3.5 Well Testing

3.5.1 Test no 1; Sequence of events.

Date	Time	Event
920917	1630	Start rig up Atlas wireline to run permanent packer
	2144	Set permanent packer.
	2330	Finished rigging down Atlas wireline.
920918	0130	Start to pick up guns.
	0640	RIH with 2 Read gauges.
	0710	RIH with 2 HMR gauges.
	0830	Pressure test PCT and HRT to 220 bar
	1630	Pressure test slipjoints against PCT to 440 bar
920919	1005	Pressure test string to 440 bar
	1210	EZ-tree through rotary
	1335	Lubricator through rotary
	1409	Pressure test against PCT to 440 bar
	2048	Open master valve
	2052	Pressured up to 135 bar to open PCT tester valve.
		PERFORATION AND CLEANUP FLOW
	2127	Pressuring up tubing to 427 bar to fire guns.
	2130	Bleed down tubing through choke to tank
	2136	Perforated 3545-3552 m MDRKB and flowed to tank on 32/64" adj. choke
	2142	Direct flow to burner
	2156	Start glycol injection on choke manifold
	2233	Bottom up. Mud to surface
	2245	Increased to 40/64" adj. choke
	2250	Increased to 48/64" adj. choke
	2255	Choke plugged
	2300	BSW = 100 % Mud
	2315	Increased to 56/64" fixed choke
	2316	BSW = 15% solids
	2330	BSW = 9 % solids (5% mud 4 % sand)
920920	0000	BSW = 7 % solids (all sand)
	0019	Divert flow to tank, pump out tank to burner
	0027	Stopped emptying tank
	0031	Commenced metering returns to tank
	0035	Divert flow to flare. Rate calculated to 814 Sm3/D
	0054	Changed to 48/64" adj. choke
	0100	Divert flow through 48/64" fixed choke
	0115	Divert flow to tank for flow calculations. Rate calculated to 931 Sm3/D
	0140	Divert flow to tank for flow calculations. Rate calculated to 859.5 Sm3/D
	0210	Divert flow to tank for flow calculations. Rate calculated to 898

Sm3/D
0310 Switch flow through separator
1000 Start taking water samples

CLEANUP BUILDUP

1057 Shut in well at the choke manifold

MINIFRAC TEST

1522 Open well on 48/64" adj.choke to bleed off gas prior to minifrac test

1527 Change to 48/64" fixed choke
1533 Shut in well at choke manifold
1542 Displace mud down to perforations
1630 Wait for pressure to stabilize
1645 Start pumping 1.38 SG mud
1647 Stopped pumping due to high pressure. Pumped 2.3 m3
1654 Start pumping again. Injection rate 400 l/min.
1708 Injection rate 570 l/min.
1712 Injection rate 800 l/min.
1718 Injection rate 662 l/min.
1721 Injection rate 640 l/min.
1728 Injection rate 710 l/min.
1732 Injection rate 750 l/min.
1735 Injection rate 770 l/min.
1737 Injection rate 805 l/min.
1739 Injection rate 805 l/min.
1743 Injection rate 830 l/min.
1744 Bleed off pressure to shut PCT
1745 Shut-off cement pump. Pumped approximately 30 Sm^3 into the formation.
1746 Indication of PCT closing
1845 Bleed tbg. to 50 bar from 250 bar.
1900 Close master valve, open fail safe
1924 Close failsafe
1927 Equalize pressure across master to 65 bar
1930 Rig down flowline
2045 Minifrac test finished. Closed PCT.
2100 Apply 135 bar on annulus to open PCT
2103 Bleed down tubing to 0, do 5 min. flow check
2118 Shear short at 280 bar
2119 Open middle pipe ram
2120 Start circulating long way
2235 Open middle piperam
2322 Start to pull out of sea assembly
0024 Bullheading 5 m3
0150 Start to pull string.
END OF TEST 1

