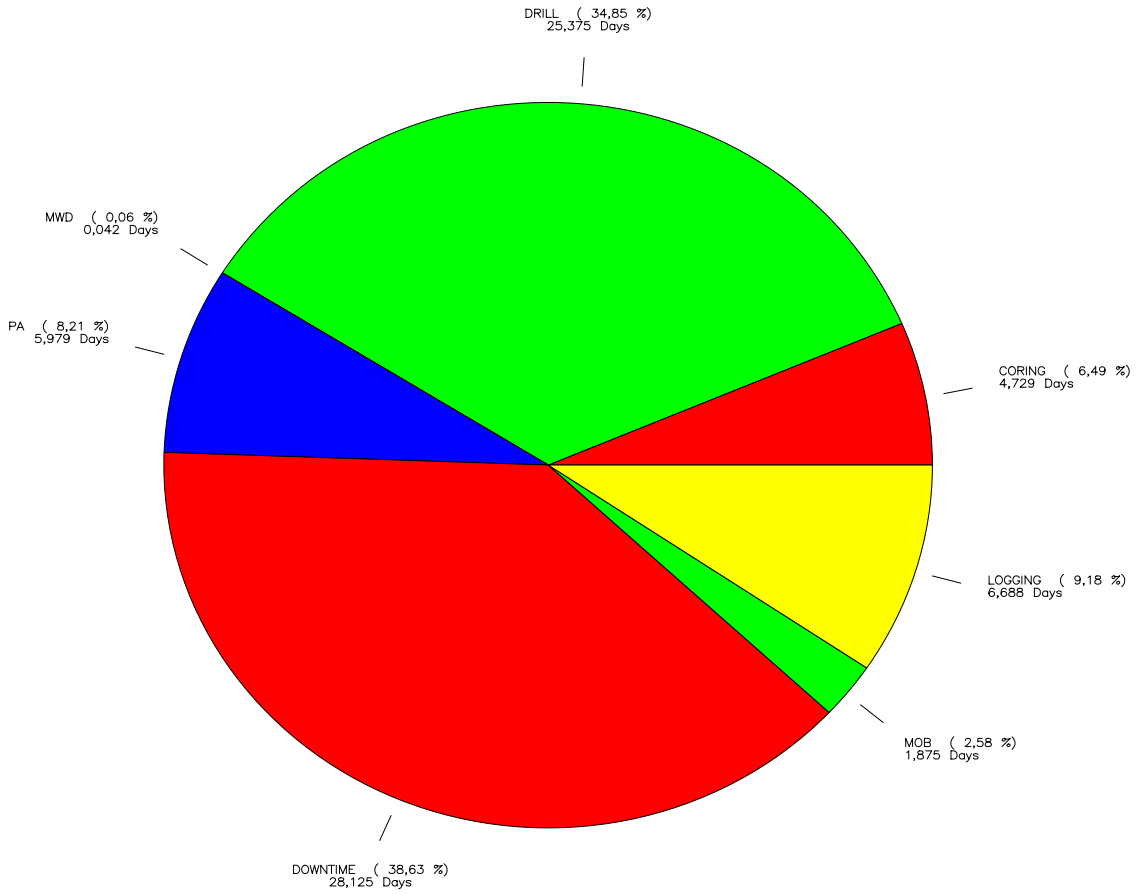


Figure 2		Time Distribution 7220/6-1	**HYDRO**

Norsk Hydro

29.03.2006

HOLE DEVIATION

Well: 7220/6-1 **PO:** 1 **Reference point:** RKB ; 25.0 **m** ABOVE MSL

Waterdepth: 368.5 **m** **Vertical to:** 319.1 **m** **Total Depth:** 1540.0 **m MD**

Utm zone: 34 **Central Median:** 21' E **Horizontal datum:** ED50

Template Centre Coordinates, UTM: **North :** 0.00 **m,** **East :** 0.00 **m**

Wellhead Coordinates, UTM: **North :** 8050890.50 **m,** **East :** 499691.00 **m**

Official Surveys: Y **Track :**

Coordinates are measured from the wellhead centre.

Depth MD [m]	Incli-nation [Deg]	Direc-tion [Deg]	Tool Type	#	Depth TVD [m]	Coordinates North [m]	Coordinates East [m]	Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
393.00	0.00	0.00	MWD	7	393.00	0.00	0.00	0.00	0.00	0.00	0.00
402.20	0.69	274.45	MWD	7	402.20	0.00	-0.06	0.06	2.25	2.25	-278.97
412.10	0.56	241.13	MWD	7	412.10	-0.01	-0.16	0.16	1.15	-0.39	-100.97
419.80	0.60	173.53	MWD	7	419.80	-0.07	-0.19	0.20	2.52	0.16	-263.38
430.90	1.11	181.95	MWD	7	430.90	-0.24	-0.18	0.30	1.42	1.38	22.76
446.30	1.37	180.25	MWD	7	446.29	-0.57	-0.19	0.60	0.51	0.51	-3.31
499.70	1.24	168.12	MWD	7	499.68	-1.77	-0.07	1.78	0.17	-0.07	-6.81
520.90	1.16	159.92	MWD	7	520.88	-2.20	0.05	2.20	0.27	-0.11	-11.60
552.90	1.09	160.94	MWD	7	552.87	-2.79	0.26	2.80	0.07	-0.07	0.96
581.00	1.03	158.63	MWD	7	580.96	-3.28	0.44	3.31	0.08	-0.06	-2.47
610.00	0.96	155.00	MWD	7	609.96	-3.74	0.64	3.80	0.10	-0.07	-3.76
638.50	0.84	155.08	MWD	7	638.46	-4.15	0.83	4.23	0.13	-0.13	0.08
667.10	0.76	152.02	MWD	7	667.05	-4.51	1.00	4.62	0.09	-0.08	-3.21
695.00	0.71	147.22	MWD	7	694.95	-4.82	1.18	4.96	0.08	-0.05	-5.16
724.00	0.67	145.14	MWD	7	723.95	-5.11	1.38	5.29	0.05	-0.04	-2.15
754.60	0.53	135.88	MWD	7	754.55	-5.35	1.58	5.58	0.17	-0.14	-9.08
783.10	0.46	129.59	MWD	7	783.05	-5.52	1.76	5.79	0.09	-0.07	-6.62
810.10	0.37	125.58	MWD	7	810.05	-5.64	1.91	5.96	0.10	-0.10	-4.46
839.40	0.33	114.82	MWD	7	839.35	-5.73	2.07	6.09	0.08	-0.04	-11.02
870.00	0.26	105.69	MWD	7	869.95	-5.79	2.21	6.20	0.08	-0.07	-8.95
897.10	0.18	117.07	MWD	7	897.04	-5.82	2.31	6.27	0.10	-0.09	12.60
926.10	0.16	129.43	MWD	7	926.04	-5.87	2.38	6.33	0.04	-0.02	12.79
952.24	0.12	128.45	MWD	7	952.18	-5.91	2.43	6.39	0.05	-0.05	-1.12
981.70	0.07	81.91	MWD	7	981.64	-5.93	2.47	6.42	0.09	-0.05	-47.39
1010.70	0.11	64.44	MWD	7	1010.64	-5.91	2.52	6.43	0.05	0.04	-18.07
1039.30	0.18	32.22	MWD	7	1039.24	-5.86	2.56	6.40	0.11	0.07	-33.80
1069.50	0.27	7.75	MWD	7	1069.44	-5.75	2.60	6.31	0.13	0.09	-24.31
1097.50	0.31	355.54	MWD	7	1097.44	-5.61	2.60	6.19	0.08	0.04	-13.08
1106.00	0.36	352.75	MWD	7	1105.94	-5.56	2.60	6.14	0.18	0.18	-9.85
1142.30	0.31	13.60	MWD	7	1142.24	-5.35	2.61	5.95	0.11	-0.04	17.23
1169.10	0.39	26.98	MWD	7	1169.04	-5.20	2.66	5.84	0.13	0.09	14.98
1201.90	0.47	17.34	MWD	7	1201.84	-4.97	2.76	5.69	0.10	0.07	-8.82
1230.70	0.52	11.14	MWD	7	1230.64	-4.73	2.82	5.51	0.08	0.05	-6.46
1258.70	0.42	346.79	MWD	7	1258.64	-4.51	2.82	5.32	0.24	-0.11	-26.09
1286.60	0.45	320.20	MWD	7	1286.54	-4.32	2.72	5.11	0.22	0.03	-28.59
1316.10	0.42	331.57	MWD	7	1316.04	-4.14	2.60	4.89	0.09	-0.03	11.56

Norsk Hydro

29.03.2006

HOLE DEVIATION

Well: 7220/6-1 **PO:** 1 **Reference point:** RKB ; 25.0 **m** ABOVE MSL

Waterdepth: 368.5 **m** **Vertical to:** 319.1 **m** **Total Depth:** 1540.0 **m MD**

Utm zone: 34 **Central Median:** 21' E **Horizontal datum:** ED50

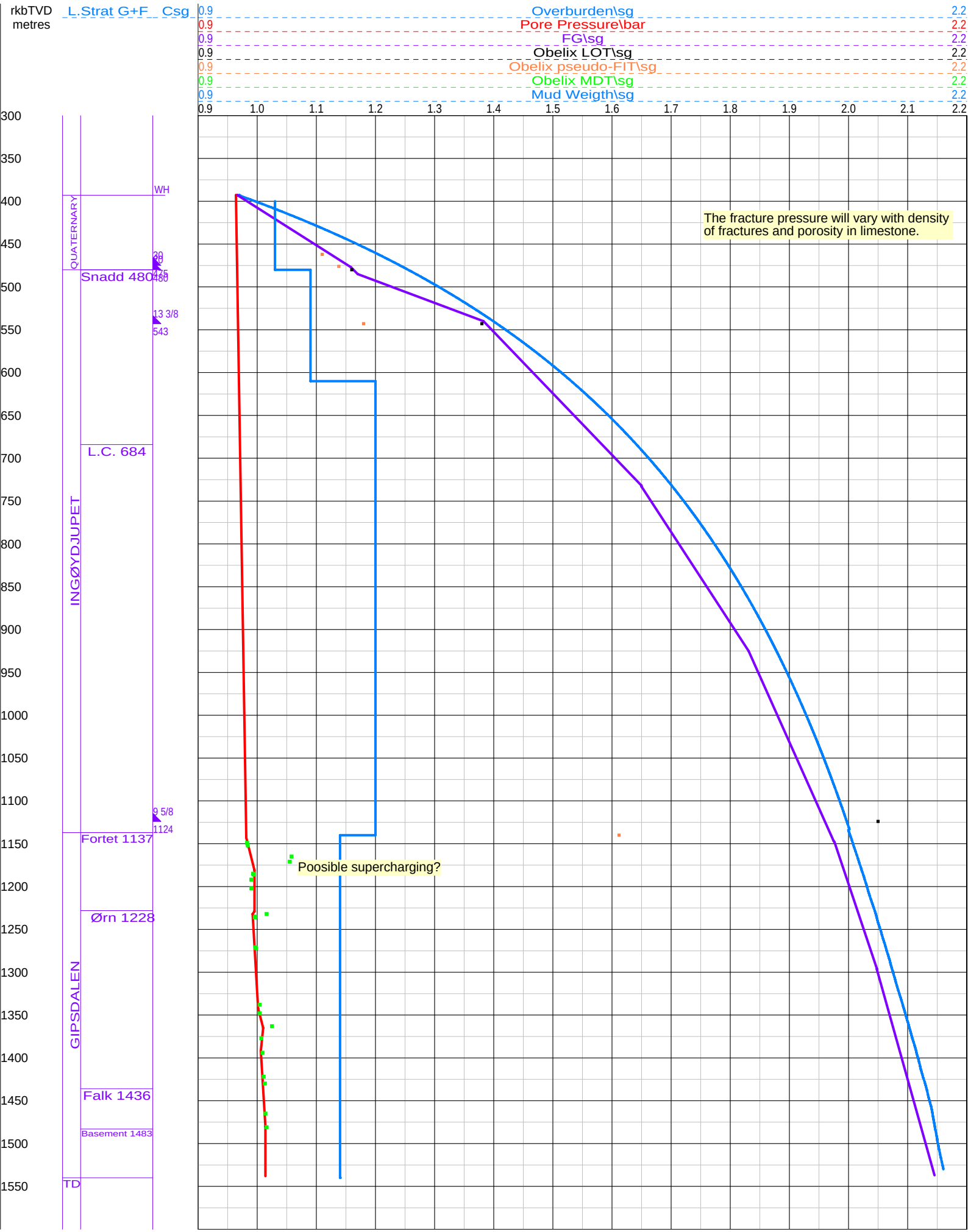
Template Centre Coordinates, UTM: **North :** 0.00 **m,** **East :** 0.00 **m**

Wellhead Coordinates, UTM: **North :** 8050890.50 **m,** **East :** 499691.00 **m**

