FLOPETROL

DIVISION : NSD

BASE : NWB

REPORT N°: 83/2301/29b

Well Testing Report

RIG "ROSS ISLE" DST NO. 2

Client : STATOIL

Field : GULLFAKS Well : 34/10-7

Zone : COOK SAND Date : JUNE/JULY 1983

N°: DOP 100

INDEX

Flopetrol chief operator
Name : GALBRUN/SKAGEN

Client representative
Name : KARL GJERDE

- TEST PROCEDURE -

DST # 2

AFTER GEOVANN TOP GUN PERFORATES INTERVAL 1833.37 - 1863.37 M IN COOK ZONE; FLOPETROL RUN IN HOLE TO SET SDP GAUGES.

THE WELL WAS OPENED FOR A CLEAN UP ON A 40/64" FIXED CHOKE ON WHICH CHOKE IT SHOULD REMAIN DURING ENTIRE FLOW PERIOD. AFTER THE WELL WAS CLEAN THE FLOW WAS SWITCHED THROUGH THE SEPARATOR.

AFTER ENOUGH INFORMATION WAS GAINED FROM THIS ZONE, THE SEPARATOR WAS BYPASSED AND THE WELL SHUT IN BOTH DOWNHOLE AND AT SURFACE FOR A PRESSURE BUILD UP.

AFTER THE PRESSURE BUILD UP, THE CLIENT INTENDED TO DO AN INJECTION TEST ON THIS WELL FOR FUTURE PURPOSES.

AFTER CLEANING THE SURFACE LINES, FILTERED SEAWATER WAS PUMPED DOWN AT 270 m^{3}/DAY.

THE WELL WAS THEN SHUT IN FOR A FALL OFF AND WHEN PRESSURE WAS STABILIZED THE PUMPS WERE STARTED AGAIN, THIS TIME TO PUMP CHEMICALS ADDED SEAWATER AND RATES WERE INCREASED SEVERAL TIMES. AFTER INJECTION TEST, A FRACTURE TEST WAS DONE.

— MAIN RESULTS —

Tested interval : COOK SAND Perforations : 1833.37-1863.37

Operation	Duration	Bottom hole pressure	Well head pressure	Oil prod. rate	Gas prod. rate	G.O.R.
Units	MIN	BARA	BARG	M^3/DAY	M^3/DAY	M^3/M^3
CLEAN UP 40/64" POS	45	264.34	115.63			
MAIN FLOW 40/64" POS	762	251.60	110.04	810.5	98.900	122
BUILD UP	1393	311.69				
1ST INJECTION	897	346.39	162.72			
FALL OFF	93	316.75	130.66			
2ND INJECTION ON DIFFERENT RATES	1617	352.85	242.70			

Depth of bottom hole measurements : 1828.60 M Reference : RKB

Temperature : 75.6°C flow 72.5°C SI 1828.60 M depth

Separator gas gravity (air : 1) at choke size : 0.681 40/64" FIXED CHOKE

STO gravity at choke size : 0.8264 40/64" FIXED CHOKE

BSW : 0 Water cut : 0

REMARKS AND OTHER OPERATIONS

ALL FIGURES ARE LAST DATED IN THE EVENTS.
BOTTOM HOLE PRESSURES TAKEN FROM SDP NO. 82014

- OPERATING AND MEASURING CONDITIONS -

A - TYPE OF GAUGE -

BOTTOM HOLE :
Pressure : 2 x SDP 10000 PSI 3 x SPERRY SUN
Temperature : 2 x SDP 0-150°F 3 x SPERRY SUN

WELL HEAD :
Pressure : FOXBORO 0-5000 PSIG DWT 0-10000 PSI SPERRY SUN MR. SIX
Temperature : FOXBORO 0-200°F

SEPARATOR :
Pressure : BARTON 0-1500 PSIG, 0-100 HW
Temperature : 0-300°F

B - PRODUCTION RATE CONDITIONS AND SOURCES -

OIL PRODUCTION RATE
- ☐ Tank → ☐ Floco
- ☒ Meter
- ☐ Dump → ☒ Rotron
- ☐ _____

Reference conditions :
- ☐ Separator
- ☐ Atmospheric pressure 60°F

Shrinkage measurement :
- ☐ With tank
- ☐ With shrinkage tester

GAS PRODUCTION RATE
- ☒ Orifice meter
- ☐ _____

Standard conditions :
14.698 PSI
59°F

WATER PRODUCTION RATE
- ☐ Tank
- ☐ Meter
- ☐ _____

C - WELL DATA -

WELL STATE DURING SURVEY :

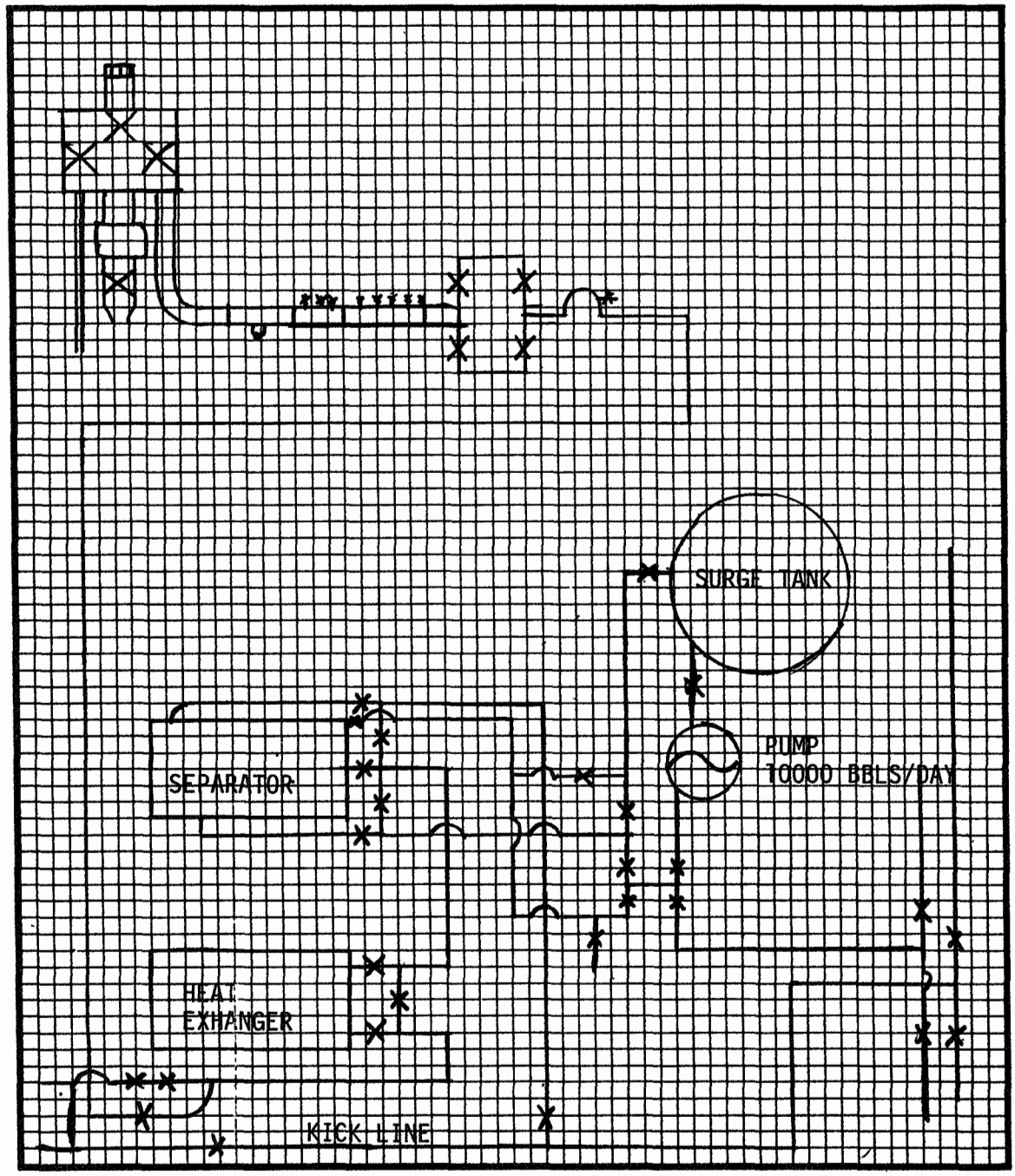
Well producing through : 3 1/2 tubing / ~~annulus~~ / ~~casing~~
Main casing size 7" set at WELLHEAD Total well depth 2550 M
Tubing size 2.75" I.D. set at _____ Packer RTTS set at 1809.60 M
Perforations :
- Zone COOK From 1833.37 to 1863.37 From _____ to _____
- Zone _____ From _____ to _____ From _____ to _____
-

WELL STATE BEFORE TEST : RE-ENTRY

- ☐ Well closed since _____
- ☐ Well flowing since _____ Producing zone _____
  Choke size _____

N° : DOP 104

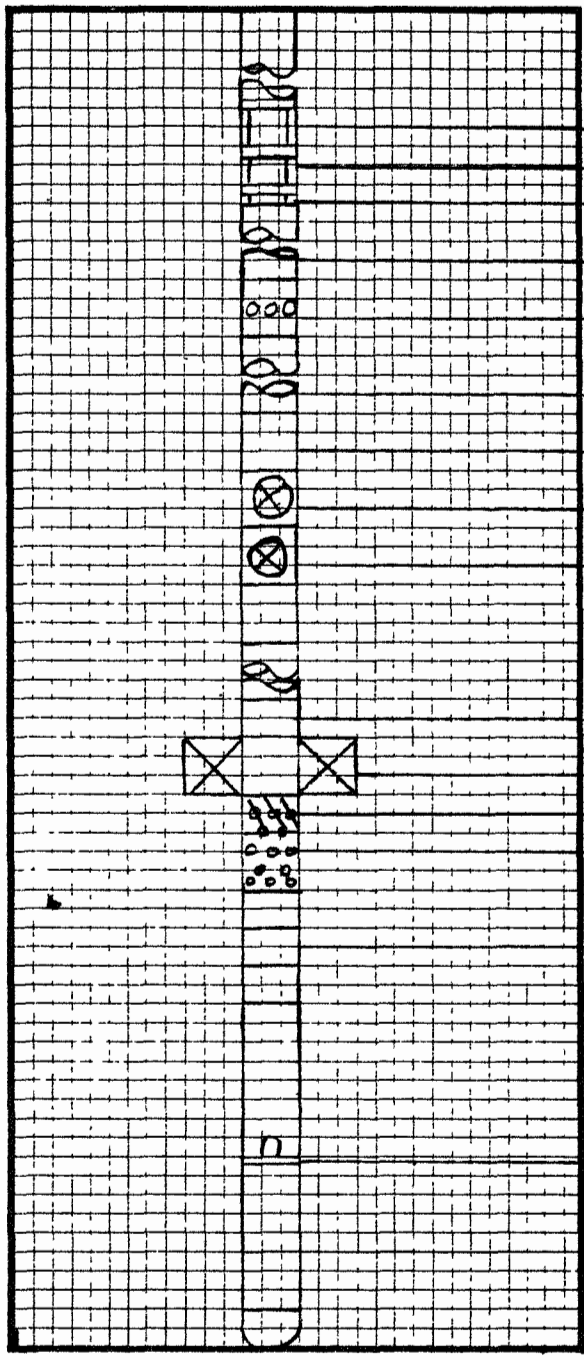
- SURFACE EQUIPMENT LAYOUT -



REMARKS :