WELL TEST DATA

Measured by ELS

DATE	TIME	WHP bar	WHT °C	WATER m^3/d	GOR m^3/m^3	CHOKE mm
920919	21:26	38.4	13.9			
	21:28	186.4	13.9			
	21:30	445.0	15.0			
	21:36	1.1	13.8			
	21:38	51.4	13.7			
	21:40	45.3	13.3			
	21:42	48.7	14.2			
	21:48	43.0	17.5			
	21:50	41.8	18.5			
	21:52	40.6	19.4			
	22:02	33.8	22.8			
	22:04	32.4	23.3			
	22:06	30.3	23.8			
	22:08	28.5	24.1			
	22:10	26.4	24.6			
	22:12	24.2	25.0			
	22:16	20.2	25.5			
	22:18	18.5	25.6			
	22:22	15.6	25.7			
	22:24	14.4	25.8			
	22:30	13.5	26.1			
	22:32	15.0	27.7			
	22:34	21.8	30.8			
	22:50	21.6	21.8			
	22:52	20.3	28.2			
	22:54	21.6	30.4			
	23:02	14.7	30.5			
	23:10	17.3	30.1			
	23:20	10.9	34.1			
	23:34	11.0	42.9			
	23:46	13.0	48.1			
	23:48	13.1	48.9			
920920	00:38	14.9	67.6			
	00:56	28.0	71.3			
	00:58	30.4	71.1			
	03:56	20.5	81.4	878	19.05	
	04:06	20.4	81.7	905	19.05	
	04:18	20.4	82.0	888	19.05	
	04:20	20.5	81.5	885	19.05	
	04:30	20.6	82.4	875	19.05	
	04:40	20.3	83.0	851	19.05	
	04:52	20.3	83.1	902	19.05	
	04:54	20.8	83.4	861	19.05	

05:04	20.8	83.5	871	19.05
05:06	20.4	83.7	892	19.05
05:08	20.7	83.7	885	19.05
05:24	20.5	84.3	885	19.05
09:00	20.6	87.6	872	19.05
10:45	20.3	89.0	876	19.05
11:00	36.1	88.5		
15:30	17.7	26		
16:00	28.6	37		
17:00	22.9	28		
17:45	21.1	24		

OFFSHORE ANALYSIS OF PRODUCED WATER

Time (hh:mm)	00:00 *	00:30 *	01:00 *	01:30 *	02:00 *	03:00 *	04:00	05:00	06:00	07:00	08:00	09:00	10:00
H_2O density (g/cc)	1.115	1.118	1.118	1.118	1.118	1.118	1.118	1.118	1.118	1.118	1.118	1.118	1.118
Ph at 25 ^{0}C	6.55	6.49	6.49	6.55	6.50	6.52	6.42	6.42	6.44	6.42	6.43	6.48	6.46
Cl^- (ppm)	110000	110000	105000	105000	110000	100000	115000	110000	110000	110000	110000	110000	110000
Ba + Sr (mg/l)	1	2	2	3	3	5	52	34	34	33	39	45	43
Sulpharte (mg/l)	3	30	4	4	4	34	35	16	19	20	8	12	6
Turbidity	9	5	9	11	5	4	4	9	10	7	2	3	5
Conductivity (mS/cm)	160	176	165.5	168.5	193.2	180.2	180.7	178.2	181.6	182.5	181.1	179	178.3
Alkalinity (mg/l)	200	189	185	185	178	187	186	193	190	191	195	194	184
BS & W (%)	18 at 22:45	1.5	1.5	3 1.2 at 01:50	0	0	0	0	0	0	-	-	-
Temp (^{0}C)	20.5	23.6	21.9	22.8	25.0	25.5	25.0	25.9	26.7	25.6	25.0	26.5	25.0

* Samples taken upstream separator
Rest taken at separator

SAMPLING TEST 1

Water samples

Date	Time	
920920	0400	6 bottles of 2 litres (1 with and 1 without HNO3) every hrs.
	1000	2 setts (ELS sampling programme)
	1020	6 bottles of 18 litre (3 with and 3 without HNO3)
	1030	2 bottles of 2 litre (1 with and 1 without HNO3). Esso
	1030	2 setts for organic acids, phenol and TOC (ELS sampling programme)
	1045	4 bottles with 2 litres. (1 with and 1 without HNO3)
	1050	1 a 300 cc gassbottle

DOWNHOLE GAUGES

TEST 1

Company	Gauge no.	Sensing depth	Delay	Sample rate	Performance
Halliburton	HMR 10692	3179.1 m MDRKB	30 hours	10 sec. fixed	
Halliburton	HMR 10793	3179.1 m MDRKB	35 hours	2 sec. + dP	
Read WS	Murr-2 051	3185.9 m MDRKB	30 hours	6 sec. fixed	
Read WS	Murr-2 021	3185.9 m MDRKB	35 hours	3 sec. fixed	