Official Surveys: Y **Track :**

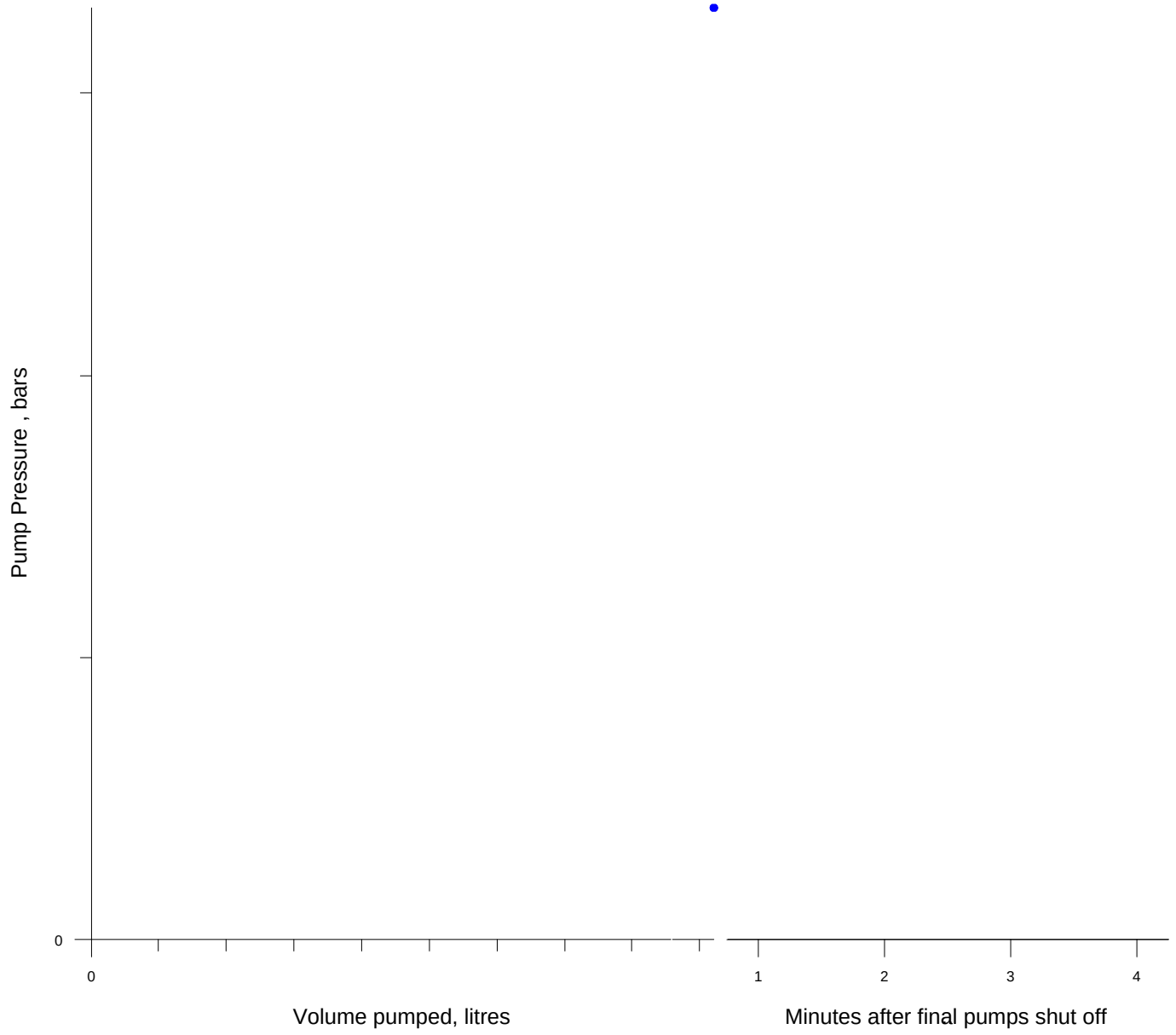
Coordinates are measured from the wellhead centre.

Depth MD [m]	Incli-nation [Deg]	Direc-tion [Deg]	Tool Type	#	Depth TVD [m]	Coordinates North [m]	Coordinates East [m]	Vert. Sect [m]	Dogleg [D/30m]	Build [D/30m]	Turn [D/30m]
1345.00	0.42	315.00	MWD	7	1344.94	-3.97	2.47	4.68	0.13	0.00	-17.20
1370.10	0.41	297.74	MWD	7	1370.04	-3.87	2.33	4.51	0.15	-0.01	-20.63
1398.50	0.50	296.32	MWD	7	1398.44	-3.76	2.13	4.32	0.10	0.10	-1.50
1431.10	0.65	302.94	MWD	7	1431.03	-3.60	1.84	4.04	0.15	0.14	6.09
1460.00	0.78	318.49	MWD	7	1459.93	-3.36	1.58	3.71	0.24	0.13	16.14
1490.20	0.75	308.61	MWD	7	1490.13	-3.09	1.29	3.34	0.13	-0.03	-9.81
1518.80	0.55	315.55	MWD	7	1518.73	-2.87	1.04	3.05	0.22	-0.21	7.28



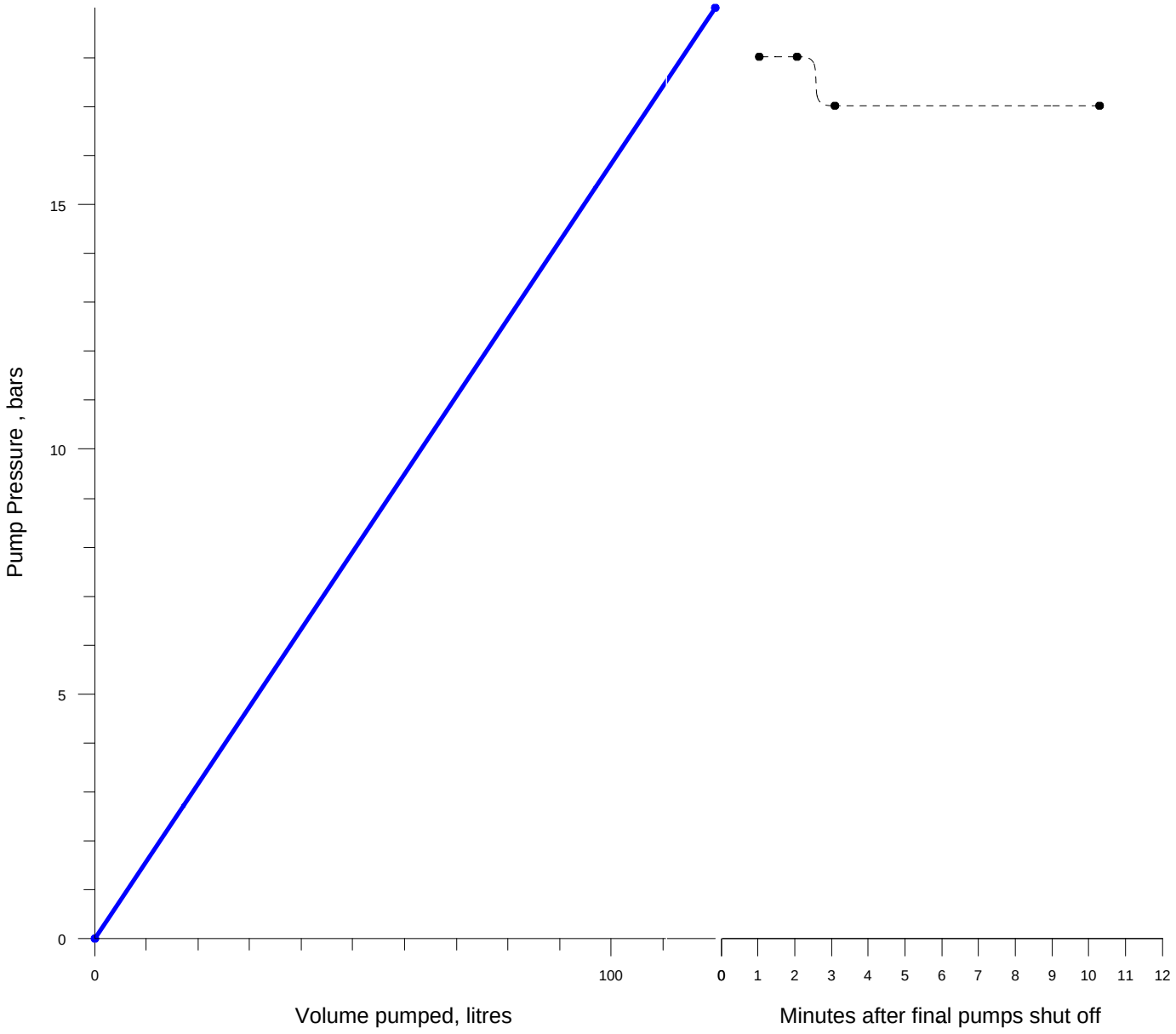
Final Pore Pressure-, Fracture- and Overburden

Well	**7220/6-1**	Test type :	**LOT**	Test date :	2005-02-08
Rig EIRIK RAUDE	Airgap (m) 25,00	Water depth (m)	368,50	CsgOd" 20,000	Hole angle (deg) 1
Csg Shoe (mMD/mTVD)	476,20 / 476,19	OH depth (mMD/mTVD)	482,00 / 481,98	Lithology :	
Dens1,09	API WL(ml/30min) 5,20	PV (cp)	13,00	YP (Pa) 9,00	Gel0/Gel10 / 5,00
Pump Rate (l/min)	5,00	Vol pumped (l.)	92,00	Vol bled back (l.)	65,00
Leakoff Pressure (bar)	3,30	Max pressure (bar)	4,80	Propagation press (bar)	
Test result (sg EMD)	1,15	Shut-in pressure			
Comments					



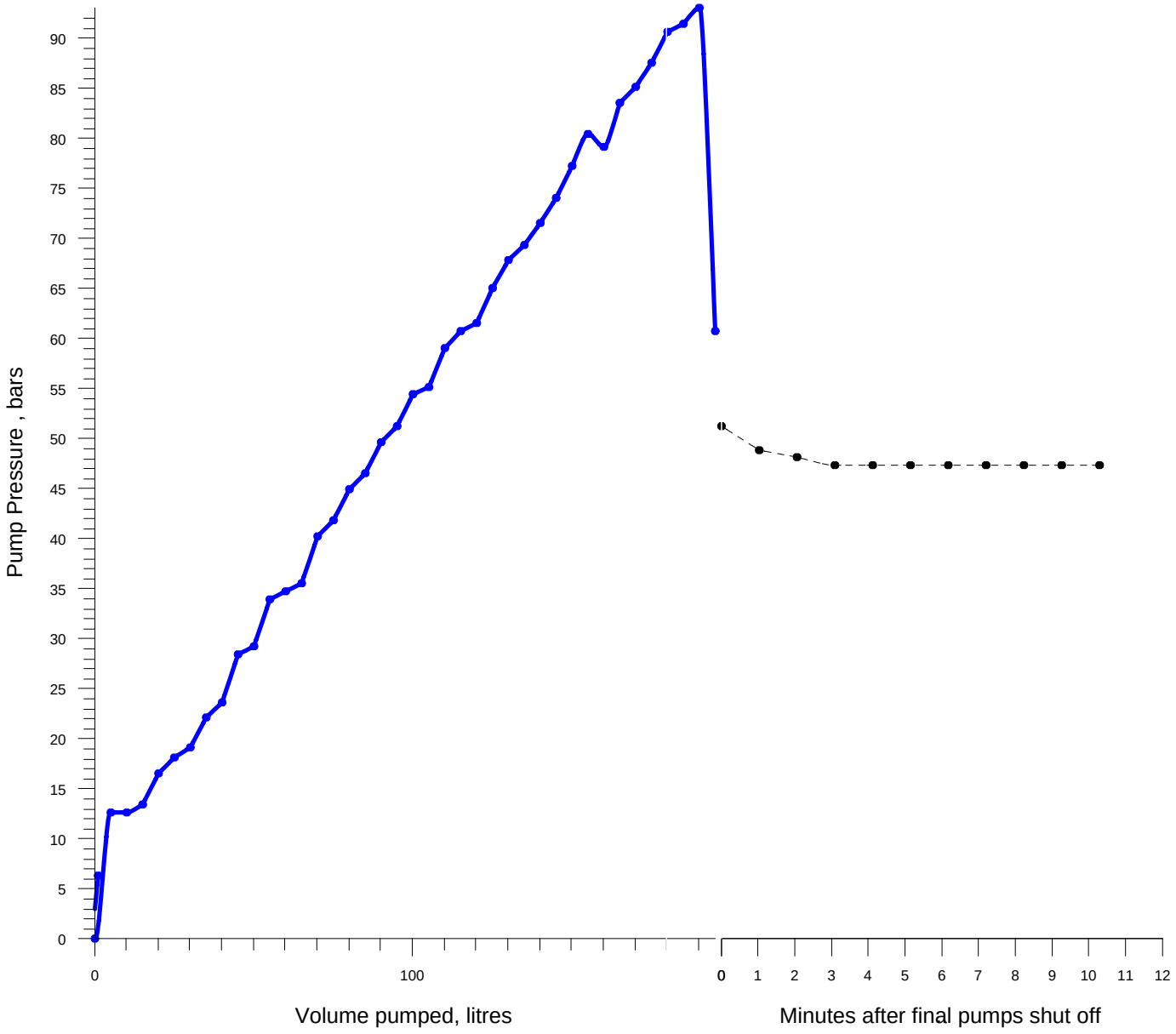
End of Well Report **7220/6-1**	Fig.: 4a	FIT at 20" Casing Shoe	**HYDRO**