NOT TO SCALE

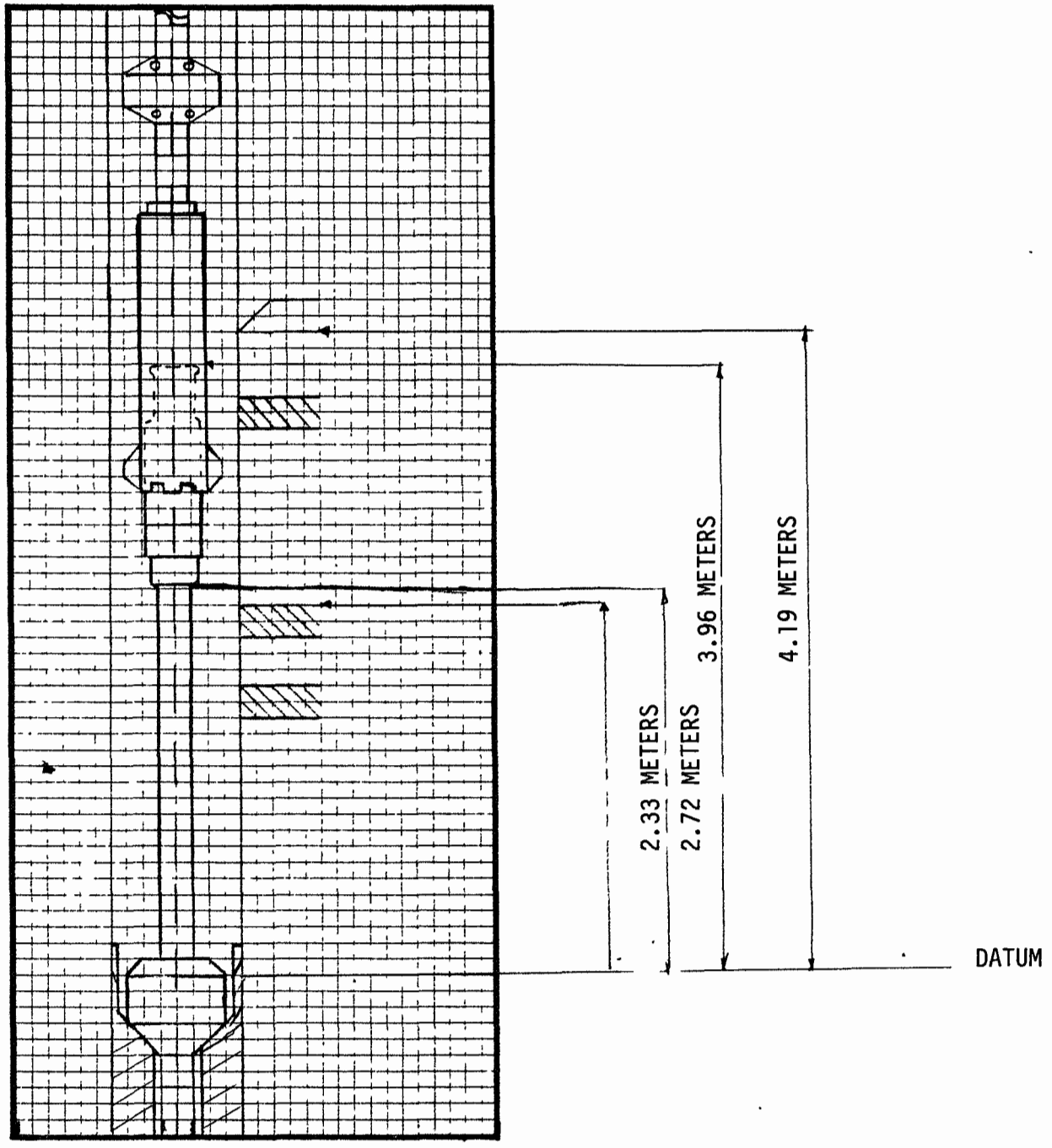
- WELL COMPLETION DATA -



1 SLIP JOINT OPEN
1 SLIP JOINT CLOSED — RTTS CIRC. VALVE
APR-M CIRC VALVE 1798.82 METERS
DRILL PIPE TESTER VALVE
LPR-N 1805.16 METERS
RTTS PACKER 1810.60 METERS
BUNDLE CARRIER 1811.03 - 1816.12 METERS
PERFORATED JOINT 1819.65 METERS
BAKER F-NIPPLE 1 3/4" 1820.69 METERS
GEOVANN PERFORATOR

REMARKS :

- WELL COMPLETION DATA -



REMARKS :

CLEARANCE BETWEEN TOP OFF M.P.RAMS AND COLLAR ON SLICK JOINT = 39 CM
CLEARANCE FROM TOP OFF UNLATCH POINT TO BOTTOM OFF SHEAR RAMS = 24 CM

- SEQUENCE OF EVENTS -

DATE	TIME	OPERATION
23.06.83	07:30	CREW LEAVE STAVANGER TO BERGEN - STANDBY IN BERGEN.
24.06.83	08:45	A. GALBRUN, TERJE AASLAND, STEVE BREZINA, A. TURTON
		ARRIVE ON RIG.
	10:00	INSTALLATION OF LODGE BOXES ON BOTH BURNERS.
	13:00	FUNCTION TEST OF LODGE BOX.
	15:00	INVENTORY AND OVERALL CHECK OF FIXED EQUIPMENT.
25.06.83	06:00	ALL EQUIPMENT ARRIVE WITH SUPPLY BOAT.
	06:30	RIGGED UP RUPTURE DISC ON SEPARATOR.
	07:00	RIGGED UP RUPTURE DISC ON STEAM EXCHANGER.
	07:30	FIXED UP VALVE ON SIDE GLASS SEPARATOR.
	09:00	RIGGED UP FLOWLINE TO PRESSURE TEST FIXED SURFACE
		EQUIPMENT.
	09:30	RIGGED UP FLOWHEAD.
	11:30	RIGGED UP LUBRICATOR VALVE.
	14:00	START PRESSURE TEST OF FIXED SURFACE EQUIPMENT ACCORDING
		TO AND SUPERVISED BY STATOIL.
	18:00	END OF PRESSURE TEST. ONE LEAK OBSERVED ON RIG VALVE.
	18:00	PRESSURE TEST AND FUNCTION TEST OF LUBRICATOR VALVE: TEST
		OK.
	19:00	CALIBRATION OF FLOCO AND ROTRON METER.
	22:00	END OF CALIBRATION.
26.06.83	06:00	RIG UP EZ-TREE.
		PRESSURE TEST OF FLOWHEAD.
		PRESSURE TEST OF EZ-TREE.
		PRESSURE TEST OF CHOKE MANIFOLD.
		PRESSURE TEST OF GLYCOL INJECTION UNIT.
		INSTALLATION OF LAB CABIN.
		INSTALLATION OF SURFACE SAMPLING.

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
26.06.83		INSTALLATION OF GAS SUPPLY ON BURNER.
27.06.83	08:00	PRESSURE TEST OF CHOKE MANIFOLD (CONTINUED). OK
		CALIBRATION OF FOXBORO.
		CALIBRATION OF BARTON.
		INSTALLATION OF DEGASSING UNIT.
	18:00	TIDY UP EQUIPMENT.
	22:00	REST OF CREW, Ø. SKAGEN, G. HEITMAN, A. ENDEBAKEN,
		K. VARGEVIK, A. AUSTLID ARRIVE RIG.
28.06.83	00:00	RIGGED UP OF PRESSURISATION UNIT FOR LAB CABIN.
		RIGGED UP OF RUPTURE DISC OM STEAM EXCHANGER.
		RIGGED UP OF SDP GAUGES AND CHECK. OK.
	12:00	TEST OF GEOVAN FIRE BAR. SPACE OUT IN FLOPETROL
		FLOWHEAD. OK.
	13:00	PRESSURE TEST OF 1502 CHICKSANS TO 5000 PSI.
	15:00	FLUSHED COOLING WATER THROUGH BURNERS.
	16:00	PICK UP FLOWHEAD TO TORQUE UP CONNECTIONS + SINGLE.
	16:50	FLOWHEAD ON PIPEDECK.
	17:00	PICK UP LUBRICATOR VALVE AND PUP JOINTS TO BE TORQUED
		UP.
	17:15	LUBRICATOR VALVE ON PIPE DECK.
	17:20	PICK UP EZ-TREE + PUP JOINT TO BE TORQUED UP.
	18:45	EZ-TREE TORQUED UP AND RUN IN HOLE FOR DUMMY RUN.
	20:00	CLOSE MIDDLE PIPE RAMS. POOH.
	20:34	EZ-TREE ON SURFACE.
	20:45	EZ-TREE ON PIPEDECK.
29.06.83	07:10	BUNDLE CARRIER WITH SPERRY SUN GAUGES ON STRING.
	07:30	BUNDLE CARRIER WITH SPERRY SUN GAUGES IN HOLE.
	18:00	EZ-TREE ON RIG FLOOR.
	18:15	FUNCTION TEST LATCH + A AND B LINE.
	18:25	RUN IN HOLE WITH EZ-TREE.

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
29.06.83	19:00	LUBRICATOR VALVE ON RIG FLOOR.
	19:15	RUN IN HOLE.
	19:40	TEST STRING PRESSURE TESTED TO TOP OF LUBRICATOR VALVE.
	20:00	FLOWHEAD ON RIG FLOOR. RIG UP KILL AND FLOWLINE.
	21:00	FILL LINES WITH WATER TO PRESSURE TEST DOWN HOLE
		EQUIPMENT. .
	22:15	PRESSURE TEST EZ-TREE VALVE.
	22:29	PRESSURE TEST LUBRICATOR VALVE.
	22:58	FLUSH FLOWLINE TO BURNERS.
	23:05	PRESSURE TEST CHOKE MANIFOLD INLET VALVES.
	23:35	PRESSURE TEST HEATER INLET AND BY-PASS..
	23:47	PRESSURE TEST CHOKE MANIFOLD DOWNSTREAM VALVES.
30.06.83	00:20	PRESSURE TEST BURNERS.
	00:50	SET PACKER.
	01:00	START RIG UP SCHLUMBERGER.
	02:52	CLOSE LUBRICATOR VALVE.
	02:54	OPEN SWAB VALVE.
	02:55	OPEN MASTER VALVE.
	03:02	RIG UP SCHLUMBERGER. TOOL STRING THROUGH BOP..
	03:04	CLOSE CHOKE MANIFOLD FOR PRESSURE TEST.
	03:25	OPEN CHOKE MANIFOLD TO BLEED OFF. LEAK IN BOP.
	03:30	CLOSE CHOKE MANIFOLD.
	03:33	OPEN CHOKE MANIFOLD.
	03:40	CLOSE CHOKE MANIFOLD.
	03:40	PRETEST SCHLUMBERGER BOP TO 2000 PSIG. OK.
	03:50	PRETEST SCHLUMBERGER STUFFING BOX TO 2000 PSIG. OK.
	04:02	OPEN CHOKE MANIFOLD.
	04:03	OPEN LUBRICATOR VALVE.
	04:05	SCHLUMBERGER RIH WITH CCL.
	06:37	CLOSE CHOKE MANIFOLD.