3.5.1 Test no 2; Sequence of events

Date	Time	Event
920922	1500	Pick up guns and run teststring.
	1925	READ gauges through rotary.
	1940	HRS gauges through rotary.
920923	1200	Pressure test EZ-valve to 440 bar. Not able to bleed off pressure below. Pulled back EZ-tree to surface and changed upper part of EZ-tree.
920924	0200	EZ-tree O.K
		PERFORATION & CLEANUP FLOW
	1422	Pressured up annulus to open PCT-valve. Valve opened.
	1518	Pressure up tubing to 440 bar to perforate.
	1529	Clear indication of perforation. Flow 2.3 m3 to tank on 24/64" adj. choke. Rate approx. 400 m3/d.
	1542	Increased adj. choke to 32/64".
	1604	Mud to surface.
	1615	Oil to surface.
	1628	Increased to 48/64" adj. choke. Problems with sand plugging the choke. Also problems to get BSW as BSW line plugged.
	1633	Diverted flow to 36/64" fixed choke.
	1655	Indication of 7% sand (problems with BSW measurements)
	1700	Diverted flow to 32/64" adj. choke. Plugging problems. Diverted flow back to 36/64" fixed choke.
	1717	BSW 1% sand.
	1718	Changed to 36/64" adj. choke.
	1724	Changed to 36/64" fixed choke due to plugging.
	1733	BSW Trace of sand.
	1742	Switched to port flare.
	1747	BSW 0% sand. Divert flow to 48/64" adj. choke. Had to increase to 64/64" adj. choke to avoid plugging.
	1755	Trace of sand. Visible inspection of fixed choke. No indication of erosion.
	1803	Changed to 52/64" adjustable choke.
	1805	Changed to 52/64" fixed choke. Got a peak on Sandec indicating more sand lifted out of the string due to increased rate.
	1855	Directed flow through separator.
	1950	Started injecting defoamer downstream choke. Problems with chemical injection pump, not able to establish injection.
		SAMPLING (DURING CLEANUP FLOW)
	2206	Changed to 32/64" adj.choke. Cease of flow caused by choke plugging or poor adj. choke calibration.
	2210	Increased to 1" adj. choke.
	2218	Changed to 1/2" fxd. choke.

	2305	Started PVT-sampling from separator:
	2340	Directed flow to tank for combined meter & shrinkage factor (5 min.).
920925	0040	PVT-sampling finished.
	0052	Changed to 1" adj.choke.
	0101	Changed to 52/64" fxd. choke.
	0400	Directed flow to tank for meter factor.
	0401	Bypassed tank after 1.5 minutes.

CLEANUP BUILDUP

	0602	Closed PCT-valve.
	0603	Positive indications of downhole closure. Closed choke manifold.
	1537	Closed the Lubricator valve.
	1545	Started to bleed the WHP to 35 Bar. Bled off the WHP to zero. Started to rig up wireline equipment to run BHS.
	1919	Pressure tested lubricator - OK. Pressured up to 94 bar, closed kill valve and opened lubricator valve, - pressure dropped 10 bar.

BOTTOMHOLE SAMPLING

	1928	Opened PCT-valve with 135 bar on annulus. Pressure increased gradually to 150 bar.
	1929	Started glycol injection on EZ-tree.
	1934	Opened well on 36/64" fixed choke for well conditioning.
	2045	Closed well in on choke manifold and prepared to run BHS. Sampler no sn100, sn042, sn117 and sn121.
	2051	Closed lubricator valve, bled down pressure to 35 bar.
	2056	Closed choke manifold. No leakage observed; bled pressure to zero. Started to rig up W/L w/BHS.
	2225	Toolstring in lubricator. Flushed lines and pressure tested to 180 bar, problems with grease injection.
	2305	Pressure tested - OK.
	2317	Zero W/L-depth on lubricator valve.
	2324	Opened lubricator valve. RIH w/BHS.
	2355	Samplers at 500 m. Problems with grease injection.
920926	0027	Opened well on 12/64" fxd. choke. Cont. RIH with samplers.
	0044	Directed flow through the separator.
	0135	Samplers at 2800 m RKB. Prepare to sample.
	0150	Fired samplers.
	0245	Closed well in at the choke manifold. Started to POOH with BHS
	0420	Closed the lubricator valve
	0427	Started to bleed of the WHP to 35 Bar
	0438	Started to bleed of the WHP to zero
	0450	Started to rig down the BHS samplers.
	0525	BHS on rig floor. Just the upper sampler had fired (Sampler #100).
	0645	Prepared to run four new samplers; two on electric firing and two with clocks set on three hours delay. Rig up & RIH.
	0737	Closed choke manifold.