Well	**7220/6-1**	Test type :	**LOT**	Test date :	2005-02-15
Rig EIRIK RAUDE	Airgap (m) 25,00	Water depth (m)	368,50	CsgOd" 13,375	Hole angle (deg) 1
Csg Shoe (mMD/mTVD)	543,00 / 542,97	OH depth (mMD/mTVD)	548,00 / 547,97	Lithology :	Clst
Dens1,09	API WL(ml/30min)	PV (cp)		YP (Pa)	Gel0/Gel10 /
Pump Rate (l/min)	20,00	Vol pumped (l.)	780,00	Vol bled back (l.)	760,00
Leakoff Pressure (bar)	16,00	Max pressure (bar)	19,00	Propagation press (bar)	
Test result (sg EMD)	1,39	Shut-in pressure			
Comments					



End of Well Report **7220/6-1**	Fig.: 4b	LOT at 13 3/8" Casing Shoe	**HYDRO**

Well	**7220/6-1**	Test type :	**LOT**	Test date :	2005-02-28
Rig EIRIK RAUDE	Airgap (m) 25,00	Water depth (m)	368,50	CsgOd" 9,625	Hole angle (deg) 0
Csg Shoe (mMD/mTVD)	1124,20 / 1124,14	OH depth (mMD/mTVD)	1133,00 / 1132,94	Lithology :	Clst
Dens1,21	API WL(ml/30min) 2,80	PV (cp)	14,00	YP (Pa) 14,00	Gel0/Gel10 4,50 / 8,50
Pump Rate (l/min)	30,00	Vol pumped (l.)	198,00	Vol bled back (l.)	98,00
Leakoff Pressure (bar)	93,00	Max pressure (bar)	93,00	Propagation press (bar)	
Test result (sg EMD)	2,05	Shut-in pressure	47,30		
Comments					



End of Well Report **7220/6-1**	Fig.: 4c	LOT at 9 5/8" Casing Shoe	**HYDRO**

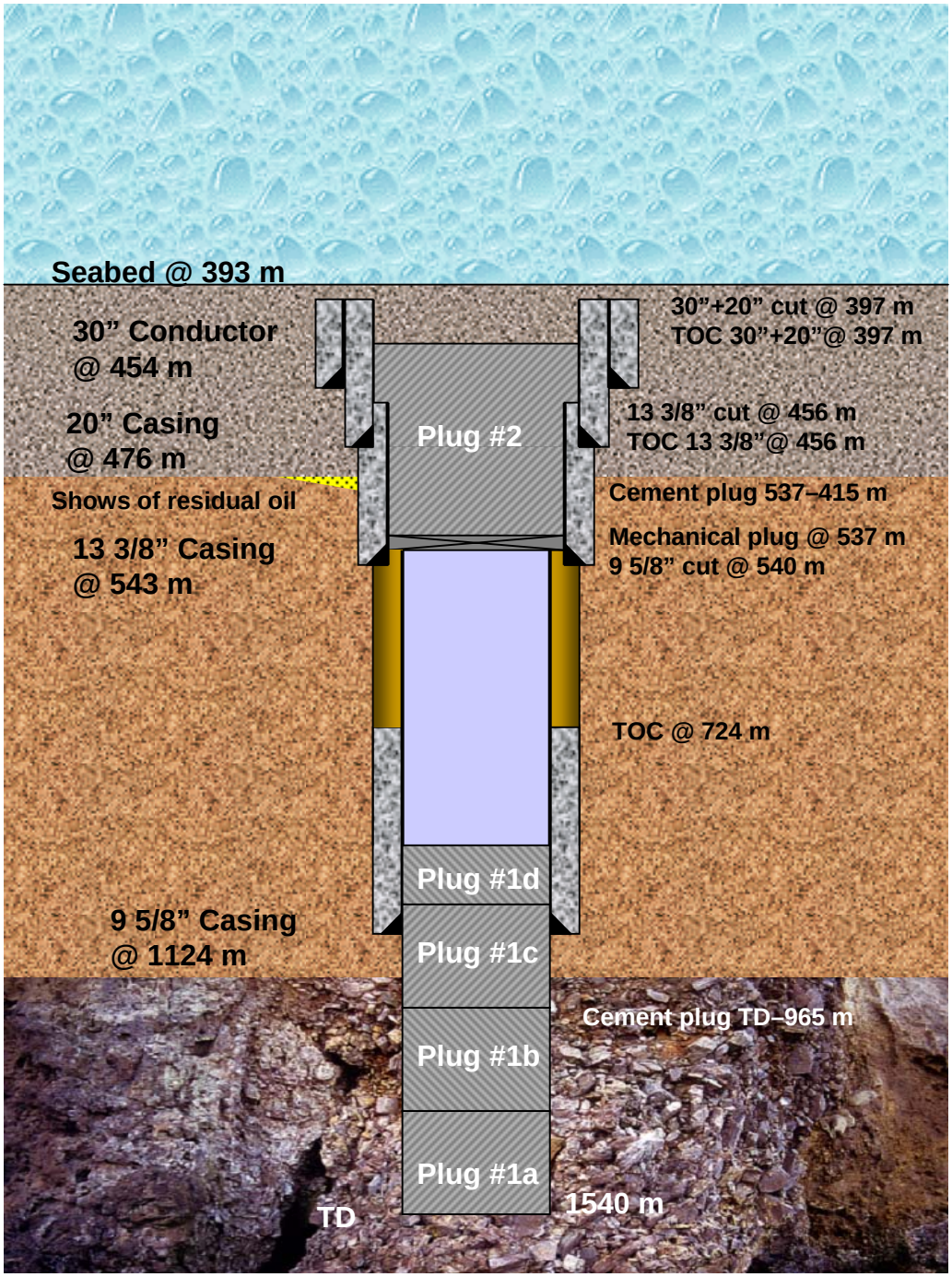
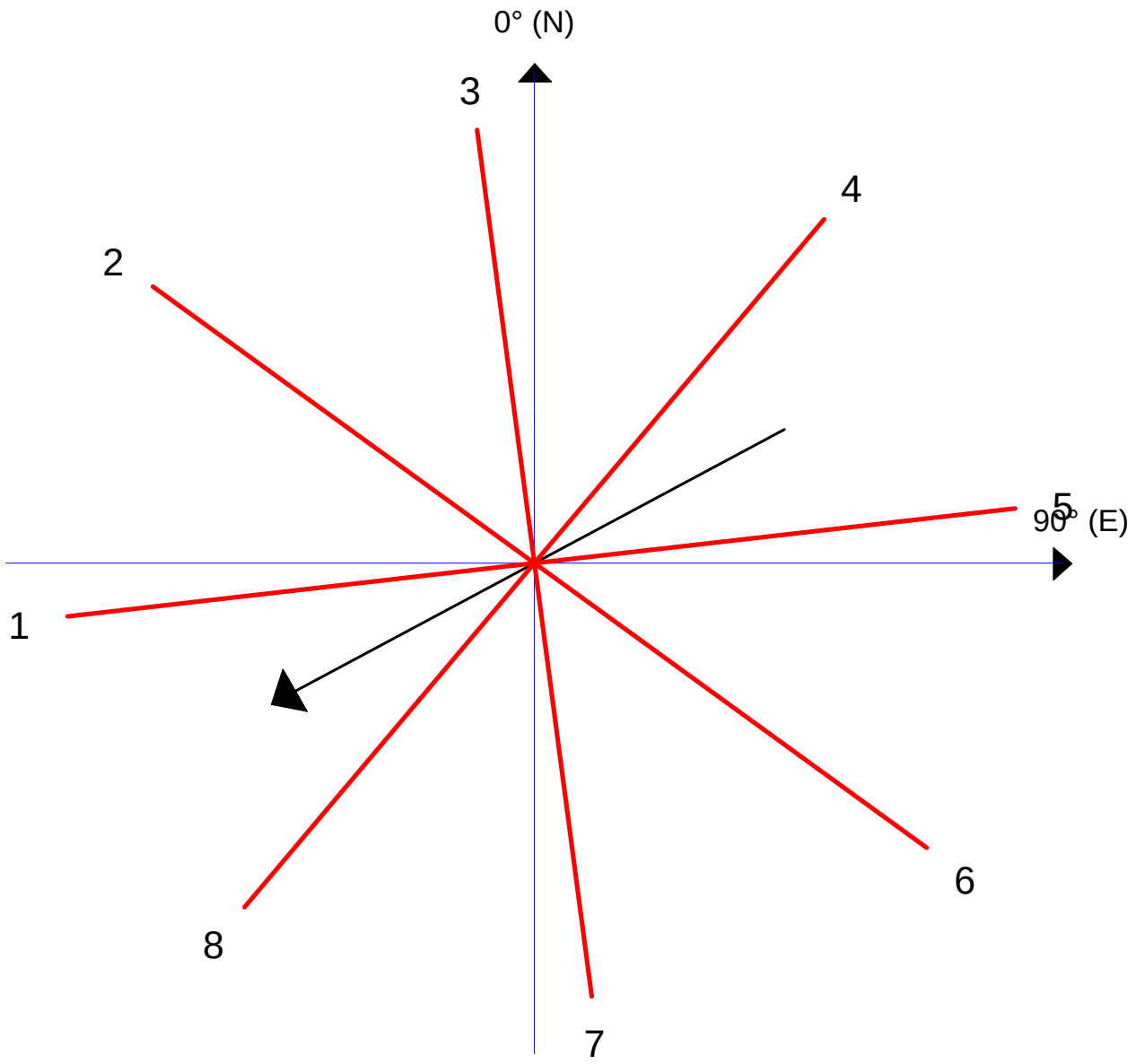


Figure B-5 Abandonment Status



RIGHEADING 240 DEG.

ANCHOR NO		DIRECTION (DEG.)		LENGTH (m)	
	1		263		1700
	2		308		1750
	3		353		1700
	4		38		1700
	5		83		1750
	6		128		1800
	7		173		1700
	8		218		1700

Figure 6		RIG ANCHORS EIRIK RAUDE 7220/6-1	**HYDRO**

BITRECORD

Well: 7220/6-1 **PO:** 1

Bit No		RR	Type	Size (in)	Manu-fact-urer	Trade name	Serial no.	IADC code	Nozzles diameter (../32in)	Flow area (in2)	BHA no.	Depth out (m MD)	Bit meter (m)	Rot. hours (hrs)	ROP (m/hr)	Rotation min/max) (rpm)	Total bit revol.	Weight min/max (kN)	Flow min/max (l/min)	Pump min/max (bar)	Cutting Structure I - O -DC- L - B	Gauge 1/16 (in)	Other Remarks	Pull Cause
1			ISRT	9.88	HTC	MXB20DX	5044391		18,18,18	0.746	1	417	24	2.59	9.3	0/84	15	0/2	0/1632	0/79	- - - - -			SIH
1		1	ISRT	9.88	HTC	MXB20DX	5044391		14,14,14	0.451	3	479	85	6.91	12.3	41/128	91	0/4	1673/2570	73/171	0 - 0 - WT - A - E	I	NO	TD
2			BIT	17.50	HTC	MXC3T09DDT	V56D		16,16,16,18,18,	1.335	4	431	38	7.72	4.9	41/121	90	1/4	997/4531	7/174	1 - 1 - BU - A - E	I	NO	BHA
0			HO	36.00	REDB	STANDARDHO	30927		12,12,12,12,12,	0.663	4	431	38		0.0	41/121	0	1/4	997/4531	7/174	- - - - -			
3			MILL	17.50	HTC	MXST31	6027866	115	18,20,20,20	1.169	5	429	35	13.41	2.6	51/111	101	0/3	2679/4547	69/197	1 - 1 - WT - A - E	I	NO	BHA
2		1	BIT	17.50	HTC	MXC3T09DDT	V56D		16,16,16,18,18,	1.335	6	414	20	0.73	27.4	21/48	3	0/0	1055/2056	8/42	- - - - -			
0			ISRT	36.00	SMIT	02GMODC	30927		12,12,12,12,12,	0.663	6	414	20		0.0	21/48	0	0/0	1055/2056	8/42	- - - - -			
2		2	BIT	17.50	HTC	MXC3T09DDT	V56D		16,16,16,18,18,	1.335	7	462	48	7.62	6.3	21/62	51	0/4	1330/4472	14/177	- - - - -			
0			ISRT	36.00	SMIT	02GMODC	30927		12,12,12,12,12,	0.663	7	462	48		0.0	21/62	0	0/4	1330/4472	14/177	- - - - -			
2		3	BIT	17.50	HTC	MXC3T09DDT	V56D		16,16,16,18,18,	1.335	8	462	0	7.62	0.0	0/0	51	0/0	0/0	0/0	1 - 1 - WT - A - E	I	NO	TD
0			ISRT	36.00	SMIT	02GMODC	30927		12,12,12,12,12,	0.663	8	462	0		0.0	0/0	0	0/0	0/0	0/0	- - - - -			
4			ISRT	26.00	HTC	GTXCM03	6027679	415	18,18,18,18	0.994	9	479	17	2.63	6.5	60/80	21	1/8	4414/4539	186.7/197.1	1 - 1 - WT - A - E	I	NO	TD
5			ISRT	17.50	HTC	MXT305H	6014321	415	18,20,20,20	1.169	10	459	10	0.71	14.1	13/203	21	5/8	1100/4000	46/65	- - - - -			SIH
5		1	ISRT	17.50	HTC	MXT305H	6014321	415	18,20,20,20	1.169	11	546	67	5.08	13.2	185/234	265000	2/8	2983/4520	74/126	- - - - -			SIH
5		2	ISRT	17.50	HTC	MXT305H	6014321	415	18,20,20,20	1.169	12	546	0	5.08	0.0	0/0	265000	0/0	0/0	0/0	1 - 1 - WT - A - 0	I	NO	RIG
6			ISRT	12.25	HTC	MXC09DX	W50DX	437	22,22,22	1.114	13	749	203	7.71	26.3	0/185	283	0/16	0/3576	0/144	- - - - -			SIH
6		1	ISRT	12.25	HTC	MXC09DX	W50DX	437	22,22,22	1.114	14	1130	381	20.06	19.0	145/189	483	1/16	2800/3560	104/158	1 - 1 - WT - A - 1	I	NO	TD
7			ISRT	8.50	HTC	MXRS18CDDT	V43DC	447	18,18,18	0.746	15	1149	19	3.03	6.3	0/177	107	0/16	0/1619	0/105	1 - 1 - WT - A - E	I	NO	CP
8			CORE	8.50	VARL	MCP682	CP6858	M525		0.000	16	1167	18	6.09	3.0	61/75	44	2/7	759/937	33.2/52.3	1 - 3 - WT - A - X	I	PN	TD
8		1	CORE	8.50	VARL	MCP682	CP6858	M525		0.000	17	1197	30	4.19	7.3	60/72	36	3/8	954/955	42.9/53.7	2 - 3 - WT - N - X	I	NO	TD
9			CORE	8.50	HTC	SC226	83492	T5X8		0.000	18	1204	7	7.00	1.0	60/73	30	4/6	944/955	46.6/77.9	2 - 2 - WT - A - X	I	PN	CJ
10			ISRT	8.50	HTC	MXRS18CDDT	V43DC	447	18,18,18	0.746	19	1396	192		0.0	60/73	0	4/6	944/955	46.6/77.9	- - - - -			SIH
10		1	ISRT	8.50	HTC	MXRS18CDDT	V43DC	447	18,18,18	0.746	20	1428	32	16.16	2.0	182/231	470	3/16	1626/1738	102/125	3 - 8 - BT - G - E	3	WT	DTF
11			BIT	8.50	HTC	MXBDP28CHDX2	6025122		18,18,18	0.746	21	1540	112	11.84	9.5	0/164	226000	0/21	0/1708	0/92	3 - 1 - BT - M - E	I	WT	TD