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
30.06.83	06:40	PRESSURED UP TOOL STRING TO 2000 PSI
	06:44	OPEN LPRN
	06:48	START RUN THROUGH LPRN VALVE
	07:10	THROUGH LPRN.
	07:12	START POOH
	07:58	ON SURFACE.
	07:59	CLOSE LUB VALVE
	08:01	BLEED DOWN TO 700 PSIG
	08:04	SCHLUMBERGER START RIG DOWN.
	08:20	CLOSE SWAB VALVE
	08:30	START RIG UP BOP AND LUBRICATOR
	08:44	CLOSE CHOKE MANIFOLD
	08:45	CLOSE MASTER VALVE
	08:46	OPEN SWAB VALVE
	08:48	START PRESSURE TEST LUBRICATOR TO 2000 PSIG
	08:55	BLEED OFF. PRESSURE TEST OK
	08:58	OPEN CHOKE MANIFOLD
	09:00	CLOSE SWAB VALVE/OPEN MASTER VALVE
	09:02	LUBRICATOR OFF BOP
	09:03	GEOVANN FIRING BAR ON SWAB VALVE
	09:04	LUBRICATOR ON BOP. CLOSE CHOKE MANIFOLD.
	09:22	PRESSURE UP AGAINST LUBRICATOR VALVE TO 1900 PSIG.
	09:28	OPEN LUBRICATOR VALVE.
	09:33	CLOSE KILL VALVE. START BLEED OFF TO 500 PSIG
	09:34	OPEN SWAB VALVE AND DROP FIRING BAR
	09:35	CLOSE SWAB VALVE
	09:39	TOP GUN FIRED
	09:47	CLOSE LUBRICATOR VALVE
	09:48	OPEN CHOKE MANIFOLD. BLEED OFF PRESSURE
	09:50	START RIG UP V.L.

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
30.06.83	09:57	OPEN SWAB VALVE
	09:59	LUBRICATOR OFF BOP.
	11:33	GAUGES ON STRING. 1 x SPERRY SUN MRPG + 2 FLOPETROL SDP
		# 82014 + # 82016.
	11:37	OPEN KILL VALVE
	11:41	PRESSURE UP TO 1900 PSI ABOVE LUBRICATOR VALVE
	11:44	CLOSE KILL VALVE
	11:45	OPEN LUBRICATOR VALVE
	11:46	START RIH TO SET GAUGES IN "F" NIPPLE.
	14:14	WIRELINE TOOLS IN LUBRICATOR.
	14:28	DISCONNECT LUBRICATOR AND RIG DOWN WIRELINE.
	14:33	CLOSE SWAB VALVE.
	14:36	OPEN LUBRICATOR VALVE.
	14:45	OPEN WELL ON 40/64" FIXED CHOKE.
	14:51	GAS BUBBLES AT SURFACE
	14:52	MUD TO SURFACE
	14:54	BURNER IGNITED
	15:00	CRUDE OIL AT SURFACE
	16:46	SWITCH FLOW THROUGH SEPARATOR.
	17:00	START SEPARATOR READINGS
	17:15	SWITCH TO SURGE TANK METER FACTOR + SHRINKAGE
	17:25	SWITCH FLOW BACK TO BURNER
	18:00	SWITCH FLOW TO SURGE TANK, PUMP OUT TO BURNER.
	18:30	SWITCH FLOW TO BURNER.
	19:00	SWITCH FLOW TO TANK FOR METER AND SHRINKAGE FACTOR.
	19:10	SWITCH FLOW TO BURNER.
	22:15	SWITCH FLOW TO TANK. PUMP OUT TO BURNER.
	22:40	SWITCH FLOW BACK TO BURNER.
	23:00	SWITCH FLOW THROUGH TANK FOR METER AND SHRINKAGE FACTOR.
	23:10	SWITCH FLOW BACK TO BURNER.

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
01.07.83	02:52	START 1ST SET PVT SAMPLES OIL BOTTLE NO. 1509, GAS BOTTLE
		NO. A-14747.
	03:21	FINISH 1ST SET PVT SAMPLES.
	03:48	START 2ND SET PVT SAMPLES. OIL BOTTLE NO. 1422. GAS
		BOTTLE NO. A-14748.
	04:09	FINISH 2ND SET PVT SAMPLES.
	04:10	BY-PASS SEPARATOR.
	04:12	SHUT IN WELL AT LPR AND CHOKE MANIFOLD.
	22:45	EMPTY SURGE TANK.
	23:05	CLOSE MASTER VALVE.
	23:07	OPEN CHOKE MANIFOLD AND ADJUSTABLE CHOKE TO BLEED OFF.
	23:10	PRESSURE ZERO.
	23:18	OPEN KILL VALVE AND FLUSH LINES.
02.07.83	02:59	STOP FLUSH LINES.
	03:11	CLOSE CHOKE MANIFOLD AND PRESSURE UP TO 1600 PSI BETWEEN
		MASTER VALVE AND CHOKE MANIFOLD.
	03:20	CLOSE KILL VALVE.
	03:21	OPEN MASTER VALVE.
	03:25	START BLEED OFF TUBING THROUGH CHOKE MANIFOLD TO BURNERS.
	04:05	PRESSURE ZERO. CLOSE CHOKE MANIFOLD.
	04:09	OPEN KILL VALVE.
	04:37	PRESSURE UP TUBING TO 1600 PSI.
	04:42	CLOSE KILL VALVE.
	04:58	START BLEED OFF PRESSURE THROUGH CHOKE MANIFOLD TO
		BURNERS.
	05:01	PRESSURE ZERO. CLOSE CHOKE MANIFOLD.
	05:03	OPEN KILL VALVE.
	05:05	PRESSURE UP TUBING TO 1600 PSI.
	05:07	CLOSE KILL VALVE.
	06:50	OPEN LPR.

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
02.07.83	06:55	OPEN KILL VALVE.
	07:03	START INJECT SEAWATER.
	10:05	INCREASE PUMPRATE.
	10:20	INCREASE PUMPRATE.
	22:00	STOP PUMPING. CLOSE KILL VALVE AND OBSERVE FALL OFF.
	23:32	OPEN KILL VALVE.
	23:33	START INJECT SEAWATER.
	23:35	START ADDING CHEMICALS.
03.07.83	18:27	INCREASE PUMP RATE.
	21:00	INCREASE PUMP RATE.
	21:30	ONE PUMP STOPPED DUE TO OVERHEATING.
	21:50	INCREASE PUMP RATE.
	22:00	INCREASE PUMP RATE.
	22:55	INCREASE PUMP RATE TO 750 l/min.
04.07.83	00:00	INCREASE PUMP RATE.
	02:10	INCREASE PUMP RATE.
	02:30	STOP PUMPING. CLOSE KILL VALVE.
	02:41	CLOSE MASTER VALVE. PRESSURE UP TO 2500 PSIG AGAINST
		KILL VALVE.
	02:44	OPEN KILL VALVE.
	02:46	BLEED OFF PRESSURE THROUGH CHOKE MANIFOLD.
	03:10	CHOKE MANIFOLD CLOSED. PRESSURE EQUALIZED. MASTER VALVE
		OPEN.
	03:12	START TO BULLHEAD TUBING CONTENT + 500 LITER OF MUD INTO
		FORMATION.
	03:30	FINISH BULLHEADING.
	03:44	CLOSE KILL VALVE.
	04:02	OPEN APR-M CIRCULATING VALVE.
	04:15	KILL VALVE OPEN. START TO REVERSE OUT.
	04:48	START CIRCULATING.

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
04.07.83	05:31	STOP CIRCULATING
	05:35	START CIRCULATING WITH PIPERAMS OPEN.
	06:29	STOP CIRCULATING.
	06:32	CLOSE KILL VALVE.
	06:46	PICK UP TEST STRING TO OPEN HYDRAULIC BY-PASS.
	06:51	UNSEAT PACKER.
	06:55	LAND IN WEAR BUSHING.
	06:56	OPEN KILL VALVE.
	07:01	CLOSE KILL VALVE. CLOSE MIDDLE PIPE RAMS.
	07:05	BULLHEAD DOWN ANNULUS.
	07:16	CLOSE MASTER VALVE. OPEN KILL VALVE. FLUSH THROUGH
		SURFACE LINES.
	07:30	STOP FLUSHING.
	07:38	CLOSE FAIL SAFE VALVE.
	07:39	OPEN MASTER VALVE.
	07:44	START PUMPING SLUGS.
	07:53	CHOKE MANIFOLD AT PIPE DECK.
	07:55	WIRELINE BOP OFF FLOWHEAD.
	07:59	STOP PUMPING SLUGS.
	08:33	FLOWHEAD AND SINGLE DISCONNECTED FROM TEST STRING.
	08:53	FLOWHEAD ON PIPEDECK.
	09:07	LUBRICATOR VALVE AT SURFACE.
	09:14	LUBRICATOR VALVE ON PIPEDECK.
	09:50	EZ-TREE AT SURFACE.
	10:11	EZ-TREE ON PIPEDECK.
	15:10	SDP NO. 82014 AND SDP NO. 82016 AT SURFACE.

No DOP 109

FLOPETROL

Base : NWB

Client : STATOIL
Field : GULLFAKS
Well : 34/10-7

- WELL TESTING DATA SHEET -

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS					
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press	Temp	Press	Rate	Gravity	BSW	Rate	Gravity				
HRS/MIN	MIN	°C	BARA	°F	PSIG								Air = 1				Units
								30 JUNE 1983									
14:36						OPEN LURBICATOR VALVE.											
14:45		70.7	314.03		1757												
14:45	0				690	OPEN WELL THROUGH 40/64" FIXED CHOKE.											
14:46	1	70.7	284.14		800												
14:47	2	70.9	278.20		850												
14:48	3	71.2	275.25	58	910												
14:49	4	71.7	273.09	62	988												
14:50	5	72.2	271.33	65	1040												
14:51	6	72.6	269.93	68	1190	GAS BUBBLES AT SURFACE.											
14:52	7	73.0	269.19	74	1450	MUD AT SURFACE.											
14:53	8	73.5	270.85	82	1800												
14:54	9	73.4	273.98	82	1750	BURNER IGNITED.											
14:55	10	73.7	274.04	86	2450												

LIQUID FLOW RATE MEASURING CONDITIONS : 14.73 PSI AT 60°F

TESTED INTERVAL : COOK SAND 1833.37 1863.37 METERS
DEPTH REFERENCE : RKB
DEPTH OF B H MEASUREMENTS : 1828.60

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FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
30.06.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG						%		Air=1				Units
14:55	10																
15:00	15	74.5	304.57	80	1825	CRUDE OIL AT SURFACE									0/0		
15:05	20	74.8	274.72	82	1997												
15:10	25	74.8	282.16	83	2145												
15:15	30	74.9	286.38	87	2215												
15:20	35	74.6	266.72	88	1689						TRACE SOLIDS						
15:25	40	74.6	265.00	93	1730												
15:30	45	74.5	264.34	100	1677	CLEAN UP FINISHED.			OBSERVE WELL.								
15:35	50	74.6	263.63	101	1677												
15:40	55	74.5	263.29	104	1677												
15:45	60	74.5	262.99	106	1675												
15:50	65	74.5	262.53	108	1672												
15:55	70	74.7	262.32	108	1670												
16:00	75	74.7	261.98	108	1669										0/0		
16:15	90	74.8	261.35	111	1667												
16:30	105	74.9	260.69	112	1662												
16:45	120	75.0	260.11	112	1660												
16:46	121			113		SWITCH FLOW THROUGH SEPARATOR.											