0840 Samplers at 500 m, opened well on 12/64" fxd. choke. Cont. RIH w/samplers.
0842 Started glycol injection on choke manifold.
0859 Directed flow through separator.
0915 Samplers at 2800 m.
0927 Stopped glycol injection
0935 Fired two el. samplers (#122, #124).
0945 Fired two mech. samplers (#120, #123).
1017 Bypassed separator.
1020 Shut in well at choke manifold.
1023 Started POOH w/samplers.
1112 At 500 m depth, switched ELS-logging from P/T to CCL.
1140 Toolstring in toolcatcher.
1144 Closed lubricator valve.
1148 Bled surface pressure to 35 bar and checked for leakage. Bled to zero and rigged down W/L. Three samplers OK, fourth sampler had been triggered (by clock), but failed during sampling.

DROP TCP GUNS

1400 Finished rigging down electrical line, started rig up of slick line to drop TCP-guns.
1624 Opened the lubricator valve.
1630 Started to RIH with gun release tool.
1830 Release tool connected to gun release in the test string. Not able to release the guns. Started jarring.
1930 Gun released.
1940 Started to POOH with slick line.
2023 Lubricator valve closed. Bled off pressure to 35
bar and checked for leakage. Bled down pressure to zero.
2130 Started to rig up Atlas wireline surface equipment to run PLT.
2311 AWS finished rigging up.
2346 Opened the lubricator valve.

CLEANUP FLOW BEFORE PLT LOGGING

2353 Opened the well on 15.87 mm (40/64") adjustable choke. Gradually increased to 20.63 mm (52/64")
2354 Switched to 20.63 mm (52.64") fixed choke.
920927 0116 Switched flow through separator.
0200 Changed to wintertime.(Clock back 1 hour to 0100)

(NOTE: CHANGED TO NORWEGIAN WINTERTIME.)

0200 Closed in the well at choke manifold.
0223 Closed the lubricator valve.

PLT LOGGING

0300 Rigged up AWS to run PLT.
0340 PLT in tool catcher. HP gauge malfunction. Gauge changed out. (Lost time approximately 1.5 hrs.)
0555 Opened lubricator valve.
0558 Started RIH with PLT. Depth tie in at radioactive markers in test string (3153.9 m MD RKB) and in 5 1/2" liner (3350 m MD RKB).
0900 PLT at TD (3450 m MD RKB), mud up to 3439 m, i.e. 13 meters of perforation covered. Made PLT calibration and shutin passes.
0954 Started glycol injection on choke manifold.
0955 Opened well on 12/64" fxd choke.
1003 Changed to 1/4" adj. choke.
1010 Incr. to 24/64" adj. choke. Stopped glycol injection.
1015 Changed to 24/64" fxd. choke.
1020 Changed to 28/64" adj. choke.
1025 Incr. to 30/64" adj. choke.
1030 Incr. to 32/64" adj. choke.
1035 Incr. to 34/64" adj. choke.
1040 Incr. to 36/64" adj. choke.
1045 Changed to 36/64" fxd. choke.
1055 Changed to 38/64" adj. choke.
1105 Incr. to 40/64" adj. choke.
1110 Incr. to 41/64" adj. choke.
1115 Incr. to 42/64" adj. choke.
1120 Incr. to 44/64" adj. choke.
1125 Incr. to 46/64" adj. choke.
1130 Changed to 48/64" fxd. choke.
1152 Directed flow through separator.
1223 Raised separator pressure to reduce carry over in gas line.
1245 Started running PLT flow passes. Logged the interval 3385 - 3443 m. Log indicates mud in hole up to 3439 m.
1300 Directed flow to tank for combined meter & shrinkage factor.
1303 Bypassed tank.
1342 Finished running PLT flow passes.