Norsk Hydro 29.03.2006

BOTTOM HOLE ASSEMBLIES

Well: 7220/6-1 **PO: 1**

BHA no. 1: No. / Element / Body OD(in) / Length(m) Depth In: 393 m MD Out: 417 m MD

1	MXB20DX	9.875	0.26	13	DRILL COLLAR STEEL	8.27	9.35
2	BIT SUB	7.99	0.89	14	DRILL COLLAR STEEL	8.27	9.45
3	PIN SUB	8.27	0.47	15	JAR	7.99	9.60
4	MULTIPLE PROPAGATION RESIST	8.27	4.86	16	DRILL COLLAR STEEL	8.27	9.45
5	MEASUREMENT WHILE DRILLING	8.27	11.05	17	DRILL COLLAR STEEL	8.27	9.45
6	SAVER SUB	8.27	0.71	18	DRILL COLLAR STEEL	8.27	9.45
7	X-OVER	7.99	0.91	19	DRILL COLLAR STEEL	8.27	9.43
8	STEEL STAB	6.77	1.72	20	DRILL COLLAR STEEL	8.27	9.33
9	X-OVER	7.99	0.91	21	DRILL COLLAR STEEL	8.27	9.23
10	DRILL COLLAR STEEL	8.27	9.45	22	X-OVER	8.26	0.86
11	DRILL COLLAR STEEL	8.27	9.44	23	HWDP	5.5	0.00
12	DRILL COLLAR STEEL	8.27	9.45				

Total Length: 135.71 m

BHA no. 2: No. / Element / Body OD(in) / Length(m) Depth In: 417 m MD Out: 417 m MD

1	OVER SHOT	11.75	2.19	11	DRILL COLLAR STEEL	8.27	9.43
2	DRILL COLLAR STEEL	8.27	9.45	12	DRILL COLLAR STEEL	8.27	9.33
3	DRILL COLLAR STEEL	8.27	9.44	13	DRILL COLLAR STEEL	8.27	9.23
4	DRILL COLLAR STEEL	8.27	9.45	14	X-OVER	8.26	0.86
5	DRILL COLLAR STEEL	8.27	9.35	15	HWDP	7.0	140.03
6	DRILL COLLAR STEEL	8.27	9.45	16	DRILL COLLAR STEEL	8.27	9.43
7	JAR	7.99	9.60	17	DRILL COLLAR STEEL	8.27	9.33
8	DRILL COLLAR STEEL	8.27	9.45	18	DRILL COLLAR STEEL	8.27	9.23
9	DRILL COLLAR STEEL	8.27	9.45	19	X-OVER	8.26	0.86
10	DRILL COLLAR STEEL	8.27	9.45	20	HWDP	5.5	0.00

Total Length: 285.01 m

BHA no. 3: No. / Element / Body OD(in) / Length(m) Depth In: 394 m MD Out: 479 m MD

1	MXB20DX	9.875	0.26	11	DRILL COLLAR STEEL	8.27	9.45
2	BIT SUB	7.99	0.92	12	JAR	7.99	9.60
3	PIN SUB	8.27	0.81	13	DRILL COLLAR STEEL	8.27	9.45
4	MULTIPLE PROPAGATION RESIST	8.27	5.10	14	DRILL COLLAR STEEL	8.27	9.45
5	MEASUREMENT WHILE DRILLING	8.27	11.06	15	DRILL COLLAR STEEL	8.23	9.45
6	SAVER SUB	8.27	0.72	16	DRILL COLLAR STEEL	8.27	9.43
7	DRILL COLLAR STEEL	8.27	9.45	17	DRILL COLLAR STEEL	8.27	9.33
8	DRILL COLLAR STEEL	8.27	9.44	18	DRILL COLLAR STEEL	8.27	9.23
9	DRILL COLLAR STEEL	8.27	9.45	19	X-OVER	8.26	0.86
10	DRILL COLLAR STEEL	8.27	9.35	20	HWDP	5.5	0.00

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 132.81 m

BHA no. 4: No. / Element / Body OD(in) / Length(m) Depth In: 393 m MD Out: 431 m MD

1	MXC3T09DDT	17.5	0.40	13	DRILL COLLAR STEEL	8.27	9.45
2	STANDARDHO	36.0	5.59	14	DRILL COLLAR STEEL	8.27	9.35
3	STOP SUB	9.44	0.81	15	DRILL COLLAR STEEL	8.27	9.45
4	DRILL COLLAR STEEL	8.22	11.00	16	JAR	7.99	9.60
5	SAVER SUB	9.52	0.53	17	DRILL COLLAR STEEL	8.27	9.45
6	STEEL STAB	24.5	2.23	18	DRILL COLLAR STEEL	8.27	9.45
7	DRILL COLLAR STEEL	9.56	9.49	19	DRILL COLLAR STEEL	8.23	9.45
8	DRILL COLLAR STEEL	9.56	9.40	20	DRILL COLLAR STEEL	8.27	9.43
9	DRILL COLLAR STEEL	9.56	9.46	21	DRILL COLLAR STEEL	8.27	9.33
10	X-OVER	9.44	0.86	22	DRILL COLLAR STEEL	8.27	9.23
11	DRILL COLLAR STEEL	8.27	9.45	23	X-OVER	8.26	0.86
12	DRILL COLLAR STEEL	8.27	9.44	24	HWDP	5.5	0.00

Reason pulled: CHANGE BOTTOMHOLE ASSEMBLY Total Length: 163.71 m

Norsk Hydro 29.03.2006

BOTTOM HOLE ASSEMBLIES

Well: 7220/6-1 **PO: 1**

BHA no. 5: No. / Element / Body OD(in) / Length(m) Depth In: 394 m MD Out: 429 m MD

1	MXST31	17.5	0.43	15	DRILL COLLAR STEEL	8.27	9.45
2	BIT SUB	9.57	0.99	16	DRILL COLLAR STEEL	8.27	9.44
3	X-OVER	9.49	0.80	17	DRILL COLLAR STEEL	8.27	9.45
4	STEEL STAB	17.24	1.88	18	DRILL COLLAR STEEL	8.27	9.35
5	DRILL COLLAR STEEL	8.27	3.13	19	DRILL COLLAR STEEL	8.27	9.45
6	STEEL STAB	17.01	2.43	20	JAR	7.99	9.60
7	X-OVER	9.49	0.80	21	DRILL COLLAR STEEL	8.27	9.45
8	STOP SUB	9.44	0.81	22	DRILL COLLAR STEEL	8.27	9.45
9	MEASUREMENT WHILE DRILLING	8.22	11.00	23	DRILL COLLAR STEEL	8.23	9.45
10	SAVER SUB	9.52	0.53	24	DRILL COLLAR STEEL	8.27	9.43
11	DRILL COLLAR STEEL	9.56	9.49	25	DRILL COLLAR STEEL	8.27	9.33
12	DRILL COLLAR STEEL	9.56	9.40	26	DRILL COLLAR STEEL	8.27	9.23
13	DRILL COLLAR STEEL	9.56	9.46	27	X-OVER	8.26	0.86
14	X-OVER	9.44	0.86	28	HWDP	5.5	140.03

Reason pulled: CHANGE BOTTOMHOLE ASSEMBLY Total Length: 305.97 m

BHA no. 6: No. / Element / Body OD(in) / Length(m) Depth In: 394 m MD Out: 414 m MD

1	MXC3T09DDT	17.5	0.40	15	DRILL COLLAR STEEL	8.27	9.44
2	X-OVER	9.5	0.98	16	DRILL COLLAR STEEL	8.27	9.45
3	STEEL STAB	17.01	2.43	17	DRILL COLLAR STEEL	8.27	9.35
4	SAVER SUB	9.5	1.02	18	DRILL COLLAR STEEL	8.27	9.45
5	02GMODC	36.0	5.19	19	JAR	7.99	9.60
6	STOP SUB	9.44	0.81	20	DRILL COLLAR STEEL	8.27	9.45
7	DRILL COLLAR STEEL	8.22	11.00	21	DRILL COLLAR STEEL	8.27	9.45
8	SAVER SUB	9.52	0.53	22	DRILL COLLAR STEEL	8.23	9.45
9	STEEL STAB	24.5	2.23	23	DRILL COLLAR STEEL	8.27	9.43
10	DRILL COLLAR STEEL	9.56	9.49	24	DRILL COLLAR STEEL	8.27	9.33
11	DRILL COLLAR STEEL	9.56	9.40	25	DRILL COLLAR STEEL	8.27	9.23
12	DRILL COLLAR STEEL	9.56	9.46	26	X-OVER	8.26	0.86
13	X-OVER	9.44	0.86	27	HWDP	5.5	0.00
14	DRILL COLLAR STEEL	8.27	9.45				

Total Length: 167.74 m

BHA no. 7: No. / Element / Body OD(in) / Length(m) Depth In: 414 m MD Out: 462 m MD

1	MXC3T09DDT	17.5	0.40	15	DRILL COLLAR STEEL	8.27	9.44
2	X-OVER	9.5	0.98	16	DRILL COLLAR STEEL	8.27	9.45
3	STEEL STAB	17.01	2.43	17	DRILL COLLAR STEEL	8.27	9.35
4	SAVER SUB	9.5	1.02	18	DRILL COLLAR STEEL	8.27	9.45
5	02GMODC	36.0	5.19	19	JAR	7.99	9.60
6	STOP SUB	9.44	0.81	20	DRILL COLLAR STEEL	8.27	9.45
7	DRILL COLLAR STEEL	8.22	11.00	21	DRILL COLLAR STEEL	8.27	9.45
8	SAVER SUB	9.52	0.53	22	DRILL COLLAR STEEL	8.23	9.45
9	STEEL STAB	24.5	2.23	23	DRILL COLLAR STEEL	8.27	9.43
10	DRILL COLLAR STEEL	9.56	9.49	24	DRILL COLLAR STEEL	8.27	9.33
11	DRILL COLLAR STEEL	9.56	9.40	25	DRILL COLLAR STEEL	8.27	9.23
12	DRILL COLLAR STEEL	9.56	9.46	26	X-OVER	8.26	0.86
13	X-OVER	9.44	0.86	27	HWDP	5.5	0.00
14	DRILL COLLAR STEEL	8.27	9.45				

Total Length: 167.74 m

BOTTOM HOLE ASSEMBLIES

Well: 7220/6-1 PO: 1

BHA no. 8: No. / Element / Body OD(in) / Length(m) Depth In: 462 m MD Out: 462 m MD