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FLOPETROL — WELL TESTING DATA SHEET (Continuation)

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
30.06.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp.	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
17:00	135	75.0	259.81	115	1661				START READINGS.								
17:15	150								SWITCH FLOW TO SURGE TANK.								
17:15	150	75.0	259.38	115	1651		77	375	1130.8	.8318	0	105.6	.685	93			
17:25	160								SWITCH FLOW BACK TO BURNER.								
17:30	165	75.1	259.07	116	1645		77	390	561.2	.8318	0	138.0	.685	246			
17.45	180	75.2	258.77	116	1645		79	390	822.9	.8318	0	148.4	.685	180			
18:00	195								SWITCH FLOW TO SURGE TANK. PUMP OUT FROM SURGE TANK TO BURNER.								
18:00	195	75.2	258.35	117	1643		79	380	822.9	.8318	0	143.3	.685	174	0/0.5		
18:15	210	75.3	258.23	118	1643		79	380	822.9	.8318	0	135.9	.685	165			
18:30	225								SWITCH FLOW TO BURNER.								
18:30	225	75.3	257.82	118	1643		79	380	817.3	.8318	0	135.7	.685	166			
18:45	240	75.3	257.55	119	1641		80	390	786.6	.8318	0	149.1	.685	190			
19:00	255								SWITCH FLOW TO TANK.								
19:00	255	75.3	257.19	119	1639		80	390	799.1	.8320	0	149.1	.687	187	0/0.05		
19:10	265								SWITCH FLOW TO BURNER.								
19:15	270	75.4	257.03	120	1638		80	405	831.3	.8320	0	148.6	.687	179			
19:30	285	75.4	256.84	120	1637		81	419	775.4	.8320	0	150.6	.687	194			

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30.06.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
19:45	300	75.4	256.48	122	1635		81	410	797.4	.8320	0	143.3	.687	180			
20:00	315	75.5	256.34	122	1634		113	405	800.5	.8320	0	144.6	.687	181	0 0.5		
20:30	345	75.4	255.91	121	1630		113	405	818.0	.8321	0	145.9	.679	178			
21:00	375	75.4	255.53	122	1628		115	405	810.3	.8327	0	144.3	.681	178	0 0.5		
21:30	405	75.4	255.20	122	1624		118	380	807.4	.8327	0	102.5		127			
22:00	435	75.5	254.84	123	1622		118	380	801.2	.8312	0	102.4	.680	128	0 0.5		
22:15	450								SWITCH FLOW TO SURGE TANK. PUMP OUT TO BURNER.								
22:30	465	75.5	254.51	124	1618		118	380	800.5	.8312	0	102.3	.680	128			
22:40	475								SWITCH FLOW BACK TO BURNER.								
23:00	495								SWITCH FLOW THROUGH TANK.								
23:00	495	75.5	254.26	124	1617		120	380	794.2	.8319	0	102.2	.680	129			
23:10	505								SWITCH FLOW BACK TO BURNER.								
23:30	525	75.6	253.90	125	1615		118	380	792.1	.8319	0	102.2	.680	129			
24:00	555	75.6	253.61	126	1612		118	380	824.5	.8324	0	102.2	.680	124	0 0.5		
01.07.83																	
00:30	585	75.6	253.33	126	1610		118	380	820.9	.8324	0	102.2	.680	124			
01:00	615	75.6	253.15	126	1608		120	380	817.2	.8334	0	102.2	.680	125			

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
01.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
01:00	615																
01:30	645	75.8	252.85	126	1606		124	380	816.5	.8334		101.3	.680	124			
02:00	675	75.6	252.59	126	1604		123	380	816.5	.834	TRACE	101.1	.681	124	0 0.5		
02:30	705	75.6	252.36	126	1602		124	380	812.9	.834		101.0	.681	124			
02:52	727	75.6	252.21				START 1ST SET PVT SAMPLES OIL BOTTLE NO. 1509 GAS BOTTLE NO. A-14747										
03:00	735	75.6	252.21		1600		124	375	812.0	.8264	TRACE	99.0	.681	122			
03:21	756	75.6	251.99				FINISH 1ST SET PVT SAMPLES										
03:30	765	75.6	251.99	126	1598		124	380	809.8	.8264		99.7	.681	123			
03:48	783	75.6	251.76				START 2ND SET PVT SAMPLES OIL BOTTLE NO. 1422 GAS BOTTLE NO. A- 14748										
04:00	795	75.6	251.76	127	1596		124	375	810.5	.8264	TRACE	98.9	.681	122	0 0.5		
04:09	804	75.7	251.63				FINISH 2ND SET PVT SAMPLES.										
04:10	805	75.7	251.63	127			BY-PASS SEPARATOR.										
04:12	807/0	75.7	251.63	127	1596		SHUT IN AT LPR-N AND CHOKE MANIFOLD.										
04:13	1	75.6	251.60	127	1900												
04:14	2	75.6	282.16	126	1884												
04:15	3	75.8	286.53	126	1877												
04:20	8	76.0	292.02	126	1857												
04:25	13	76.2	294.29	119	1821												

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01.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
04:25																	
04:30	18	76.0	295.54	114	1803												
04:45	33	75.9	297.99	103	1761												
05:00	48	75.5	299.33	95	1734												
05:15	63	75.4	300.26	89	1714												
05:30	78	75.1	301.02	88	1702												
05:45	93	74.9	301.71	82	1692												
06:00	108	74.7	302.20	78	1685												
06:30	138	74.5	303.12	72	1675												
07:00	168	74.5	303.86	66	1671												
07:30	198	74.0	304.46	64	1667												
08:00	228	74.0	304.93	62	1663												
08:30	258	73.7	305.36	60	1659												
09:00	288	73.6	305.86	58	1654												
09:30	318	73.5	306.15	58	1649												
10:00	348	73.3	306.59	58	1645	AMBIENT	TEMPERATURE		STOP TAKING TEMPERATURES.								
10:30	378	73.4	306.66		1641												
11:00	408	73.2	307.14		1637												

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01.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg. temp	Tg. press.	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
11:00																	
11:30	438	73.2	307.47		1633												
12:00	468	73.1	307.73		1629												
12:30	498	73.2	307.81		1628												
13:00	528	73.1	308.11		1625												
13:30	558	73.1	308.11		1620												
14:00	588	73.0	308.59		1616												
14:30	618	73.0	308.66		1612												
15:00	648	72.9	308.88		1608												
15.30	678	72.8	309.07		1605												
16:00	708	72.8	309.23		1602												
16:30	738	72.8	309.42		1600												
17:00	768	72.8	309.64		1597												
17:30	798	72.8	309.73		1592												
18:00	828	72.7	309.75		1590												
18:30	858	72.6	309.93		1589												
19:00	888	72.6	310.06		1587												
19:30	918	72.7	310.21		1585												

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01.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg.temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
19:30																	
20:00	948	72.7	310.21		1582												
20:30	978	72.6	310.43		1580												
21:00	1008	72.7	310.55		1579												
21:30	1038	72.7	310.55		1577												
22:00	1068	72.6	310.77		1576												
22:30	1098	72.7	310.88		1574												
23:00	1128	72.7	310.88		1573												
23:05	1133	72.7	310.88		CLOSE MASTER VALVE												
23:07	1135	72.7	310.88		OPEN CHOKE MANIFOLD ON ADJUSTABLE CHOKE TO BLEED.												
23:10	1138	72.7	310.88		0												
23:18	1146	72.7	310.88		OPEN KILL VALVE AND FLUSH LINES								AT 65	m^3/day			
02.07.83																	
03:00	1368	72.6	311.55		STOP FLUSHING.												
03:11	1379	72.6	311.55		CLOSE CHOKE MANIFOLD AND PRESSURE UP TO 1574 PSI ON TOP OF MASTER VALVE.												
03:20	1388	72.6	311.69		CLOSE KILL VALVE												
03:21	1389	72.6	311.69		OPEN MASTER VALVE												

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02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg. temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
03:21																	
03:25	1393/0	72.6	311.69			START TO BLEED OFF TUBING.											
04:05					0	CLOSE CHOKE MANIFOLD.											
04:09						OPEN KILL VALVE.											
04:37		72.6	311.76			PRESSURE UP TUBING TO 1600 PSI.											
04:42						CLOSE KILL VALVE.											
04:58						BLEED OFF TUBING THROUGH CHOKE MANIFOLD TO BURNERS.											
05:01					0	CLOSE CHOKE MANIFOLD.											
05:03						OPEN KILL VALVE.											
05:05						PRESSURE UP TUBING TO 1600 PSI											
05:07						CLOSE KILL VALVE.											
06:49					1600												
06:50		72.6	312.15		1950	OPEN LPR VALVE.											
06:51		72.5	311.93		1950												
06:52		72.6	312.15		1950												
06:53		72.6	312.18		1950												
06:54		72.6	312.18		1955												
06:55		72.5	312.19		1955	OPEN KILL VALVE.											