PLT BUILDUP

1401 Shut in well on choke manifold for pressure buildup with PLT positioned above perforations. (HP gauge sensing depth 3378 m MD RKB.)
1805 PLT buildup ended.
1815 Start POOH w/PLT. Stopped due to high overpull (approaching 3000 lbs). Worked PLT carefully up and down while checking tool movement with GR and CCL log responses. Moved down to 3410 and logged up at 5 m/min. Tension gradually dropped off to normal logging value (approx. 2500 lbs), entered tubing without problems.
1855 Cont. POOH w/PLT.

	2115	PLT in toolcatcher.
	2116	Closed LUB valve.
	2119	Bled down pressure to 35 bar at choke manifold.
	2130	Bled down pressure to zero at choke manifold.
	2130	Started rigging down AWS.
	2325	Finished rigging down AWS.

MAIN FLOW

920928	0002	Opened LUB valve.
	0007	Opened the well on 12.54 mm (32/64") adjustable choke.
	0011	Changed to 15.87 mm (40/64") fixed choke.
	0030	Switched the flow thought the separator
	0835	Directed flow to tank for combined meter & shrinkage factor (5 min.). $M_f*(1-S_{hr})=0.8775$ (ELS)
	1420	Directed flow to tank for combined meter & shrinkage factor. Failed due to leak in flange of tank.
	1430	Started PVT sampling.
	2200	Finished PVT sampling.
	2240	Directed flow to tank for combined meter shrinkage factor (5 min.). $M_f*(1-S_{hr})=0.8600$ (ELS)
	2248	Changed to 15.87 mm (40/64") adjustable choke
	2259	All sampling completed.
	2300	Changed to 20.64 mm (52/64") fixed choke.

FINAL BUILDUP

920930	1200	Started to bleed off the annulus pressure. Good indication of the PCT valve closing.
	1201	Closed in at the choke manifold.
921002	0012	Started killing procedure. Opened the choke manifold and start to displace the volume above the PCT valve with mud.
	0925	Attempted to open the PCT valve - negative.
	0943	2'nd attempt to open the PCT. Annulus pressure 150 Bar - negative.
	1002	Opened the PCT valve (annulus pressure 200 Bar). Started to displace the volume below PCT and bottom perforation with mud.
	1305	Pulled the test string out of the packer - Started to circulate
	1800	Started to POOH with test string.
921003	0835	HRS gauges through rotary
	0847	READ gauges through rotary.

END OF TEST 2

Surface and bottomhole data from ELS and HRS gauge no. 10793.

DATE	TIME	WHP bar	WHT °C	BHP bar	BHT °C	Q_{GAS} Sm^3/d	Q_{OIL} Sm^3/d	GOR Sm^3/Sm^3
920924	2000	106.76	76.7	308.42	123.1	126895	1569	81
	2030	106.97	78.2	308.17	123.3	129180	1563	83
	2100	107.10	80.8	307.92	123.4	129819	1559	83
	2130	107.18	81.3	307.73	123.5	130068	1557	84
	2200	107.22	82.6	307.44	123.6	130861	1537	85
	2230	134.31	76.0	312.67	123.2	65977	720	92
	2300	133.93	73.6	313.01	123.2	64367	752	86
	2330	133.78	71.3	313.12	123.2	64805	734	88
920925	0000	133.71	70.2	313.20	123.3	64860	732	89
	0030	133.74	71.0	313.25	123.3	64403	749	86
	0100	131.92	70.4	309.50	123.4	-	843	-
	0130	107.55	80.9	307.73	123.8	127324	1533	83
	0200	107.84	83.9	307.34	123.9	128130	1537	83
	0230	107.76	85.1	307.11	123.9	130472	1528	86
	0300	107.89	86.2	306.87	124.0	130618	1531	86
	0330	107.89	86.6	306.68	124.0	130508	1531	86
	0400	107.82	87.0	306.56	124.1	130300	1537	85
	0430	107.95	86.6	306.36	124.1	129707	1477	88
	0500	107.93	87.5	306.29	124.1	129952	1502	86
	0530	107.89	87.3	306.11	124.1	130905	1492	87
	0558	107.76	86.9	305.97	124.2			
	0602	93.73	85.9	312.82	124.1			
	0700	86.95	58.7	315.74	120.8			
	0900	83.75	32.6	317.16	117.9			
	1500	84.00	17.2	319.00	114.6			
	1926	81.08	14.0	319.57	113.7			
	1930	143.63	14.0	319.19	116.4			
	2000	126.64	43.3	314.58	122.8			
	2044	128.87	55.4	314.09	123.2			
920926	0100	140.51	20.9	319.20	118.9			
	0200	141.18	23.4	319.22	120.3	11592	135	86
	0945	140.34	19.4	319.67	119.7	11564	135	85
	1015	140.34	20.7	319.65	120.1	11521	135	85
920927	0000	95.92	13.9	312.71	122.2			
	0140	107.87	76.3	310.01	123.9	133741	1531	87
	0155	108.32	81.6	309.82	124.0	139906	1537	91
	0200	108.15	78.3	309.74	124.0	133731	1541	86
			Wintertime					
	0220	145.66	74.0	316.95	123.2			
	0600	141.92	25.6	319.15	117.7			
920927	1000	139.06	13.4	319.31	117.4			
	1005	137.57	15.0	318.54	117.7			
	1015	135.13	24.5	317.80	120.9			
	1025	131.37	32.3	316.72	122.4			