1	MXC3T09DDT	17.5	0.40	15	DRILL COLLAR STEEL	8.27	9.44
2	X-OVER	9.5	0.98	16	DRILL COLLAR STEEL	8.27	9.45
3	STEEL STAB	17.01	2.43	17	DRILL COLLAR STEEL	8.27	9.35
4	SAVER SUB	9.5	1.02	18	DRILL COLLAR STEEL	8.27	9.45
5	02GMODC	36.0	5.19	19	JAR	7.99	9.60
6	STOP SUB	9.44	0.81	20	DRILL COLLAR STEEL	8.27	9.45
7	DRILL COLLAR STEEL	8.22	11.00	21	DRILL COLLAR STEEL	8.27	9.45
8	SAVER SUB	9.52	0.53	22	DRILL COLLAR STEEL	8.23	9.45
9	STEEL STAB	24.5	2.23	23	DRILL COLLAR STEEL	8.27	9.43
10	DRILL COLLAR STEEL	9.56	9.49	24	DRILL COLLAR STEEL	8.27	9.33
11	DRILL COLLAR STEEL	9.56	9.40	25	DRILL COLLAR STEEL	8.27	9.23
12	DRILL COLLAR STEEL	9.56	9.46	26	X-OVER	8.26	0.86
13	X-OVER	9.44	0.86	27	HWDP	5.5	0.00
14	DRILL COLLAR STEEL	8.27	9.45				

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 167.74 m

BHA no. 9: No. / Element / Body OD(in) / Length(m) Depth In: 462 m MD Out: 479 m MD

1	GTXCM03	26.0	0.56	13	DRILL COLLAR STEEL	8.27	9.45
2	BIT SUB	9.5	0.80	14	DRILL COLLAR STEEL	8.27	9.35
3	DRILL COLLAR STEEL	9.52	2.00	15	DRILL COLLAR STEEL	8.27	9.45
4	STEEL STAB	24.5	2.27	16	JAR	7.99	9.60
5	DRILL COLLAR STEEL	8.27	9.45	17	DRILL COLLAR STEEL	8.27	9.45
6	STEEL STAB	24.5	2.23	18	DRILL COLLAR STEEL	8.27	9.45
7	DRILL COLLAR STEEL	9.56	9.49	19	DRILL COLLAR STEEL	8.23	9.45
8	DRILL COLLAR STEEL	9.56	9.40	20	DRILL COLLAR STEEL	8.27	9.43
9	DRILL COLLAR STEEL	9.56	9.46	21	DRILL COLLAR STEEL	8.27	9.33
10	X-OVER	9.44	0.86	22	DRILL COLLAR STEEL	8.27	9.23
11	DRILL COLLAR STEEL	8.27	9.45	23	X-OVER	8.26	0.86
12	DRILL COLLAR STEEL	8.27	9.44	24	HWDP	5.5	0.00

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 160.46 m

BHA no. 10: No. / Element / Body OD(in) / Length(m) Depth In: 449 m MD Out: 459 m MD

1	MXT305H	17.5	0.40	10	DRILL COLLAR STEEL	9.53	9.49
2	DOWNHOLE MOTOR	9.49	10.93	11	X-OVER	9.52	0.85
3	NON MAG. STAB	17.24	1.88	12	JAR	7.91	9.64
4	PIN-PIN SUB	8.27	0.80	13	X-OVER	9.49	0.63
5	MULTIPLE PROPAGATION RESIST	8.31	5.02	14	DRILL COLLAR STEEL	9.49	9.40
6	ANNULAR PRESSURE WHILE DRIL	8.27	11.75	15	DRILL COLLAR STEEL	9.5	9.40
7	NON MAG. STAB	17.0	2.43	16	X-OVER	9.49	0.86
8	X-OVER	9.45	0.80	17	DRILL COLLAR STEEL	8.23	9.45
9	DRILL COLLAR STEEL	9.45	9.45	18	X-OVER	8.307	0.84

Total Length: 94.02 m

BHA no. 11: No. / Element / Body OD(in) / Length(m) Depth In: 479 m MD Out: 546 m MD

1	MXT305H	17.5	0.40	10	DRILL COLLAR STEEL	9.53	9.49
2	DOWNHOLE MOTOR	9.49	10.93	11	X-OVER	9.52	0.85
3	NON MAG. STAB	17.24	1.88	12	JAR	7.91	9.64
4	PIN-PIN SUB	8.27	0.80	13	X-OVER	9.49	0.63
5	MULTIPLE PROPAGATION RESIST	8.31	5.02	14	DRILL COLLAR STEEL	9.49	9.40
6	ANNULAR PRESSURE WHILE DRIL	8.27	11.75	15	DRILL COLLAR STEEL	9.5	9.40
7	NON MAG. STAB	17.0	2.43	16	X-OVER	9.49	0.86
8	X-OVER	9.45	0.80	17	DRILL COLLAR STEEL	8.23	9.45
9	DRILL COLLAR STEEL	9.45	9.45	18	X-OVER	8.307	0.84

Total Length: 94.02 m

Norsk Hydro 29.03.2006

BOTTOM HOLE ASSEMBLIES

Well: 7220/6-1 **PO: 1**

BHA no. 12: No. / Element / Body OD(in) / Length(m) Depth In: 546 m MD Out: 546 m MD

1	MXT305H	17.5	0.40	10	DRILL COLLAR STEEL	9.53	9.49
2	DOWNHOLE MOTOR	9.49	10.93	11	X-OVER	9.52	0.85
3	NON MAG. STAB	17.24	1.88	12	JAR	7.91	9.64
4	PIN-PIN SUB	8.27	0.80	13	X-OVER	9.49	0.63
5	MULTIPLE PROPAGATION RESIST	8.31	5.02	14	DRILL COLLAR STEEL	9.49	9.40
6	ANNULAR PRESSURE WHILE DRIL	8.27	11.75	15	DRILL COLLAR STEEL	9.5	9.40
7	NON MAG. STAB	17.0	2.43	16	X-OVER	9.49	0.86
8	X-OVER	9.45	0.80	17	DRILL COLLAR STEEL	8.23	9.45
9	DRILL COLLAR STEEL	9.45	9.45	18	X-OVER	8.307	0.84

Reason pulled: RIG REPAIR/SURFACE EQP. FAILURE Total Length: 94.02 m

BHA no. 13: No. / Element / Body OD(in) / Length(m) Depth In: 546 m MD Out: 749 m MD

1	MXC09DX	12.25	0.34	9	SAVER SUB	8.313	0.96
2	VERTITRAK	10.125	10.14	10	NON MAG. STAB	8.0	1.91
3	X-OVER	9.563	0.74	11	DRILL COLLAR STEEL	8.25	57.00
4	NON MAG. STAB	8.0	2.22	12	JAR	7.99	9.60
5	FLOAT SUB	7.938	0.91	13	DRILL COLLAR STEEL	8.25	38.00
6	NON MAG. STAB	8.25	0.80	14	X-OVER	8.25	1.00
7	MULTIPLE PROPAGATION RESIST	8.25	5.02	15	HWDP	5.5	9.50
8	DRILL COLLAR STEEL	8.25	11.10				

Total Length: 149.24 m

BHA no. 14: No. / Element / Body OD(in) / Length(m) Depth In: 749 m MD Out: 1130 m MD

1	MXC09DX	12.25	0.34	9	SAVER SUB	8.313	0.96
2	VERTITRAK	10.125	10.14	10	NON MAG. STAB	8.0	1.91
3	X-OVER	9.563	0.74	11	DRILL COLLAR STEEL	8.25	57.00
4	NON MAG. STAB	8.0	2.22	12	JAR	7.99	9.60
5	FLOAT SUB	7.938	0.91	13	DRILL COLLAR STEEL	8.25	38.00
6	NON MAG. STAB	8.25	0.80	14	X-OVER	8.25	1.00
7	MULTIPLE PROPAGATION RESIST	8.25	5.02	15	HWDP	5.5	9.50
8	DRILL COLLAR STEEL	8.25	11.10				

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 149.24 m

BHA no. 15: No. / Element / Body OD(in) / Length(m) Depth In: 1130 m MD Out: 1149 m MD

1	MXRS18CDDT	8.5	0.24	9	NON MAG. BIT SUB	6.75	0.46
2	VERTITRAK	6.75	9.37	10	STEEL STAB	6.625	2.02
3	NON MAG. STAB	6.613	2.02	11	SAVER SUB	6.75	2.51
4	FLOAT SUB	6.437	0.61	12	DRILL COLLAR STEEL	6.5	75.61
5	STOP SUB	6.75	0.48	13	JAR	6.5	9.40
6	MEASUREMENT WHILE DRILLING	6.75	3.70	14	DRILL COLLAR STEEL	6.5	28.34
7	STEEL STAB	6.75	1.29	15	HWDP	5.0	82.39
8	MEASUREMENT WHILE DRILLING	6.75	5.70				

Reason pulled: CORE POINT Total Length: 224.14 m

BHA no. 16: No. / Element / Body OD(in) / Length(m) Depth In: 1149 m MD Out: 1167 m MD

1	MCP682	8.5	0.37	7	DRILL COLLAR STEEL	6.811	85.05
2	CORE BARREL	7.1	20.42	8	JAR	6.496	9.40
3	CIRCULATING SUB	6.5	0.82	9	DRILL COLLAR STEEL	6.811	9.46
4	DRILL COLLAR STEEL	6.75	9.45	10	HWDP	5.0	82.39
5	JAR	6.5	9.40	11	DRILL PIPE	5.0	571.23
6	FLOAT SUB	6.5	0.48	12	X-OVER	6.811	0.65

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 799.11 m

Norsk Hydro 29.03.2006

BOTTOM HOLE ASSEMBLIES

Well: 7220/6-1 **PO: 1**

BHA no. 17: No. / Element / Body OD(in) / Length(m) Depth In: 1167 m MD Out: 1197 m MD

1	MCP682	8.5	0.39	7	JAR	6.496	9.39
2	CORE BARREL	7.1	32.61	8	DRILL COLLAR STEEL	6.811	9.46
3	CIRCULATING SUB	6.5	0.82	9	HWDP	5.0	82.39
4	DRILL COLLAR STEEL	6.75	9.45	10	DRILL PIPE	5.0	600.00
5	FLOAT SUB	6.5	0.48	11	X-OVER	6.811	0.65
6	DRILL COLLAR STEEL	6.811	85.05				

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 830.67 m

BHA no. 18: No. / Element / Body OD(in) / Length(m) Depth In: 1197 m MD Out: 1204 m MD

1	SC226	8.5	0.37	7	JAR	6.496	9.40
2	CORE BARREL	7.1	38.71	8	DRILL COLLAR STEEL	6.811	9.46
3	CIRCULATING SUB	6.5	0.82	9	HWDP	5.0	82.39
4	DRILL COLLAR STEEL	6.75	9.45	10	DRILL PIPE	5.0	609.59
5	FLOAT SUB	6.5	0.48	11	PUP JOINT	5.0	4.59
6	DRILL COLLAR STEEL	6.811	103.91	12	X-OVER	6.811	0.65

Reason pulled: CORE JAMMED Total Length: 869.81 m

BHA no. 19: No. / Element / Body OD(in) / Length(m) Depth In: 1204 m MD Out: 1396 m MD

1	MXRS18CDDT	8.5	0.24	10	STEEL STAB	6.625	2.02
2	VERTITRAK	6.75	9.37	11	CIRCULATING SUB	6.75	2.51
3	NON MAG. STAB	6.613	2.02	12	DRILL COLLAR STEEL	6.811	122.77
4	FLOAT SUB	6.437	0.61	13	JAR	6.496	9.40
5	STOP SUB	6.75	0.48	14	DRILL COLLAR STEEL	6.811	9.44
6	MEASUREMENT WHILE DRILLING	6.75	3.20	15	HWDP	5.0	82.39
7	STEEL STAB	6.75	1.29	16	DRILL PIPE	5.0	600.00
8	MEASUREMENT WHILE DRILLING	6.75	5.06	17	X-OVER	7.007	0.65
9	NON MAG. ORIENTING SUB	6.75	0.46				

Total Length: 851.91 m

BHA no. 20: No. / Element / Body OD(in) / Length(m) Depth In: 1396 m MD Out: 1428 m MD

1	MXRS18CDDT	8.5	0.24	10	STEEL STAB	6.625	2.02
2	VERTITRAK	6.75	9.37	11	CIRCULATING SUB	6.75	2.51
3	NON MAG. STAB	6.613	2.02	12	DRILL COLLAR STEEL	6.811	122.77
4	FLOAT SUB	6.437	0.61	13	JAR	6.496	9.40
5	STOP SUB	6.75	0.48	14	DRILL COLLAR STEEL	6.811	9.44
6	MEASUREMENT WHILE DRILLING	6.75	3.20	15	HWDP	5.0	82.39
7	STEEL STAB	6.75	1.29	16	DRILL PIPE	5.0	600.00
8	MEASUREMENT WHILE DRILLING	6.75	5.06	17	X-OVER	7.007	0.65
9	NON MAG. ORIENTING SUB	6.75	0.46				

Reason pulled: DOWNHOLE TOOL FAILURE Total Length: 851.91 m

BHA no. 21: No. / Element / Body OD(in) / Length(m) Depth In: 1428 m MD Out: 1540 m MD

1	MXBDP28CHDX2	8.5	0.24	10	NON MAG. ORIENTING SUB	6.5	0.46
2	NEAR BIT STAB	8.46	2.06	11	STEEL STAB	8.46	2.02
3	DRILL COLLAR STEEL	6.5	2.81	12	CIRCULATING SUB	6.5	2.51
4	NON MAG. STAB	6.61	2.02	13	DRILL COLLAR STEEL	6.81	122.77
5	FLOAT SUB	6.5	0.61	14	JAR	6.5	9.84
6	STOP SUB	6.5	0.48	15	DRILL COLLAR STEEL	6.85	9.44
7	MEASUREMENT WHILE DRILLING	6.5	3.12	16	HWDP	5.0	82.39
8	STEEL STAB	6.5	1.29	17	DRILL PIPE	5.0	600.00
9	MEASUREMENT WHILE DRILLING	6.5	5.06	18	X-OVER	6.81	0.65