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02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press.	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
06:55																	
06:56		72.6	312.18		1957												
06:57		72.6	312.18		1955												
06:58		72.6	312.18		1955												
06:59		72.6	312.18		1956												
07:00		72.5	312.21		1957												
07:03	0	72.6	312.63		1957	START INJECT FILTERED SEAWATER.											
07:04	1	72.6	313.38		1980												
07:05	2	72.5	314.07		1982												
07:06	3	72.5	314.16		1982												
07:07	4	72.6	314.30		1984												
07:08	5	72.7	314.42		1985												
07:09	6	72.5	314.56		1985												
07:10	7	72.5	314.56		1986												
07:11	8	72.4	314.60		1988												
07:15	12	72.1	314.91		1985												
07:20	17	71.7	315.42		1980												
07:25	22	71.3	315.76		1975												

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02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
07:25																	
07:30	27	71.0	316.39		1965												
07:35	32	70.6	317.29		1965												
07:40	37	70.3	318.07		1950												
07:45	42	70.1	318.14		1945												
07:50	47	69.8	318.13		1942												
07:55	52	69.7	317.92		1932												
08.00	57	68.9	317.58		1920												
08:05	62	68.6	317.40		1915												
08:10	67	67.9	317.35		1916												
08:15	72	67.6	317.24		1914												
08:20	77	67.1	317.17		1914												
08:25	82	66.4	317.11		1912												
08:30	87	65.8	317.11		1910												
08:35	92	65.3	317.10		1912												
08:40	97	64.9	317.13		1910												
08:45	102	64.3	317.12		1910												
08:50	107	63.9	316.83		1906												

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02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
08:50																	
08:55	112	63.6	316.81		1906												
09:00	117	63.2	316.86		1903												
09:05	122	62.9	316.88		1903												
09:10	127	62.6	316.90		1900												
09:15	132	62.3	316.95		1900												
09:20	137	62.0	317.07		1900												
09:25	142	61.8	317.26		1903												
09:30	147	61.5	317.54		1905												
09:35	152	61.0	318.00		1915												
09:40	157	60.8	318.40		1915												
09:45	162	60.6	318.40		1915												
09:50	167	60.1	318.36		1915												
09:55	172	59.7	318.47		1915												
10:00	177	59.3	318.30		1915												
10:05	182	59.1	325.81		2095	INCREASE PUMP RATE											
10:10	187	58.4	329.57		2095												
10:15	192	56.8	334.80		2195												

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02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
10:15																	
10:20	197	54.6	337.36		2205	INCREASE	PUMP	RATE.									
10.25	202	52.5	338.92		2235												
10:30	207	50.3	340.26		2255												
10:35	212	48.5	341.20		2280												
10:40	217	46.4	341.87		2280												
10:45	222	44.3	343.35		2310												
10:50	227	42.6	345.00		2320												
10:55	232	41.1	345.82		2330												
11:00	237	39.4	346.17		2335												
11:05	242	38.2	346.22		2340												
11:10	247	37.2	346.28		2340												
11:15	252	36.6	346.24		2340												
11:20	257	36.1	346.22		2340												
11:25	262	35.2	346.01		2340												
11:30	267	34.6	346.00		2340												
11:35	272	34.3	346.12		2340												
11:40	277	34.0	346.07		2340												

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02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press.	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
11:40																	
11:45	282	33.7	346.27		2340												
11:50	287	33.4	346.34		2340												
11:55	292	33.3	346.26		2340												
12:00	297	32.8	346.20		2342												
12:05	302	32.8	346.19		2342												
12:10	307	32.4	346.17		2342												
12:15	312	32.2	346.06		2343												
12:20	317	32.0	345.91		2342												
12:25	322	31.5	345.94		2342												
12:30	327	31.5	345.82		2342												
12:35	332	31.5	346.12		2342												
12:40	337	31.3	345.91		2342												
12:45	342	31.3	346.06		2342												
12:50	347	31.3	346.06		2342												
12:55	352	30.8	346.06		2342												
13:00	357	30.7	346.06		2342												
13:10	367	30.2	346.30		2342												

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02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg. temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
13:10																	
13:20	377	30.2	346.47		2344												
13:30	387	29.7	346.23		2342												
13:40	397	29.5	346.18		2342												
13:50	407	29.3	346.16		2340												
14:00	417	29.0	346.15		2339												
14:10	427	28.9	346.18		2342												
14:20	437	28.7	346.18		2342												
14:30	447	28.5	346.13		2345												
14:40	457	28.5	346.09		2345												
14:50	467	28.3	346.11		2348												
15:00	477	28.0	346.18		2349												
15:10	487	27.9	346.37		2350												
15:20	497	27.6	346.05		2343												
15:30	507	27.5	345.66		2338												
15:40	517	27.6	345.60		2336												
15:50	527	27.6	345.64		2336												
16:00	537	27.6	345.81		2339												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
16:00																	
16:10	547	27.5	346.04		2342												
16:20	557	27.4	346.15		2343												
16:30	567	27.1	346.27		2349												
16:40	577	26.9	346.46		2349												
16:50	587	27.0	346.38		2350												
17:00	597	26.6	346.19		2347												
17:10	607	26.3	346.14		2349												
17:20	617	26.3	346.01		2347												
17.30	627	26.3	346.00		2344												
17.40	637	26.3	345.92		2343												
17:50	647	26.3	345.90		2343												
18:00	657	26.2	345.95		2343												
18:10	667	26.3	345.97		2344												
18:20	677	26.2	346.03		2346												
18:30	687	26.1	346.24		2355												
18:40	697	25.9	346.20		2352												
18:50	707	25.7	345.96		2350												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press.	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
18:50																	
19:00	717	25.6	346.13		2350												
19:10	727	25.6	346.25		2350												
19:20	737	25.4	346.41		2354												
19.30	747	25.2	346.43		2352												
19.40	757	25.0	346.32		2350												
19:50	767	24.8	346.49		2352												
20:00	777	24.8	346.48		2354												
20:10	787	24.8	346.43		2358												
20:20	797	24.7	346.37		2358												
20:30	807	24.5	346.40		2359												
20:40	817	24.5	346.47		2360												
20:50	827	24.6	346.57		2363												
21:00	837	24.5	346.66		2365												
21:10	847	24.2	345.94		2345												
21:20	857	24.6	345.99		2348												
21:30	867	24.5	346.34		2356												
21:40	877	24.5	346.40		2356												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press.	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
21:40																	
21:50	887	24.4	346.52		2360												
22:00	897/0	24.5	346.39		STOP PUMPING, CLOSE KILL VALVE AND OBSERVE FALL OFF.												
22:01	1	24.3	325.64		1970												
22:02	2	24.2	322.83		1961												
22:03	3	24.2	321.77		1952												
22:04	4	24.2	321.16		1940												
22:05	5	24.3	320.92		1930												
22:06	6	24.3	320.42		1925												
22:07	7	24.3	320.16		1930												
22:08	8	24.4	319.97		1925												
22:09	9	24.5	319.76		1925												
22:10	10	24.6	319.59		1925												
22:11	11	24.6	319.59		1920												
22:12	12	24.8	319.31		1921												
22:13	13	24.9	319.24		1920												
22:14	14	24.9	319.15		1918												
22:15	15	25.0	318.97		1916												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
22:15	15																
22:20	20	25.6	318.59		1910												
22:25	25	26.3	318.30		1905												
22:30	30	27.0	318.08		1902												
22:35	35	27.8	317.72		1897												
22:40	40	28.4	317.63		1897												
22:45	45	29.1	317.58		1897												
22:50	50	29.7	317.44		1899												
22:55	55	29.7	317.41		1899												
23:00	60	30.9	317.24		1897												
23:10	70	31.8	317.08		1895												
23:20	80	33.0	316.93		1895												
23:30	90	34.0	316.80		1895												
23:32	92	34.1	316.76			OPEN KILL VALVE.											
23:33	93/0	34.4	316.75			START INJECTING FILTRATED SEAWATER AGAIN (270m^3/DAY)											
23:35	2	34.6	338.96		2295	START ADDING CHEMICALS											
23:40	7	35.3	343.10		2319												
23:45	12	36.3	343.80		2335												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
02.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
23:45	12																
23:50	17	36.2	344.43		2335												
23:55	22	35.8	344.93		2347												
24:00	27	35.2	345.38		2357												
03.07.83																	
00:05	32	33.8	345.90		2360												
00:10	37	32.8	345.21		2367												
00:15	42	31.8	346.04		2367												
00:20	47	30.9	346.08		2367												
00:25	52	30.2	346.18		2368												
00:30	57	29.1	346.22		2370												
00:40	67	27.8	346.31		2370												
00:50	77	26.9	346.10		2365												
01:00	87	26.3	345.98		2361												
01:10	97	26.1	345.43		2358												
01:20	107	25.8	345.77		2358												
01:30	117	25.6	345.81		2356												
01:40	127	25.5	345.52		2354												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
03.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
01:40	127																
01:50	137	25.5	345.42		2348												
02:00	147	25.7	345.51		2348												
02:10	157	25.6	345.32		2347												
02:20	167	25.5	345.78		2347												
02:30	177	25.4	345.87		2347												
02:40	187	25.3	346.12		2360												
02:50	197	24.9	346.19		2360												
03:00	207	25.0	346.17		2360												
03:10	217	24.9	346.14		2360												
03:20	227	25.1	346.18		2360												
03:30	237	24.7	346.15		2360												
03:40	247	24.5	346.15		2360												
03:50	257	24.6	346.10		2362												
04:00	267	24.5	346.00		2365												
04:10	277	24.5	345.96		2365												
04:20	287	24.5	346.07		2365												
04:30	297	24.5	346.07		2365												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
03.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
04:30	297																
04:40	307	24.3	346.12		2365												
04:50	317	24.4	346.07		2365												
05:00	327	24.3	346.00		2365												
05:10	337	24.3	345.86		2365												
05:20	347	24.4	345.81		2365												
05:30	357	24.3	345.97		2365												
05:40	367	24.4	346.12		2365												
05:50	377	24.4	346.21		2365												
06:00	387	24.5	346.23		2366												
06:10	397	24.2	346.24		2366												
06:20	407	24.1	346.21		2366												
06:30	417	24.0	346.23		2366												
06:40	427	24.0	346.13		2366												
06:50	437	23.9	345.89		2355												
07:00	447	24.3	345.59		2345												
07:10	457	24.1	345.05		2341												
07:20	467	24.3	344.76		2337												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
03.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
07:20	467																
07:30	477	24.5	344.87		2336												
07:40	487	24.7	345.01		2337												
07:50	497	24.9	345.12		2341												
08:00	507	24.9	345.31		2344												
08:10	517	24.9	346.24		2370												
08:20	527	24.5	346.41		2370												
08:30	537	24.3	346.46		2375												
08:40	547	24.0	346.52		2375												
08:50	557	23.8	346.48		2370												
09:00	567	23.6	346.53		2370												
09:10	577	23.6	346.53		2370												
09:20	587	23.6	346.50		2370												
09:30	597	23.6	346.32		2370												
09:40	607	23.6	346.29		2370												
09:50	617	23.4	346.51		2375												
10:00	627	23.6	346.64		2375												
10:10	637	23.4	346.55		2375												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
03.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
10:10	637																
10:20	647	23.6	346.62		2385												
10:30	657	23.3	345.88		2385												
10.40	667	23.3	345.84		2380												
10:50	677	23.3	345.95		2380												
11:00	687	23.5	345.86		2380												
11:10	697	23.2	345.84		2380												
11:20	707	23.3	345.88		2380												
11:30	717	23.0	345.91		2380												
11:40	727	23.1	345.78		2375												
11:50	737	23.1	345.83		2371												
12:00	747	23.0	345.77		2371												
12:10	757	23.0	345.82		2367												
12:20	767	23.1	345.86		2367												
12:30	777	23.1	345.79		2367												
12:40	787	22.9	345.57		2367												
12:50	797	23.3	345.44		2360												
13:00	807	23.1	345.52		2360												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
03.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
13:00	807																
13:10	817	23.1	345.76		2367												
13:20	827	23.4	345.70		2362												
13:30	837	23.0	345.70		2362												
13:40	847	22.9	345.77		2365												
13:50	857	23.0	345.76		2365												
14:00	867	23.4	345.67		2365												
14:10	877	23.0	345.69		2364												
14:20	887	23.1	345.88		2366												
14:30	897	22.9	345.63		2365												
14:40	907	22.9	345.69		2367												
14:50	917	23.1	345.83		2364												
15:00	927	23.0	345.83		2365												
15:10	937	23.0	345.64		2365												
15:20	947	22.9	345.71		2364												
15:30	957	22.8	345.72		2364												
15:40	967	22.9	345.83		2366												
15:50	977	22.9	345.81		2366												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
03.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS					
Time	Cumul	Temp.	Pressure	Tg. temp	Tg. press.	Cg. press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		H_2S ppm/ CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
15:50	977																
16:00	987	22.9	345.84		2366												
16:10	997	23.1	345.80		2366												
16:20	1007	22.9	345.78		2366												
16:30	1017	22.9	345.73		2366												
16.40	1027	22.9	345.75		2366												
16:50	1037	22.8	345.71		2366												
17:00	1047	22.8	345.66		2365												
17:10	1057	22.7	345.76		2365												
17:20	1067	22.8	345.81		2367												
17:30	1077	22.6	345.87		2365												
17:40	1087	22.7	345.88		2365												
17:50	1097	22.8	345.83		2365												
18:00	1107	22.7	345.81		2365												
18:10	1117	22.7	345.81		2366												
18:20	1127	22.8	346.32		2579												
18:27	1134	22.2	348.50		2610	INCREASE PUMP RATE											
18:30	1137	21.7	348.84		2604												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
03.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg.temp	Tg. press.	Cg. press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
18:30	1137																
18:40	1147	20.3	348.70		2603												
18:50	1157	19.1	349.00		2605												
19:00	1167	18.6	349.08		2610												
19:10	1177	18.4	349.09		2612												
19:20	1187	18.3	349.03		2610												
19:30	1197	18.2	349.05		2610												
19:40	1207	18.3	349.05		2612												
19:50	1217	18.3	348.82		2595												
20:00	1227	18.4	348.75		2580												
20:10	1237	18.5	348.67		2577												
20:20	1247	18.4	348.88		2597												
20:30	1257	18.2	349.11		2609												
20:40	1267	18.0	349.23		2620												
20:50	1277	18.0	348.88		2595												
21:00	1287	18.9	348.56		2580	INCREASE PUMP RATE											
21:10	1297	17.7	349.70		2795												
21:20	1307	17.2	350.04		2785												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
03.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
21:20	1307																
21:30	1317	17.6	346.71		2435	ONE PUMP STOPPED DUE TO OVERHEATING.											
21:40	1327	18.1	346.39		2432												
21:50	1337	19.5	346.75		2437	INCREASE PUMP RATE											
22:00	1347	19.7	346.47		2750	INCREASE PUMP RATE											
22:05	1352	19.1	349.15		2845												
22:10	1357	18.9	349.67		2820												
22:20	1367	17.6	349.90		2820												
22:30	1377	17.2	349.93		2824												
22:40	1387	17.0	349.93		2824												
22:50	1397	16.8	350.01		2824												
22:55	1402	16.7	349.99		2824	INCREASE PUMP RATE TO 750 1/min											
23:00	1407	16.8	350.23		3090												
23:10	1417	16.8	351.06		3985												
23:20	1427	16.5	351.03		3095												
23:30	1437	16.2	351.06		3095												
23:40	1447	16.2	351.00		3070												
23:50	1457	16.1	350.98		3074												