	1035	128.80	38.5	315.64	122.9			
	1040	126.35	41.3	315.00	123.1			
	1050	126.09	46.2	315.05	123.3			
	1100	118.96	50.5	313.57	123.5			
	1110	116.18	55.9	312.73	123.7			
	1120	114.37	60.4	311.88	123.8			
	1130	107.34	66.4	311.65	123.9			
	1150	114.40	72.2	311.51	124.0			
	1230	115.09	77.3	311.08	124.0	119929	1294	92
	1300	115.24	80.2	310.77	124.1	120029	1288	93
	1400	115.46	82.3	314.45	124.1	120599	1269	95
	1430	145.34	72.5	317.16	123.0			
	1500	143.97	61.5	317.70	121.9			
	1600	142.54	46.5	318.27	120.4			
	1649	141.92	38.2	318.58	119.3			
920928	0500	140.00	14.7	319.84	115.9			
	0010	122.50	16.4	315.05	119.0			
	0100	123.38	54.4	313.66	123.7	93842	1117	84
	0200	125.03	67.7	313.02	124.0	95552	1123	85
	0400	125.55	74.0	312.17	124.2	96966	1105	88
	0600	125.58	76.4	311.58	124.2	97443	1081	90
	1000	125.49	78.2	310.83	124.2	97975	1090	90
	1600	125.34	79.4	310.20	124.3	98075	1093	90
	2000	125.37	81.0	309.95	124.3	97978	1087	90
	2255	121.03	82.6	309.14	124.4	98062	1090	90
	2330	108.36	87.5	306.90	124.5	132732	1499	89
920929	0100	108.36	89.4	306.34	124.5	133394	1496	89
	0200	108.21	89.4	306.08	124.5	133452	1508	88
	0400	108.06	89.1	305.69	124.5	132844	1520	87
	0600	107.94	88.6	305.39	124.6	132733	1514	88
	0800	107.80	88.6	305.16	124.6	132428	1517	87
	1000	107.70	89.6	304.98	124.6	132061	1520	87
	1200	107.70	89.0	304.81	124.6	132645	1502	88
	1400	107.60	88.9	304.69	124.6	132443	1520	87
	1600	107.40	88.4	304.56	124.6	131704	1535	86
	1800	107.40	88.2	304.45	124.6	132119	1508	88
	2000	107.50	89.2	304.38	124.6	132279	1520	87
	2200	107.42	89.3	304.29	124.6	131987	1544	85
920930	0000	107.53	90.1	304.23	124.6	132465	1523	87
	0200	107.34	89.1	304.16	124.6	132209	1508	88
	0400	107.25	89.2	304.11	124.6	131669	1502	88
	0600	107.29	89.1	304.05	124.6	132088	1508	88
	0800	107.23	89.0	303.98	124.6	131107	1556	84
	1000	107.25	88.6	303.94	124.6	131227	1508	87
	1200	107.10	88.5	303.82	124.6	131495	1520	87
	1400	92.68	47.3	313.76	121.5			
	1600	91.40	30.4	315.13	120.2			
	1800	91.87	21.6	316.06	119.4			
	2000	91.16	17.0	316.75	118.7			