Reason pulled: TOTAL DEPTH/CASING DEPTH Total Length: 847.77 m

Norsk Hydro

29.03.2006

MAIN CONSUMPTION OF CASING/TUBING

Well: 7220/6-1 **PO:** 1

Size	Casing string	Grade	Weight [kg/m]	Weight [lb/ft]	Threads type	Length [m]	No. of joints
30"	CONDUCTOR	X-52	460.86	309.70	SL-60	62.7	5
20"	SURFACE	X-52	192.46	129.33	E60MT	85.7	8
13 3/8"	INTERMEDIATE	P-110	107.14	72.00	VAM TOP	150.7	13
9 5/8"	INTERMEDIATE	P-110	79.61	53.50	VAM TOP	732.6	58

Norsk Hydro

29.03.2006

CEMENT SLURRY REPORT

Well: 7220/6-1 **PO:** 1

Date	CsgSize	Jobtype	Slurry Type	Pumped Volume [m3]	Density [sg]	BHCT [DegC]	Yield [l/100 kg]	Additive	Unit	Additives [../100 kg Cement]	Additives [../m3 Slurry]
28.01.2005	30"	CASING CEMENTING	LEAD	12.00	1.44	20.00	169.60	B-143	l	0.01	
								D075	l	0.40	
			TAIL SLURRY	27.00	1.95	20.00	74.72	B-143	l	0.01	
								D077	l	0.20	
			DISPLACEMENT			20.00					
01.02.2005	20"	CASING CEMENTING	LEAD	12.00	1.44	20.00	169.60	B-143	l	0.01	
								D075	l	0.40	
			TAIL SLURRY	23.00	1.95	20.00	0.00	B-143	l	0.01	
								D077	l	0.20	
			DISPLACEMENT			20.00					
10.02.2005	13 3/8"	CASING CEMENTING	LEAD	8.40	1.90	22.00	81.13	B-143	l	0.01	
								B018	l	1.00	
								B165	l	0.17	
								D075	l	0.03	
								D193	l	0.25	
			DISPLACEMENT			22.00					
24.02.2005	9 5/8"	CASING CEMENTING	SPACER	15.00	1.40	22.00		B-143	l		0.02
								B174	l		0.04
			TAIL SLURRY	13.50	1.90	22.00	76.71	B-143	l	0.01	
								B165	l	0.10	
								D193	l	0.60	
			DISPLACEMENT			22.00					
25.03.2005	9 5/8"	PLUG IN CASED HOLE	TAIL SLURRY	5.50	1.96	22.00	76.75	B-143	l	0.10	
								B165	l	1.00	
								D193	l	6.00	
			DISPLACEMENT			22.00					
		PLUG IN CASED TO OPEN HOLE	TAIL SLURRY	7.00	1.42	22.00	112.99	B-143	l	0.30	
								B018	l	10.00	
								B151	l	0.00	
								B165	l	2.00	

Norsk Hydro

29.03.2006

CEMENT SLURRY REPORT

Well: 7220/6-1 **PO:** 1

Date	CsgSize	Jobtype	Slurry Type	Pumped Volume [m3]	Density [sg]	BHCT [DegC]	Yield [l/100 kg]	Additive	Unit	Additives [../100 kg Cement]	Additives [../m3 Slurry]
25.03.2005	9 5/8"	PLUG IN CASED TO OPEN HOLE	TAIL SLURRY	7.00	1.42	22.00	112.99	B174	l	0.00	
								D075	l	0.30	
								D193	l	4.00	
			DISPLACEMENT			22.00					
		PLUG IN OPEN HOLE	TAIL SLURRY	6.00	1.42	22.00	112.99	B-143	l	0.30	
								B018	l	10.00	
								B151	l	0.00	
								B165	l	2.00	
								B174	l	0.00	
								D075	l	0.30	
								D193	l	4.00	
			DISPLACEMENT			22.00					
		PLUG	TAIL SLURRY	8.00	1.42	22.00	112.99	B-143	l	0.30	
								B018	l	10.00	
								B151	l	0.00	
								B165	l	2.00	
								B174	l	0.00	
								D075	l	0.30	
								D193	l	4.00	
			DISPLACEMENT			22.00					
26.03.2005	20"	PLUG IN CASED HOLE	TAIL SLURRY	13.50	2.05	12.00	65.73	B-143	l	0.10	
								B165	l	1.00	
			DISPLACEMENT			12.00					

CEMENT CONSUMPTION PER JOB

Well: 7220/6-1 **PO:** 1

Date	CsgSize	Job Type	Cement/ Additive	Description	Unit	Actual Amount Used
28.01.2005	30"	CASING CEMENTING	B-143	B-143	l	40
			D077	ACCELERATOR: LIQIUD ACCELERATOR	l	730
			D075	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD S	l	310
01.02.2005	20"	CASING CEMENTING	B-143	B-143	l	45
			D075	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD S	l	360
			D077	ACCELERATOR: LIQIUD ACCELERATOR	l	620
10.02.2005	13 3/8"	CASING CEMENTING	G	API CLASS G	MT	1
			B165	DISPERSANT: B165	l	200
			D075	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD S	l	36
			D081	RETARDER: LIQUID VERSION OF D013 UP TO 180 [	l	
			B018	GAS BLOCK ADDITIVE MICROBLOCK	l	1200
			D193	FLUID LOSS: D193	l	300
			B-143	B-143	l	10
24.02.2005	9 5/8"	CASING CEMENTING	B174	B174 - Viscosifier for MUDPUSH II Spacer	l	56
			B-143	B-143	l	48
			D193	FLUID LOSS: D193	l	1060
			B151	RETARDER: B151	l	60
			B165	DISPERSANT: B165	l	180
25.03.2005	9 5/8"	PLUG IN CASED HOLE	B165	DISPERSANT: B165	l	70
			D193	FLUID LOSS: D193	l	430
			B-143	B-143	l	10
	9 5/8"	PLUG IN CASED TO OPEN HOLE	B174	B174 - Viscosifier for MUDPUSH II Spacer	l	0
			D075	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD S	l	20
			B018	GAS BLOCK ADDITIVE MICROBLOCK	l	620
			B-143	B-143	l	20
			B151	RETARDER: B151	l	0
			B165	DISPERSANT: B165	l	120
			D193	FLUID LOSS: D193	l	250
	9 5/8"	PLUG IN OPEN HOLE	B174	B174 - Viscosifier for MUDPUSH II Spacer	l	0
			B165	DISPERSANT: B165	l	110
			D193	FLUID LOSS: D193	l	210
			B151	RETARDER: B151	l	10
			D075	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD S	l	20
			B018	GAS BLOCK ADDITIVE MICROBLOCK	l	530
			B-143	B-143	l	20
	9 5/8"	PLUG	B174	B174 - Viscosifier for MUDPUSH II Spacer	l	0
			B165	DISPERSANT: B165	l	730
			D193	FLUID LOSS: D193	l	1170
			D075	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD S	l	60
			B018	GAS BLOCK ADDITIVE MICROBLOCK	l	1850
			B-143	B-143	l	80
			B151	RETARDER: B151	l	60
26.03.2005	20"	PLUG IN CASED HOLE	B165	DISPERSANT: B165	l	290
			B151	RETARDER: B151	l	0
			B-143	B-143	l	20

TOTAL CONSUMPTION OF CEMENT ADDITIVES

Well: 7220/6-1 **PO:** 1

Section	Cement/Additive	Unit	Total Amount Used
36"	B-143	l	40.00
	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD SLURRIES	l	310.00
	ACCELERATOR: LIQIUD ACCELERATOR	l	730.00

Section	Cement/Additive	Unit	Total Amount Used
26"	B-143	l	45.00
	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD SLURRIES	l	360.00
	ACCELERATOR: LIQIUD ACCELERATOR	l	620.00

Section	Cement/Additive	Unit	Total Amount Used
17 1/2"	B-143	l	10.00
	GAS BLOCK ADDITIVE MICROBLOCK	l	1200.00
	DISPERSANT: B165	l	200.00
	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD SLURRIES	l	36.00
	RETARDER: LIQUID VERSION OF D013 UP TO 180 DEGF	l	
	FLUID LOSS: D193	l	300.00
	API CLASS G	MT	1.00

Section	Cement/Additive	Unit	Total Amount Used
12 1/4"	B-143	l	48.00
	RETARDER: B151	l	60.00
	DISPERSANT: B165	l	180.00
	B174 - Viscosifier for MUDPUSH II Spacer	l	56.00
	FLUID LOSS: D193	l	1060.00

Section	Cement/Additive	Unit	Total Amount Used
8 1/2"	B-143	l	150.00
	GAS BLOCK ADDITIVE MICROBLOCK	l	3000.00
	RETARDER: B151	l	70.00
	DISPERSANT: B165	l	1320.00
	B174 - Viscosifier for MUDPUSH II Spacer	l	0.00
	EXTENDER: LIQUID EXTENDER FOR HIGH-YIELD SLURRIES	l	100.00
	FLUID LOSS: D193	l	2060.00

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS

Well: 7220/6-1 **PO:** 1

Hole section : 9 7/8" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2005-01-18		0	SEA WATER				0	0	0	0	0	0	0	0					
2005-01-19		0	SEA WATER				0	0	0	0	0	0	0	0					
2005-01-20		0	SEA WATER				0	0	0	0	0	0	0	0					
2005-01-21		0	SEA WATER	112.0	1.05	15.0	0	0	0	0	0	0	0	0					
2005-01-22		0	SEA WATER		1.25		72	52	44	34	0	0	14	11	50.0	20.0	16.0	12.0	16.0
2005-01-23		0	SEA WATER		1.25		72	52	44	34	0	0	14	11	50.0	20.0	16.0	6.0	8.0
2005-01-24		0	SEA WATER		1.25		72	52	43	34	0	0	14	11	50.0	20.0	16.0	6.0	8.0

Hole section : 36" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2005-01-25		0	SEA WATER		1.21		53	38	32	24	0	0	9	8	50.0	15.0	11.5	5.0	7.0
2005-01-26		0	SEA WATER		1.21		53	38	32	24	0	0	9	8	50.0	15.0	11.5	5.0	7.0
2005-01-27		0	SEA WATER		1.21		53	38	32	24	0	0	9	8	50.0	15.0	11.5	5.0	7.0
2005-01-28		0	SEA WATER		1.21		40	29	23	18	0	0	6	5	50.0	11.0	9.0	3.0	4.0
2005-01-29		0	SEA WATER		1.21		44	32	27	20	0	0	9	8	50.0	12.0	10.0	4.0	5.0

Hole section : 26" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Funnel Visc [sec]	Dens [sg]	Mudtmp Out [DegC]	Fann Readings 600	300	200	100	60	30	6	3	Rheo Test [DegC]	PV [mPas]	YP [Pa]	Gel0 [Pa]	Gel10 [Pa]
2005-01-30		0	SEA WATER		1.21		44	32	27	20	0	0	9	8	50.0	12.0	10.0	4.0	5.0
2005-01-31		0	SEA WATER		1.21		44	32	27	20	0	0	9	8	50.0	12.0	10.0	4.0	5.0
2005-02-01		0	SEA WATER		1.21		44	32	27	20	0	0	9	8	50.0	12.0	10.0	4.0	5.0
2005-02-02		0	SEA WATER		1.09		53	38	32	23	0	0	9	8	50.0	15.0	11.5	4.0	5.5
2005-02-03		0	SEA WATER		1.09		53	38	32	23	0	0	9	8	50.0	15.0	11.5	4.0	5.5
2005-02-04		0	SEA WATER		1.09		53	38	32	23	0	0	9	8	50.0	15.0	11.5	4.0	5.5
2005-02-05		0	SEA WATER		1.09		53	38	32	23	0	0	9	8	50.0	15.0	11.5	4.0	5.5
2005-02-06		0	SEA WATER		1.09		53	38	32	23	0	0	9	8	50.0	15.0	11.5	4.0	5.5
2005-02-07	470	470	SEA WATER	70.0	1.09		44	31	26	19	0	0	7	5	50.0	13.0	9.0	4.0	5.0
2005-02-08	547	547	SEA WATER	87.0	1.09	15.0	52	38	32	24	0	0	9	8	50.0	14.0	12.0	4.0	6.0

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS

Well: 7220/6-1 **PO:** 1

Hole section : 17 1/2" **WATER BASED SYSTEM**

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2005-02-09	547	547	SEA WATER	87.0	1.09	15.0	52	38	32	24	0	0	9	8	50.0	14.0	12.0	4.0	6.0
2005-02-10	547	547	SEA WATER	87.0	1.09	15.0	52	38	32	24	0	0	9	8	50.0	14.0	12.0	4.0	6.0
2005-02-11	547	547	SEA WATER	87.0	1.09	15.0	52	38	32	24	0	0	9	8	50.0	14.0	12.0	4.0	6.0
2005-02-12	547	547	SEA WATER	87.0	1.09	15.0	52	38	32	24	0	0	9	8	50.0	14.0	12.0	4.0	6.0
2005-02-13	547	547	SEA WATER	87.0	1.09	15.0	52	38	32	24	0	0	9	8	50.0	14.0	12.0	4.0	6.0
2005-02-14		0	SEA WATER				0	0	0	0	0	0	0	0					