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
03.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
23:50	1457																
23:58	1465	15.9	351.00		3050												
04.07.83																	
00:00	1467	15.9	351.18			INCREASED PUMP RATE											
00:05	1472	15.8	351.90		3425												
00:06	1473	15.8	351.79		3325												
00:07	1474	15.8	351.77		3330												
00:08	1475	15.8	351.77		3330												
00:09	1476	15.8	351.77		3325												
00:10	1477	15.8	351.77		3325												
00:15	1482	15.8	351.98		3395												
00:20	1487	15.7	352.09		3425												
00:25	1492	15.7	352.24		3465												
00:30	1497	15.8	352.22		3425												
00:35	1502	15.7	352.28		3430												
00:40	1507	15.8	352.34		3420												
00:45	1512	15.7	352.30		3395												
00:50	1517	15.8	352.31		3380												

No DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

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Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
04.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
00:50	1517																
00:55	1522	15.7	352.28		3345												
01:00	1527	15.7	352.34		3355												
01:05	1532	15.7	352.33		3322												
01:10	1537	15.7	352.13		3250												
01:15	1542	15.7	352.09		3260												
01:20	1547	15.9	352.19		3255												
01:25	1552	16.0	352.18		3250												
01:30	1557	15.7	352.26		3253												
01:35	1562	15.7	352.38		3280												
01:40	1567	15.6	352.42		3274												
01:45	1572	15.7	352.44		3273												
01:50	1577	15.9	352.47		3278												
01:55	1582	15.6	352.48		3250												
02:00	1587	15.6	352.40		3230												
02:05	1592	15.7	352.46		3255												
02:10	1597	15.6	352.54		3450	INCREASE PUMP RATE											
02:11	1598	15.8	352.95		3520												

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FLOPETROL — WELL TESTING DATA SHEET (Continuation)

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Report N°: 83/2301/29b

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
04.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg. press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
02:11	1598																
02:12	1599	15.6	353.01		3530												
02:13	1600	15.6	353.06		3520												
02:14	1601	15.5	353.08		3520												
02:15	1602	15.6	352.30		3500												
02:16	1603	15.7	352.83		3520												
02:17	1604	15.6	352.96		3520												
02:18	1605	15.6	353.03		3520												
02:19	1606	15.6	353.03		3520												
02:20	1607	15.6	353.03		3520												
02:21	1608	15.6	353.03		3520												
02:22	1609	15.7	353.08		3520												
02:23	1610	15.6	353.11		3520												
02:24	1611	15.6	353.11		3520												
02:25	1612	15.6	353.11		3520												
02:26	1613	15.6	353.12		3520												
02:27	1614	15.6	353.13		3520												
02:28	1615	15.6	353.12		3520												

No.: DOP 110

FLOPETROL — WELL TESTING DATA SHEET (Continuation)

Page : 47
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Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
04.07.83		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			H_2S ppm/		
Time	Cumul	Temp	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		CO_2 %		
HRS/MIN	MIN	°C	BARA	°F	PSIG		OIL	PSIG	M^3/DAY	SG/60°F	%	MSCM/DAY	Air=1	SCM/m^3			Units
02:28	1615																
02:29	1616	15.6	353.13		3520												
02:30	1617/0	15.7	352.85		3520	STOP PUMPING. CLOSE KILL VALVE.											
02:31	1	15.6	347.50		2220												
02:32	2	15.6	343.54		2220												
02:33	3	15.7	340.34		2180												
02:34	4	16.9	338.04		2170												
02:35	5	16.4	336.55		2140												
02:36	6	16.0	335.41		2130												
02:37	7	15.7	334.51		2122												
02:38	8	15.7	333.75		2110												
02:39	9	15.7	333.16		2105												
02:40	10	15.7	332.87		2100												
02:41	11	15.7	332.22		2100	CLOSE MASTER VALVE. PRESSURE UP TO 2500 AGAINST KILL VALVE.											
02:44		15.6	331.37			OPEN KILL VALVE.											
02:46		15.8	330.61			BLEED OFF PRESSURE THROUGH CHOKE MANIFOLD											
03:10		16.0	327.64			CHOKE MANIFOLD CLOSED. PRESSURE EQUALIZED. MASTER VALVE OPEN.											
03:12		16.0	327.49			START BULLHEADING TUBING CONTENT + 500 LITERS MUD INTO FORMATION.											

FLOPETROL

DIVISION : NSD

BASE : NWB

REPORT N°: 83/2301/29 b

Well Testing Report
Annexes —

Client : STATOIL

Field : GULLFAKS Well : 34/10-7

Zone : COOK SAND Date : 30.06.83 - 01.07.83

N°: DOP 111

INDEX of ANNEXES

-LIQUID PRODUCTION RATE MEASUREMENT -

2.1 - MEASUREMENT WITH TANK -

$$Vo = V \times K\ 5\ (1 - BSW)$$

Vo : Net oil volume at 60° F and atmospheric pressure.
V : Gross oil volume measured by tank gauging.
K : Volume correction factor to be applied between the tank temperature during gauging and 60° F.
BSW : Basic sediments and water.

2.2 - MEASUREMENT WITH METER -

a) Shrinkage factor is measured by shrinkage tester.

$$Vo = Vs \times f \times (1 - Shr) \times K \times (1 - BSW)$$

Vo : Net oil volume at 60° F and atmospheric pressure.
Vs : Gross oil volume measured by meter under separator conditions.
f : Meter correction factor = Volume measured in tank / Volume measured by meter
Shr : Percentage of oil volume reduction between separator and tank conditions, reported to oil volume at separator conditions.
K : Volume correction factor to be applied between the finale temperature during shrinkage measurement and 60° F.
BSW : Basic sediments and water.

b) Shrinkage factor is measured with tank.

$$Vo = Vs \times (1 - Shr') \times K \times (1 - BSW)$$

Vo, Vs, K and BSW : Same meaning as in a).
(1 Shr') : Shrinkage factor including meter correction factor.

No DOP 120

FLOPETROL

Base : NWB

Client : STATOIL

Field : GULLFAKS

Well : 34/10-7

- OIL PRODUCTION RATE -

- MEASUREMENT WITH TANK -

Section : Annex **2.1**

Page : 50

Report N° : 83/2301/29b

Date - Time		Gauge graduation	Tank volume		STO Gravity			K	BSW	Net volume of STO V_o	Net STO product. rate	Cumulative production	
Time	Interval		Volume V	Temp.	Gravity	Temp.	Grav. 60°F						
HRS	MIN	CM	BBLS	°F					%		/day		Units
16:46			SWITCH FLOW	THROUGH SEPARATOR									
17:15		28/152.4											
17:25	10	243/172.3	37.84		METER FACTOR + SHRINKAGE = NIL (CLEAN OUT TANK).								
	READING AFTER SHRINKAGE												
19:00		10/540.6		60		60°F		1					
19:10	10	209.5/578.9	35.112		METER FACTOR + SHRINKAGE = 35.112/38.3 = 0.9169								
	READING AFTER SHRINKAGE												
23:00		7/1459.7											
23:10	10	212/1497.1	36.08	85	METER FACTOR + SHRINKAGE = 0.9647								
	READING AFTER SHRINKAGE												