	2200	90.05	14.7	31728	118.2
921001	0000	88.75	13.4	31770	117.9
	0200	87.68	12.6	31804	117.5
	0400	86.81	12.3	31832	117.3
	0600	86.10	12.1	31854	117.1
	0800	85.65	12.1	31873	116.9
	1000	85.35	12.4	31889	116.7
	1200	85.10	12.4	31896	116.6
	1400	84.67	12.5	31916	116.4
	1600	84.29	14.1	31926	116.3
	1800	83.82	13.4	31936	116.2
	2000	83.43	12.5	31944	116.1
	2200	83.18	11.9	31951	116.0
920902	0000	82.94	11.7	31958	115.9

Flow data for cleanup flow:

Oil density:	0.85 g/cc @ 25 °C
Gas gravity:	0.75 (air = 1)
CO_2:	1.6 %
H_2S:	3.5 ppm
Mercaptanes	5.5 ppm
P_{SEP}:	8000 kPa
T_{SEP}:	80 °C

Flow data for Bottomhole sampling flow:

Oil density:	0.846 g/cc @ 25 °C
Gas gravity:	0.699 (air = 1)
CO_2:	1.5 %
H_2S:	0 ppm
Mercaptanes	0 ppm
P_{SEP}:	2400 kPa
T_{SEP}:	19 °C

Flow data for Cleanup before Plt logging.

Oil density:	0.850 g/cc @ 24 °C
Gas gravity:	0.738 (air = 1)
CO_2:	1.2 %
H_2S:	2.0 ppm
Mercaptanes (CH_3OH)	4.5 ppm
P_{SEP}:	5600 kPa
T_{SEP}:	78 °C

Flow data for Plt logging.

Oil density:	0.854 g/cc @ 19 °C
Gas gravity:	0.738 (air = 1)
CO_2:	1.6 %
H_2S:	0.2 ppm
Mercaptanes (CH_3OH)	0.5 ppm
P_{SEP}:	5050 kPa
T_{SEP}:	78 °C

Flow data for Main flow.

Oil density:	0.852 g/cc @ 19 °C
Gas gravity:	0.751 (air = 1)
CO_2:	1.5 %
H_2S:	4.0 ppm
Mercaptanes (CH_3OH)	6.0 ppm
P_{SEP}:	5810 kPa
T_{SEP}:	82 °C

SAMPLING TEST 2

PVT Samples

Date	Time	Oil bottle no.	Gas bottle no.
920924	2304-2351	TS-55-13	A 17113
920928	1430-1502	TS-27-03	A 17253
920928	1930-2005	TS-55-07	A 14621
920928	2125-2200	TS-56-15	A 17280

Bottom Hole Samples

BHS no.	Oil bottle no.	Opening pressure	Bubblepoint
100	TS-51-19	122 bar	152 bar
122	TS-51-07	110 bar	153 bar
123	TS-50-02	108 bar	153 bar
124	TS-55-08	118 bar	153 bar

All samples taken with bottom of tool at 2800 m.

Additional samples

Date	Time	
920924	2355	Separator oil on gas bottles: A 17274, A 17275, A 17328
920928	1555	Separator oil on gas bottles: A 16713, A 15283, A 17265, A 17311
920925	0040	Geochemical gas sample (300 cm^3)
920928	2257	Geochemical gas sample (300 cm^3)
920925	0130	Stabilized oil: 5 x 18 litre, 3 x 5 litre, 5 x 1 litre
920928	1750	Stabilized oil: 5 x 18 litre, 4 x 5 litre, 5 x 1 litre
920930	0015	8 litres of water sampled from the separator. 4 litres added HNO_3.

DOWNHOLE GAUGES

TEST 2

Company	Gauge no.	Sensing depth	Delay	Sample rate	Performance
Halliburton	HMR 10692	3179.1 m MDRKB	26 hours	26 sec. fixed	
Halliburton	HMR 10793	3179.1 m MDRKB	102 hours	6 sec. + dP	
Read WS	Murr-2 051	3185.9 m MDRKB	24 hours	15 sec. fixed	
Read WS	Murr-2 016	3185.9 m MDRKB	30 hours	60 sec. fixed	