Hole section : 12 1/4" **WATER BASED SYSTEM**

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2005-02-15 23:59	664	664	KCL/POLYMER	75.0	1.20	16.0	54	40	34	25	0	0	10	8	50.0	14.0	13.0	5.0	6.0
2005-02-16	749	749	KCL/POLYMER	79.0	1.21	18.0	55	41	33	25	0	0	10	8	50.0	14.0	13.5	5.0	8.0
2005-02-17	749	749	KCL/POLYMER	81.0	1.21	15.0	56	40	32	25	0	0	10	8	50.0	16.0	12.0	5.0	8.0
2005-02-18	749	749	SEA WATER	80.0	1.21	15.0	55	41	32	24	0	0	15	12	50.0	14.0	13.5	5.0	8.0
2005-02-19	746	746	SEA WATER	80.0	1.21	15.0	56	40	32	25	0	0	15	12	50.0	16.0	12.0	5.0	8.0
2005-02-20	746	746	SEA WATER	80.0	1.21	15.0	55	40	32	24	0	0	15	12	50.0	15.0	12.5	5.0	8.0
2005-02-21	760	760	SEA WATER	83.0	1.21	15.0	57	42	33	25	0	0	16	12	50.0	15.0	13.5	6.0	9.0
2005-02-22	1091	1091	SEA WATER	78.0	1.21	19.0	56	42	36	27	0	0	12	10	50.0	14.0	14.0	6.5	12.0
2005-02-23	1130	1130	SEA WATER	78.0	1.21	15.0	55	41	36	27	0	0	13	10	50.0	14.0	13.5	6.0	11.0
2005-02-24	1130	1130	SEA WATER	78.0	1.21		56	41	36	27	0	0	13	10	50.0	15.0	13.0	6.0	11.0
2005-02-25	1130	1130	SEA WATER	78.0	1.21		55	41	36	27	0	0	13	10	50.0	14.0	13.5	6.0	11.0
2005-02-26	1130	1130	SEA WATER	78.0	1.21		56	41	36	27	0	0	13	10	50.0	15.0	13.0	6.0	11.0

Hole section : 8 1/2" **WATER BASED SYSTEM**

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2005-02-27	1130	1130	SEA WATER	78.0	1.21		56	42	36	28	0	0	11	10	50.0	14.0	14.0	4.5	8.5
2005-02-28	1130	1130	SEA WATER	78.0	1.21		56	42	36	28	0	0	11	10	50.0	14.0	14.0	4.5	8.5
2005-03-01	1148	1148	SEA WATER	155.0	1.14	13.5	55	50	44	41	0	0	33	32	50.0	5.0	22.5	17.5	30.0
2005-03-02	1149	1149	SEA WATER	145.0	1.14		47	38	33	31	0	0	28	27	50.0	9.0	14.5	15.0	40.0
2005-03-03	1167	1167	SEA WATER	123.0	1.14	12.2	50	40	35	34	0	0	28	28	50.0	10.0	15.0	15.0	42.0
2005-03-04	1172	1172	SEA WATER	115.0	1.14	12.0	48	37	32	27	0	0	24	24	50.0	11.0	13.0	12.0	38.0
2005-03-05	1197	1197	SEA WATER	130.0	1.14	9.0	49	37	30	25	0	0	23	23	50.0	12.0	12.5	10.0	38.0
2005-03-06	1197	1197	SEA WATER	110.0	1.14	12.0	50	36	30	25	0	0	23	23	50.0	14.0	11.0	10.0	36.0

DAILY MUD PROPERTIES:RHEOLOGY PARAMETERS

Well: 7220/6-1 **PO:** 1

Hole section : 8 1/2" **WATER BASED SYSTEM**

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2005-03-07	1197	1197	SEA WATER	110.0	1.14	12.0	50	36	30	25	0	0	23	23	50.0	14.0	11.0	10.0	36.0
2005-03-08	1197	1197	SEA WATER	120.0	1.14	8.0	44	30	25	19	0	0	15	15	50.0	14.0	8.0	8.0	31.0
2005-03-09	1204	1204	SEA WATER	105.0	1.14	8.0	51	36	31	25	0	0	22	22	50.0	15.0	10.5	11.0	44.0
2005-03-10	1204	1204	SEA WATER	165.0	1.14	10.0	54	42	37	33	0	0	30	30	50.0	12.0	15.0	17.0	51.0
2005-03-11	1390	1390	SEA WATER	200.0	1.15	15.0	64	49	43	38	0	0	36	36	50.0	15.0	17.0	22.0	26.0
2005-03-12		0	SEA WATER				0	0	0	0	0	0	0	0					
2005-03-13	1428	1428	SEA WATER	160.0	1.14	7.0	54	42	38	32	0	0	30	30	50.0	12.0	15.0	15.0	36.0
2005-03-14	1428	1428	SEA WATER	155.0	1.14	7.0	51	39	34	32	0	0	30	29	50.0	12.0	13.5	16.0	28.0
2005-03-15	1540	1540	SEA WATER	152.0	1.14		62	47	42	35	0	0	32	31	50.0	15.0	16.0	16.0	33.0
2005-03-16	1540	1540	SEA WATER	148.0	1.14		63	48	43	36	0	0	32	31	50.0	15.0	16.5	17.0	34.0
2005-03-17	1540	1540	POLYMER MUD	145.0	1.14		52	39	34	32	0	0	30	28	50.0	13.0	13.0	15.0	28.0
2005-03-18	1540	1540	POLYMER MUD	145.0	1.14		52	39	34	32	0	0	30	28	50.0	13.0	13.0	15.0	28.0
2005-03-19	1540	1540	POLYMER MUD	145.0	1.15	16.0	52	39	33	32	0	0	30	28	50.0	13.0	13.0	15.0	28.0
2005-03-20	1540	1540	POLYMER MUD	140.0	1.15	16.0	50	37	31	30	0	0	29	27	50.0	13.0	12.0	14.0	27.0
2005-03-21	1540	1540	POLYMER MUD	140.0	1.15	16.0	50	37	31	30	0	0	29	27	50.0	13.0	12.0	14.0	27.0

Hole section : P&A **WATER BASED SYSTEM**

Date	Depth [m]		Mud Type	Funnel Visc	Dens	Mudtmp Out	Fann Readings								Rheo Test	PV	YP	Gel0	Gel10
	MD	TVD		[sec]	[sg]	[DegC]	600	300	200	100	60	30	6	3	[DegC]	[mPas]	[Pa]	[Pa]	[Pa]
2005-03-22	1540	1540	KCL/POLYMER	80.0	1.20	16.0	45	34	28	21	0	0	14	9	50.0	11.0	11.5	5.5	11.0
2005-03-23	1540	1540	KCL/POLYMER		1.20	15.0	42	31	27	20	0	0	10	8	50.0	11.0	10.0	5.0	9.0
2005-03-24	965	965	KCL/POLYMER		1.20	9.0	51	38	33	26	0	0	16	11	50.0	13.0	12.5	6.0	10.0
2005-03-25	538	538	KCL/POLYMER		1.20	9.0	47	36	31	24	0	0	12	9	50.0	11.0	12.5	5.0	9.0
2005-03-26		0	SEA WATER		0.00		0	0	0	0	0	0	0	0					
2005-03-27		0	SEA WATER				0	0	0	0	0	0	0	0					

DAILY MUD PROPERTIES : OTHER PARAMETERS

Well: 7220/6-1 **PO:** 1

Hole section : 9 7/8" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	Glycol [%]
2005-01-18		0	SEA WATER						/																	
2005-01-19		0	SEA WATER						/																	
2005-01-20		0	SEA WATER						/																	
2005-01-21		0	SEA WATER	1.05					/																	
2005-01-22		0	SEA WATER	1.25					/																	
2005-01-23		0	SEA WATER	1.25					/																	
2005-01-24		0	SEA WATER	1.25					/																	

Hole section : 36" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	Glycol [%]
2005-01-25		0	SEA WATER	1.21					/																	
2005-01-26		0	SEA WATER	1.21					/																	
2005-01-27		0	SEA WATER	1.21					/																	
2005-01-28		0	SEA WATER	1.21					/																	
2005-01-29		0	SEA WATER	1.21					/																	

Hole section : 26" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	Glycol [%]
2005-01-30		0	SEA WATER	1.21					/																	
2005-01-31		0	SEA WATER	1.21					/																	
2005-02-01		0	SEA WATER	1.21					/																	
2005-02-02		0	SEA WATER	1.09	4.8		1		/	8.0	0.1	0.1	0.6		26200	30000	320		320	3.0	3.5			3.2	14	
2005-02-03		0	SEA WATER	1.09	4.8		1		/	8.0	0.1	0.1	0.6		26200	30000	320		320	3.0	3.5			3.2	14	
2005-02-04		0	SEA WATER	1.09	4.8		1		/	8.0	0.1	0.1	0.6		26200	30000	320		320	3.0	3.5			3.2	14	
2005-02-05		0	SEA WATER	1.09	4.8		1		/	8.0	0.1	0.1	0.6		26200	30000	320		320	3.0	3.5			3.2	14	
2005-02-06		0	SEA WATER	1.09	4.8		1		/	8.0	0.1	0.1	0.6		26200	30000	320		320	3.0	3.5			3.2	14	
2005-02-07	470	470	SEA WATER	1.09	5.2		1		/	10.5					26200	33000				3.5	3.5	0.0		7.8	-75	
2005-02-08	547	547	SEA WATER	1.09	5.3		1		/	8.6		0.2			31720	38000	360		360	6.0		0.0	17	2.4	100	

DAILY MUD PROPERTIES : OTHER PARAMETERS

Well: 7220/6-1 **PO:** 1

Hole section : 17 1/2" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	Glycol [%]
2005-02-09	547	547	SEA WATER	1.09	5.3		1		/	8.6		0.2			31720	38000	360		360	6.0		0.0	17	2.4	100	
2005-02-10	547	547	SEA WATER	1.09	5.3		1		/	8.6		0.2			31720	38000	360		360	6.0		0.0	17	2.4	100	
2005-02-11	547	547	SEA WATER	1.09	5.3		1		/	8.6		0.2			31720	38000	360		360	6.0		0.0	17	2.4	100	
2005-02-12	547	547	SEA WATER	1.09	5.3		1		/	8.6		0.2			31720	38000	360		360	6.0		0.0	17	2.4	100	
2005-02-13	547	547	SEA WATER	1.09	5.3		1		/	8.6		0.2			31720	38000	360		360	6.0		0.0	17	2.4	100	
2005-02-14		0	SEA WATER						/																	

Hole section : 12 1/4" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	Glycol [%]
2005-02-15 23:59	664	664	KCL/POLYMER	1.20	2.7		1		/	8.5		0.2	1.5		64000	65000	480		480	9.0		0.0	15	4.0	13	
2005-02-16	749	749	KCL/POLYMER	1.21	2.7		1		/	8.5		0.2	1.5		64000	65000	480		480	10.0		0.0	15	3.6	50	
2005-02-17	749	749	KCL/POLYMER	1.21	2.7		1		/	8.5		0.2	1.5		64000	65000	480		480	10.0		0.0	15	3.6	50	
2005-02-18	749	749	SEA WATER	1.21	2.6		1		/	8.6		0.2	1.6		64000	66000	480		480	10.0		0.0	15	3.6	50	
2005-02-19	746	746	SEA WATER	1.21	2.6		1		/	8.6		0.3	1.6		64000	66000	480		480	10.0		0.0	15	3.6	50	
2005-02-20	746	746	SEA WATER	1.21	2.6		1		/	8.6		0.3	1.6		64000	66000	480		480	10.0		0.0	15	3.6	50	
2005-02-21	760	760	SEA WATER	1.21	2.6		1		/	8.6		0.3	1.6		64000	65000	480		480	10.0		0.1	16	3.6	50	
2005-02-22	1091	1091	SEA WATER	1.21	2.8		1		/	8.0	0.0	0.0	1.0		64000	64000	580		580	9.9		0.1	14	3.7	46	
2005-02-23	1130	1130	SEA WATER	1.21	2.8		1		/	8.1		0.0	1.0		64000	64000	580		580	10.0		0.0	14	3.6	51	
2005-02-24	1130	1130	SEA WATER	1.21	2.8		1		/	8.1		0.0	1.0		64000	64000	580		580	10.0		0.0	14	3.6	51	
2005-02-25	1130	1130	SEA WATER	1.21	2.8		1		/	8.1		0.0	1.0		64000	64000	580		580	10.0		0.0	14	3.6	51	
2005-02-26	1130	1130	SEA WATER	1.21	2.8		1		/	8.1		0.0	1.0		64000	64000	580		580	10.0		0.0	14	3.6	51	