TANK GRADUATION 0.176 BBL/CM

Tested interval : _____

Perforations : _____

FLOPETROL

Base : NWB

Client : STATOIL
Field : GULLFAKS
Well : 34/10-7

- OIL PRODUCTION RATE -
- MEASUREMENT WITH METER -

Section : Annex 2.2
Page : 51
Report N° : 83/2301/29b

Date - time		Meter reading	Vs	BSW	V'o*	1 - Shr		Oil Gravity			K	Net volume of STO: Vo	Net STO product. rate	Cumulative production	SCM/M³ GOR
Time	Interval					Factor	Temp.	Gravity	Temp.	Grav. 60°F					
HRS/MIN	MIN	BBLS	BBLS	%	BBLS		°F		°F			BBLS	M³ /day	M³	Units
16:46			SWITCH FLOW THROUGH SEPARATOR												
17:00		71.6													
17:15	15	152.4	80.80	(0)	74.08	0.9169	60	.8284	70	.8318	1.000	74.1	1130.8	11.8	93
17:30		192.5	40.10	0	36.76	0.9169	60	.8284	70	.8318	1.000	36.8	561.2	17.6	246
17:45		251.3	58.80	0	53.91	0.9169	60	.8284	70	.8318	1.000	53.9	822.9	26.2	180
18:00		310.1	58.80	0	53.91	0.9169	60	.8284	70	.8318	1.000	53.9	822.9	34.8	174
18:15		368.9	58.80	0	53.91	0.9169	60	.8284	70	.8318	1.000	53.9	822.9	43.3	165
18:30		427.3	58.40	0	53.5	0.9169	60	.8284	70	.8318	1.000	53.5	817.3	51.9	166
18:45		483.5	56.20	0	51.5	0.9169	60	.8284	70	.8318	1.000	51.5	786.6	60.0	190
19:00		540.6	57.10	0	52.4	0.9169	60	.8265	76	.8320	1.000	52.4	799.1	68.4	187
19:15		600.0	59.40	0	54.5	0.9169	60	.8265	76	.8320	1.000	54.5	831.3	77.0	179
19.30		655.4	55.40	0	50.8	0.9169	60	.8265	76	.8320	1.000	50.8	775.4	85.1	194
19.45		712.4	57.00	0	52.3	0.9169	60	.8265	76	.8320	1.000	52.3	797.7	93.4	180
20:00		769.6	57.20	0	52.5	0.9169	60	.8265	76	.8320	1.000	52.5	800.5	101.7	181
20:30		886.5	116.90	0	107.2	0.9169	60	.8255	79	.8321	1.000	107.2	818.0	118.8	178

Shrinkage factor measured by Shrinkage tester ☐ Tank ☒ FACTOR SHRINK/METER = 0.9169

* V'o = Vs x f x (1 - BSW) = Net oil volume at separator conditions. f = _____

Tested interval : _____

Perforations : _____

No.. DOP 123

FLOPETROL | MEASUREMENT WITH METER -(Continuation) | Page : 52 Report N : 83/2301/29b | Section : ANNEX 2.2

DATE - TIME		Meter reading	V_S	BSW	V_o'	1 - Shr		OIL GRAVITY			K	Net volume of STO: V_o	Net STO product. rate	Cumulative production	
Time	Interval					Factor	Temp.	Gravity	Temp.	Grav. 60°F					
HRS	MIN		BBLS	%	BBLS		°F		°F			BBLS	SM^3/day	M^3	Units
20:30		886.5													
21:00		1002.3	115.80	0	106.2	.9169	60	.8265	78	.8327	1.000	106.2	810.3	135.7	178
21:30		1117.3	115.00	0	105.4	.9169	60	.8265	78	.8327	1.000	105.4	807.4	152.4	127
22:00		1231.8	114.50	0	105.0	.9169	60	.8236	82	.8312	1.000	105.0	801.2	169.1	128
22:30		1346.2	114.40	0	104.9	.9169	60	.8236	82	.8312	1.000	104.9	800.5	185.8	128
23:00		1459.7	113.50	0	104.1	.9169	60	.8246	81	.8319	1.000	104.1	794.2	202.3	129
23:30		1572.9	113.20	0	103.8	.9169	60	.8246	81	.8319	1.000	103.8	792.1	218.8	129
24:00		1686.2	113.30	0	NEW METER FACTOR	.9647	85	.831	64	.8324	.9882	108.0	824.5	236.0	124
01.07.83															
00:30		1799.0	112.80	0	108.8	.9647	85	.831	64	.8324	.9882	107.6	820.9	253.1	124
01:00		1911.3	112.30	0	108.3	.9647	85	.831	67	.8334	.9882	107.1	817.2	270.2	125
01:30		2023.5	112.20	0	108.2	.9647	85	.831	67	.8334	.9882	107.0	816.5	287.2	124
02:00		2135.7	112.20	0	108.2	.9647	85	.832	66	.8340	.9882	107.0	816.5	304.2	124
02:30		2247.4	111.70	0	107.8	.9647	85	.832	66	.8340	.9882	106.5	812.9	321.1	124
03:00		2359.0	111.60	0	107.7	.9647	85	.825	64	.8264	.9882	106.4	812.0	338.0	122
03:30		2470.3	111.30	0	107.4	.9647	85	.825	64	.8264	.9882	106.1	809.8	354.9	123
04:00		2581.7	111.40	0	107.5	.9647	85	.825	64	.8264	.9882	106.2	810.5	371.8	122
04:10		2618.9	37.20	0	BY-PASS SEPARATOR					.8264	.9882	35.5	812.0	377.4	122

- GAS PRODUCTION RATE MEASUREMENT by orifice meter -

Reference is made to the rules and coefficients given in AGA gas measurement Comittee Report No.3 for orifice metering.

a) EQUATIONS -

$$Q = C \sqrt{hw \times Pf}$$

Q : Production rate at reference conditions.
C : Orifice flow coefficient.
hw: Differential pressure in inches of water.
Pf : Flowing pressure in psia.

$$C = Fu \times Fb \times Fg \times Y \times Ftf \times Fpv$$

Fu : Unit conversion factor in desired reference conditions.
Fb : Basic orifice factor (Q in Cu.ft / hour).
Fg : Specific gravity factor.
Y : Expension factor
Ftf : Flowing temperature factor.
Fpv: Supercompressibility factor (estimated).

Remarks

Fm: Manometer factor is equal one since only bellows type meters are used.
Fr : Reynolds factor is considered to be one.

TABLE OF Fu FACTOR

UNITS	REFERENCE CONDITIONS			
	60°F 14.73 psia	0°C 760mmHg*	15°C 760mmHg *	15°C 750mmHg *
Cu.ft / hour	1	0.9483	1.0004	1.0137
Cu.ft / day	24	22.760	24.009	24.329
m^3 / hour	0.02832	0.02685	0.02833	0.02870
m^3 / day	0.6796	0.6445	0.6799	0.6889

* Mercury at 32°F

b) METER DATA -

Meter type : DANIEL SR. Flange taps - Pf taken down/up stream
Flow recorder type: ITT BARTON ID of meter tube : 5.761"

c) SPECIFIC GRAVITY SOURCE -

Sampling point : GAS OUTLET Gravitometer type : KIMRAY

d) SUPERCOMPRESSIBILITY FACTOR Fpv -

All coefficients are taken from AGA NX 19 manual for natural gas free of air, CO_2 and H_2S . More accurate values could only be determined by laboratory measurement.

No. DOP 125

FLOPETROL

Base : NWB

Client : STATOIL

Field : GULLFAKS

Well : 34/10-7

- GAS PRODUCT. RATE MEASUREMENT -

Section : ANNEX 3

Page : 54

Report N : 83/2301/29

DATE - TIME		Flowing	P_f	h_w	$\sqrt{h_w \times P_f}$	Orifice	Gas	F_b	F_g	Y	F_{tf}	F_{pv}	C	Gas production rate Q	Cumulative Production
Time	Interval	Temp.	absolute			diameter	gravity								
HRS/MIN	MIN	°F	psia	"of wat.		Inches	(air=1)							MSM^3	MM^3
16:46		SWITCH FLOW THROUGH SEPARATOR													
		NB: RATES FROM 17:30 HRS TO 21:00 HRS INACCURATE DUE TO OIL IN GAS METER.													
17:15	15	81	390	38	121.737	2.250	.685	1039.5	1.2082	1.0006	0.9804	1.0359	868	105.6	1.10
17:30	15	86	405	63	159.734	2.250	.685	1039.5	1.2082	1.0010	0.9759	1.0362	864	138.0	2.54
17.45	15	87	405	73	171.945	2.250	.685	1039.5	1.2082	1.0012	0.9750	1.0360	863	148.4	4.09
18:00	15	88	395	70	166.283	2.250	.685	1039.5	1.2082	1.0011	0.9741	1.0348	862	143.3	5.58
18:15	15	88	395	63	157.750	2.250	.685	1039.5	1.2082	1.0010	0.9741	1.0348	861	135.9	6.99
18:30	15	89	395	63	157.750	2.250	.685	1039.5	1.2082	1.0010	0.9732	1.0346	860	135.7	8.41
18.45	15	89	405	74	173.118	2.250	.685	1039.5	1.2082	1.0012	0.9732	1.0355	861	149.1	9.96
19:00	15	89	405	74	173.118	2.250	.687	1039.5	1.2065	1.0012	0.9732	1.0355	861	149.1	11.51
19.15	15	96	420	72	173.897	2.250	.687	1039.5	1.2065	1.0011	0.9671	1.0355	855	148.6	13.06
19:30	15	95	435	71	175.741	2.250	.687	1039.5	1.2065	1.0011	0.9680	1.0371	857	150.6	14.63
19.45	15	95	425	66	167.481	2.250	.687	1039.5	1.2065	1.0010	0.9680	1.0362	856	143.3	16.12
20:00	15	95	420	68	168.997	2.250	.687	1039.5	1.2065	1.0010	0.9680	1.0357	856	144.6	17.63
20:30	30	98	420	69	170.235	2.250	.679	1039.5	1.2136	1.0011	0.9653	1.0342	857	145.9	19.15

F_u = 0.6799

Recorder ranges . P_f = 0 - 1500 PSIG

h_w = 0-100" H_2O Temp. = 0-300°F

TESTED INTERVAL : COOK SAND

PERFORATIONS : 1833.37 - 1863.37 M RKB

FLOPETROL — GAS PRODUC. RATE MEASUREMENT–(Continuation) — Page : 55 — Report N°: 83/2301/29 — Section : ANNEX 3 b

DATE – TIME		Flowing	P_f	h_w	$\sqrt{h_w \times P_f}$	Orifice	Gas	F_b	F_g	Y	F_{tf}	F_{pv}	C	Gas production	Cumulative
Time	Interval	Temp.	absolute			diameter	gravity							rate : Q	Production
30.06.83			psia	"of wat.		Inches	(air = 1)								
HRS	MIN	°F												$MSCM^3$	$M\ SM^3$
21:00	30	100	420	68	168.997	2.250	.681	1039.5	1.2118	1.0010	0.9636	1.0340	854	144.3	22.15
21:30	30	104	395	37	120.893	2.250	.681	1039.5	1.2118	1.0006	0.9602	1.0310	848	102.5	24.29
22:00	30	106	395	37	120.893	2.250	.680	1039.5	1.2127	1.0006	0.9585	1.0305	847	102.4	26.42
22:30	30	107	395	37	120.893	2.250	.680	1039.5	1.2127	1.0006	0.9577	1.0303	846	102.3	28.55
23:00	30	108	395	37	120.893	2.250	.680	1039.5	1.2127	1.0006	0.9568	1.0301	845	102.2	30.68
23:30	30	108	395	37	120.893	2.250	.680	1039.5	1.2127	1.0006	0.9568	1.0301	845	102.2	32.80
24:00	30	108	395	37	120.893	2.250	.680	1039.5	1.2127	1.0006	0.9568	1.0301	845	102.2	34.94
01.07.83															
00:30	30	108	395	37	120.893	2.250	.680	1039.5	1.2127	1.0006	0.9568	1.0301	845	102.2	37.07
01:00	30	108	395	37	120.893	2.250	.680	1039.5	1.2127	1.0006	0.9568	1.0301	845	102.2	39.19
01:30	30	116	395	37	120.893	2.250	.680	1039.5	1.2127	1.0006	0.9501	1.0287	838	101.3	41.31
02:00	30	118	395	37	120.893	2.250	.680	1039.5	1.2127	1.0006	0.9485	1.0283	836	101.1	43.41
02:30	30	118	395	37	120.893	2.250	.681	1039.5	1.2118	1.0006	0.9485	1.0284	836	101.0	45.52
03:00	30	118	390	36	118.491	2.250	.681	1039.5	1.2118	1.0006	0.9485	1.0280	835	99.0	47.58
03:30	30	118	395	36	119.248	2.250	.681	1039.5	1.2118	1.0006	0.9485	1.0284	836	99.7	49.70
04:00	30	119	390	36	118.491	2.250	.681	1039.5	1.2118	1.0006	0.9477	1.0279	835	98.9	51.72
04:10	10	119	390	36	118.491	BY-PASS SEPARATOR					0.9477	1.0279	835	98.9	52.40