Hole section : 8 1/2" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	Glycol [%]
2005-02-27	1130	1130	SEA WATER	1.21	2.8		1		/	9.0		0.1	1.3		64000	64000	580		580	10.0		0.0	14	3.6	51	
2005-02-28	1130	1130	SEA WATER	1.21	2.8		1		/	9.0		0.1	1.3		64000	64000	580		580	10.0		0.0	14	3.6	51	
2005-03-01	1148	1148	SEA WATER	1.14	7.2		1		/	11.0	0.6	0.2	0.5			6300	80		80	5.5		0.0		3.6	52	
2005-03-02	1149	1149	SEA WATER	1.14	6.0		1		/	11.0	0.9	0.2	0.5			7000	80		80	5.5				3.6	51	
2005-03-03	1167	1167	SEA WATER	1.14	6.4		1		/	11.0	0.9	0.1	0.5			6900	80		80	5.5			35	3.6	51	
2005-03-04	1172	1172	SEA WATER	1.14	6.5		1		/	11.1	1.0	0.2	0.5			7000	120		120	6.0			35	3.4	77	
2005-03-05	1197	1197	SEA WATER	1.14	6.5		1		/	11.0	1.0	0.2	0.5			7100	120		120	6.0			35	3.4	77	

DAILY MUD PROPERTIES : OTHER PARAMETERS

Well: 7220/6-1 **PO:** 1

Hole section : 8 1/2" **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	Glycol [%]
2005-03-06	1197	1197	SEA WATER	1.14	6.5		1		/	10.8	1.0	0.1	0.5			6700	100		100	5.5			35	3.6	51	
2005-03-07	1197	1197	SEA WATER	1.14	6.5		1		/	10.8	1.0	0.1	0.5			6700	100		100	5.5			35	3.6	51	
2005-03-08	1197	1197	SEA WATER	1.14	5.8		1		/	11.0	1.0	0.1	0.5			7800	100		100	5.5			35	3.6	51	
2005-03-09	1204	1204	SEA WATER	1.14	6.5		1		/	10.6	0.9	0.1	0.4			7200	120		120	6.0			29	3.4	77	
2005-03-10	1204	1204	SEA WATER	1.14	6.8		1		/	10.8	2.8	0.6	1.3			7200	40		40	6.0			31	3.4	77	
2005-03-11	1390	1390	SEA WATER	1.15	8.5		1		/	10.3	1.9	0.6	1.1			6500	20		20	7.5			31	3.0	139	
2005-03-12		0	SEA WATER						/																	
2005-03-13	1428	1428	SEA WATER	1.14	9.0		1		/	10.1	1.5	0.5	1.2			5600	100		100	7.5			25	2.9	148	
2005-03-14	1428	1428	SEA WATER	1.14	9.0		1		/	10.0	1.2	0.3	1.6			5500	100		100	7.5			25	2.9	148	
2005-03-15	1540	1540	SEA WATER	1.14	9.0		1		/	10.1	1.1	0.9	1.7			3600	60		60	7.5			25	3.0	149	
2005-03-16	1540	1540	SEA WATER	1.14	9.0		1		/	10.0	1.2	1.0	1.7			3600	60		60	7.5			25	3.0	149	
2005-03-17	1540	1540	POLYMER MUD	1.14	9.0		1		/	9.8	1.2	1.0	1.7			3600	60		60	7.5			25	3.0	149	
2005-03-18	1540	1540	POLYMER MUD	1.14	9.0		1		/	9.8	1.2	1.0	1.7			3600	60		60	7.5			25	3.0	149	
2005-03-19	1540	1540	POLYMER MUD	1.15	9.0		1		/	9.8	1.2	1.0	1.7			3600	60		60	7.3			25	3.0	139	
2005-03-20	1540	1540	POLYMER MUD	1.15	9.0		1		/	9.5	1.2	1.0	1.7			3600	60		60	7.3			25	3.0	139	
2005-03-21	1540	1540	POLYMER MUD	1.15	9.0		1		/	9.5	1.2	1.0	1.7			36000	60		60	7.3			25	3.0	113	

Hole section : P&A **WATER BASED SYSTEM**

Date	Depth [m] MD	Depth [m] TVD	Mud Type	Dens [sg]	Filtrate API [ml]	Filtrate HPHT [ml]	Filtcake API [mm]	Filtcake HPHT [mm]	HPHT Press/Temp [bar/DegC]	pH	Alcalinity Pm [ml]	Alcalinity Pf [ml]	Alcalinity Mf [ml]	Inhib Chem [Kg/m3]	K+ [mg/l]	CL- [mg/l]	Ca++ [mg/l]	Mg++ [mg/l]	Tot hard [mg/l]	Percentage Solid [%]	Percentage Oil [%]	Percentage Sand [%]	CEC [Kg/m3]	ASG [sg]	LGS [Kg/m3]	Glycol [%]
2005-03-22	1540	1540	KCL/POLYMER	1.20	5.2		1		/	10.8		0.5	1.7		40000	36000	320		320	9.0		0.0		3.5	76	
2005-03-23	1540	1540	KCL/POLYMER	1.20	6.8		1		/	8.8	2.5	0.2	2.2		41000	37000	840		840	9.0				3.5	74	
2005-03-24	965	965	KCL/POLYMER	1.20	9.0		1		/	12.2	5.1	0.8	5.0		41000	37000	720		720	9.0				3.5	74	
2005-03-25	538	538	KCL/POLYMER	1.20	9.8		1		/	8.5	3.3	0.3	3.8		41000	37000	720		720	9.0				3.5	74	
2005-03-26		0	SEA WATER	0.00					/																	
2005-03-27		0	SEA WATER						/																	

TOTAL CONSUMPTION OF MUD ADDITIVES

Well: 7220/6-1 **PO:** 1

Section	Product/ Additive	Unit	Total Amount Used
36"	BENTONITE	kg	4000.00
	DUOTEC NS	kg	100.00
	LIME	kg	20.00
	NACL BRINE	l	25000.00
	SODA ASH	kg	50.00

Section	Product/ Additive	Unit	Total Amount Used
26"	DUOTEC NS	kg	50.00

Section	Product/ Additive	Unit	Total Amount Used
17 1/2"	BARITE	kg	5000.00
	CITRIC ACID	kg	1500.00
	CMC EHV	kg	450.00
	DUOTEC NS	kg	1375.00
	DUOVIS PLUS NS	kg	100.00
	FLO-TROL	kg	425.00
	GLYDRIL MC	l	9000.00
	KCL POWDER	kg	5000.00
	POLYPAC ELV	kg	3425.00
	POTASSIUM CARBONATE	kg	400.00
	PREMIXED MUD	l	177000.00
	SODIUM BICARBONATE	kg	1975.00
	TROL FL	kg	1675.00

Section	Product/ Additive	Unit	Total Amount Used
12 1/4"	BACTERIOCIDE	l	100.00
	CITRIC ACID	kg	800.00
	DUOTEC NS	kg	750.00
	DUOVIS PLUS NS	kg	25.00
	KCL POWDER	kg	6000.00
	MICA FINE	kg	250.00
	PREMIXED MUD	l	73000.00
	SODIUM BICARBONATE	kg	1050.00

Section	Product/ Additive	Unit	Total Amount Used
9 7/8"	BARITE	kg	14000.00
	BENTONITE	kg	4800.00
	CITRIC ACID	kg	25.00
	DUOTEC NS	kg	525.00
	FLOWATE	kg	9000.00
	NACL BRINE	l	90000.00
	NACL PREMIX	l	99000.00
	SODA ASH	kg	50.00
	TROL FL	kg	1750.00

Section	Product/ Additive	Unit	Total Amount Used
8 1/2"	BACTERIOCIDE	l	50.00
	BARITE	kg	82000.00

TOTAL CONSUMPTION OF MUD ADDITIVES

Section	Product/ Additive	Unit	Total Amount Used
8 1/2"	BENTONITE	kg	13000.00
	CACO3 M	kg	300.00
	CITRIC ACID	kg	825.00
	CMC EHV	kg	150.00
	DEFOAMER	l	675.00
	DRILPLEX	kg	1506.00
	DUOVIS PLUS NS	kg	325.00
	FLOPLEX	kg	3506.00
	LIME	kg	160.00
	M-I X II	kg	300.00
	NUTPLUG F	kg	300.00
	SODA ASH	kg	1500.00
	SODIUM BICARBONATE	kg	550.00

Section	Product/ Additive	Unit	Total Amount Used
P&A	BARITE	kg	6000.00
	CITRIC ACID	kg	1875.00
	CMC EHV	kg	50.00
	DUOTEC NS	kg	150.00
	DUOVIS PLUS NS	kg	150.00
	GLYDRIL MC	l	800.00
	SODA ASH	kg	50.00
	SODIUM BICARBONATE	kg	2625.00

Norsk Hydro

2006-04-05

LOGGING INFORMATION

Well: 7220/6-1 **PO:** 1 **RKB:**25,0 **m** **Rig:** EIRIK RAUDE

WL Logging Contractor: SCHLUMBERGER **LWD Contractor:** BHI

Official Data: ☑

Max. Well Deviation: 7,36 [Deg]

Bit Run	LWD Run	WL Run	Run Char	Hole Section	Track	Drilled Top [m MD]	Drilled Bottom [m MD]	Log Suite	Log Tool Offset [m]	Logging Start	End Last Logging	Measured Temp [Deg C]	Circ. Prior to Log [min]	Time Since Circulation [min]
1	1			9 7/8"		393,5	417,0	MPR- MAP	2,16- 9,92	2005-01-20 04:15	2005-01-20 15:30			
1 RR	2			9 7/8"		417,0	480,0	MPR- MAP	2,68- 10,49	2005-01-21 20:30	2005-01-22 07:30			
0	3			36"		393,5	431,0	MAP	7,08- 9,82	2005-01-22 21:30	2005-02-23 21:30			
3	4			17 1/2"		393,5	462,0	MAP	11,95- 14,69	2005-01-24 22:30	2005-01-25 07:00			
0	5			36"		393,5	461,0	MAP	11,95- 14,69	2005-01-26 23:00	2005-01-27 08:30			
5	6			17 1/2"		479,0	546,0	MPR- MAP	14,7- 22,43	2005-02-08 03:30	2005-02-08 18:00			
6	7			12 1/4"		546,0	749,0	MPR- MAP	15,84- 23,58	2005-02-15 08:00	2005-02-16 08:30			
6 RR	8			12 1/4"		749,0	1130,0	MPR- MAP	15,84- 23,58	2005-02-21 22:30	2005-02-23 02:00			
7	9			8 1/2"		1130,0	1149,0	OTK	17,58- 20,85	2005-02-28 01:00	2005-03-01 22:00			
		1	A	8 1/2"		1114,0	1196,5	FMI		2005-03-05 21:00	2005-03-06 02:00	33,0	630	900
		1	A	8 1/2"		1112,0	1196,5	PEX		2005-03-06 02:00	2005-03-06 07:00	33,0	630	1200

Norsk Hydro

2006-04-05

LOGGING INFORMATION

Well: 7220/6-1 **PO:** 1 **RKB:**25,0 **m** **Rig:** EIRIK RAUDE

WL Logging Contractor: SCHLUMBERGER **LWD Contractor:** BHI

Official Data: ☑

Max. Well Deviation: 7,36 [Deg]

Bit Run	LWD Run	WL Run	Run Char	Hole Section	Track	Drilled Top [m MD]	Drilled Bottom [m MD]	Log Suite	Log Tool Offset [m]	Logging Start	End Last Logging	Measured Temp [Deg C]	Circ. Prior to Log [min]	Time Since Circulation [min]
		1	A	8 1/2"		1151,8	1191,8	MDT		2005-03-06 07:00	2005-03-06 20:15	34,8	630	1500
		1	B	8 1/2"		1151,8	1191,8	MDT		2005-03-06 20:15	2005-03-07 15:30	34,8	630	2295
7 RR	10			8 1/2"		1204,0	1428,0	OTK	18,15- 21,42	2005-03-11 23:59	2005-03-12 07:00			
11	11			8 1/2"		1428,0	1540,0	OTK	8,59- 11,86	2005-03-15 23:30	2005-03-16 06:30			
		2	A/B	8 1/2"		600,0	1537,5	FMI- DSI		2005-03-16 08:00	2005-03-16 15:00	36,0	36	966
		2	A/B	8 1/2"		1100,0	1537,5	SP- AIT- PEX- ECS		2005-03-16 15:00	2005-03-17 01:20	37,0	36	1608
		2	A	8 1/2"		1122,7	1535,0	GPIT- HNGS- UBI		2005-03-17 01:20	2005-03-17 14:00	40,0	36	2226
		2	B/A	8 1/2"		1100,0	1535,0	HNGS- CMR		2005-03-17 14:00	2005-03-18 04:15	42,8	36	2793
		2	C	8 1/2"		1150,0	1480,5	MDT		2005-03-18 04:15	2005-03-20 08:15			
		2	A	8 1/2"		728,6	1502,9	VSP		2005-03-20 08:15	2005-03-20 17:00			

Norsk Hydro

2006-04-05

LOGGING INFORMATION

Well: 7220/6-1 **PO:** 1 **RKB:**25,0 **m** **Rig:** EIRIK RAUDE

WL Logging Contractor: SCHLUMBERGER **LWD Contractor:** BHI

Official Data: ☑

Max. Well Deviation: 7,36 [Deg]

Bit Run	LWD Run	WL Run	Run Char	Hole Section	Track	Drilled Top [m MD]	Drilled Bottom [m MD]	Log Suite	Log Tool Offset [m]	Logging Start	End Last Logging	Measured Temp [Deg C]	Circ. Prior to Log [min]	Time Since Circulation [min]
		2	A	8 1/2"		1219,1	1485,0	MSCT		2005-03-20 17:00	2005-03-21 09:30	42,0	36	10620