- SURFACE SAMPLING -

Date of sampling : 01.07.83 Service order : _____ Sampling No : 1A
Sample nature : OIL Sampling point : SEPARATOR SIGHT GLASS

A - RESERVOIR AND WELL CHARACTERISTICS -

Producing zone : COOK Perforations : 1833 - 1865 Sampling interval : SAME

Depth origin : RKB Tubing Dia : 2.75" Casing Dia : 6.184"
Surface elevation : 225.70M Shoe : 1864M Shoe : 1980M

Bottom hole static conditions	Initial pressure	: 314.03BARA	at depth :	1834.27M	date :	30.06.83
	Latest pressure measured	: 311.69BARA	at depth :	1834.27M	date :	02.07.83
	Temperature	: 72.6)°C	at depth :	1834.27M	date :	02.07.83

B - MEASUREMENT AND SAMPLING CONDITIONS -

Time at which sample was taken : 02:52 Time elapsed since stabilisation : 5 HRS 52 MIN

Bottom hole dynamic conditions	Choke size : 40/64"	since : 14:45 30/6	Well head pressure : 1598PSIG		Well head temp :	126°F
	Bottom hole pressure :	251.99BARA	at depth :	1834.27M	date :	01.07.83
	Bottom hole temp :	75.6°C	at depth :	1834.27M	date :	01.07.83

Flow measurement of sampled gas - Gravity (air 1) : 0.681 Factor Fpv = $\frac{1}{\sqrt{Z}}$: 1.0284
Values used for calculations :

F_b=1039.5, F_g=1.2118, Y=1.0006, F_{tf}=0.9485

Separator	Pressure : 380 PSIG Temp : (OIL) 124	Rates - Gas : 99.7MSCM/DAY ~~SCFD~~ Oil (separator cond) : 849.4M³/DAY ~~BOPD~~ B	GOR : 117SCM/M³ (separator cond)
Stock tank	Atmosphere : _____ mmHg - _____ °F Tank temperature : _____ °F	Oil at 60 °F : 809.8M³/DAY ~~BOPD~~ B a	

BSW : _____ % WLR : _____ %

Transfering fluid : Hg Transfer duration : 29 MIN

Final conditions of the shipping bottle :
Pressure : 180PSIG Temp : 55°F

600cc Hg withdrawn for sample
70cc Hg withdrawn for gas gap
30cc Hg left in bottle

C - IDENTIFICATION OF THE SAMPLE -

Shipping bottle No : 1509 sent on : _____ by : _____ Shipping order No : _____
Addressee : _____

Coupled with	LIQUID	GAS
Bottom hole samples No		
Surface samples No		A-14747

Measurement conditions,
[A] - Tank . [B] - Meter . [C] - Dump .
[a] - Corrected with shrinkage tester. [b] - Corrected with tank .

D - REMARKS -

ALL READINGS FROM 03:30 HRS
SHRINKAGE TAKEN AT SEPARATOR = 8%

Visa Chief Operator

A. Austlid
(Sampler)

FLOPETROL

Base : NWB

Client : STATOIL

Field : GULLFAKS

Well : 34/10-7

Section: ANNEX 4.2

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Report N° 83/2301/29

- SURFACE SAMPLING -

Date of sampling : 01.07.83 Service order : _____ Sampling No : 1B

Sample nature : GAS Sampling point : SEPARATOR GAS OUTLET

A - RESERVOIR AND WELL CHARACTERISTICS -

Producing zone : COOK Perforations : 1833-1863 Sampling interval : SAME

Depth origin : RKB Tubing Dia : 2.75" Casing Dia : 6.184"

Surface elevation : 225.70M Shoe : 1864M Shoe : 1980M

Bottom hole static conditions	Initial pressure	: 314.03BARA	at depth : 1834.27M	date : 30.06.83
	Latest pressure measured	: 311.69BARA	at depth : 1834.27M	date : 02.07.83
	Temperature	: 72.6)°C	at depth : 1834.27M	date : 02.07.83

B - MEASUREMENT AND SAMPLING CONDITIONS -

Time at which sample was taken : 02:52 Time elapsed since stabilisation : 5 HRS 52 MIN

Bottom hole dynamic conditions	Choke size : 40/64"	since : 14:45 30/6	Well head pressure : 1598PSIG	Well head temp : 126°F
	Bottom hole pressure : 251.99BARA	at depth : 1834.27M	date : 01.07.83	
	Bottom hole temp : 75.6°C	at depth : 1834.27M	date : 01.07.83	

Flow measurement of sampled gas - Gravity (air 1) : 0.681 Factor Fpv = $\frac{1}{\sqrt{Z}}$: 1.0284

Values used for calculations : F_b=1039.5, F_g=1.2118, Y=1.0006, F_{tf}=0.9485

Separator	Pressure : 380 PSIG (GAS) 118	Rates - Gas : 99.7MSCM/DAY ~~SCFD~~	B	GOR : 117SCM/M³
	Temp : _____ °F	Oil (separator cond) : 849.4M³/DAY ~~BOPD~~		(separator cond)
Stock tank	Atmosphere : _____ mmHg - _____ °F	Oil at 60 °F : 809.8M³/DAY BOPD	B a	
	Tank temperature : _____ °F			

BSW : 0 % WLR : 0 %

Transfering fluid : VACUUM Transfer duration : 29 MIN

Final conditions of the shipping bottle :

Pressure : 380PSIG Temp : 55°F

C - IDENTIFICATION OF THE SAMPLE -

Shipping bottle No : A-14747 sent on : _____ by : _____ Shipping order No : _____

Addressee : _____

Coupled with	LIQUID	GAS
Bottom hole samples No		
Surface samples No	1509	

Measurement conditions.

A - Tank. B - Meter. C - Dump.

a - Corrected with shrinkage tester. b - Corrected with tank.

D - REMARKS -

ALL READINGS FROM 03:30 HRS

SHRINKAGE TAKEN AT SEPARATOR = 8%

Visa Chief Operator

A. Austlid
(Sampler)

No DOP 127

FLOPETROL

Base : NWB

Client : STATOIL

Field : GULLFAKS

Well : 34/10-7

Section : ANNEX 42

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Report N° 83/2301/29b

- SURFACE SAMPLING -

Date of sampling : 01.07.83 Service order : _____ Sampling No : 2A

Sample nature : OIL Sampling point : SEPARATOR SIGHT GLASS

A - RESERVOIR AND WELL CHARACTERISTICS -

Producing zone : ~~COOK~~ Perforations : ~~1833-1863~~ Sampling interval : ~~SAME~~

Depth origin : ~~RKB~~ Tubing Dia : ~~2.75"~~ Casing Dia : ~~6.184"~~

Surface elevation : 225.70M Shoe : 1864M Shoe : 1980M

Bottom hole static conditions

Initial pressure : 314.03BARA at depth : 1834.27M date : 30.06.83

Latest pressure measured : 311.69BARA at depth : 1834.27M date : 02.07.83

Temperature : 72.6°C at depth : 1834.27M date : 02.07.83

B - MEASUREMENT AND SAMPLING CONDITIONS -

Time at which sample was taken : 03:48 Time elapsed since stabilisation : 6 HRS 48 MIN

Bottom hole dynamic conditions

Choke size : 40/64" since : 14:45 30/6 Well head pressure : 1596PSIG Well head temp : 126°F

Bottom hole pressure : 251.76BARA at depth : 1834.27M date : 01.07.83

Bottom hole temp : 75.6°C at depth : 1834.27M date : 01.07.83

Flow measurement of sampled gas - Gravity (air 1) : 0.681 Factor Fpv = $\frac{1}{\sqrt{Z}}$: 1.0279

Values used for calculations :

F_b=1039.5, F_g=1.2118, Y=1.0006, F_{tf}=0.9477

Separator

Pressure : 375 PSIG Temp : (OIL) 124

Rates - Gas : 98.9MSCM/DAY ~~SCFD~~

Oil (separator cond) : 850 M^3/DAY ~~BOPD~~ [B]

GOR : 116SCM/M^3 (separator cond)

Stock tank

Atmosphere : _____ mmHg - _____ °F

Tank temperature : _____ °F

Oil at 60 °F : 810.5M^3/DAY ~~BOPD~~ [B] [a]

BSW : 0 % WLR : 0 %

Transfering fluid : Hg

Transfer duration : 21 MIN

Final conditions of the shipping bottle :

Pressure : 180PSIG Temp : 55°F

600cc Hg withdrawn for sample
70cc Hg withdrawn for gas cap
30cc Hg left in bottle

C - IDENTIFICATION OF THE SAMPLE -

Shipping bottle No : 1422 sent on : _____ by : _____ Shipping order No : _____

Addressee : _____

Coupled with	LIQUID	GAS
Bottom hole samples No		
Surface samples No		A-14748

Measurement conditions,

[A] - Tank. [B] - Meter. [C] - Dump.

[a] - Corrected with shrinkage tester. [b] - Corrected with tank.

D - REMARKS -

ALL READINGS FROM 04:00 HRS
SHRINKAGE TAKEN AT SEPARATOR = 8%

Visa Chief Operator

A. Austlid
(Sampler)

- SURFACE SAMPLING -

Date of sampling : 01.07.83 Service order : _____ Sampling No : 2B
Sample nature : GAS Sampling point : SEPARATOR GAS OUTLET

A - RESERVOIR AND WELL CHARACTERISTICS -

Producing zone : COOK Perforations : 1833-1863 Sampling interval : SAME

Depth origin : RKB Tubing Dia : 2.75" Casing Dia : 6.184"
Surface elevation : 225.70M Shoe : 1864M Shoe : 1980M

Bottom hole static conditions	Initial pressure	: 314.03BARA	at depth : 1834.27M	date : 30.06.83
	Latest prassure measured	: 311.69BARA	at depth : 1834.27M	date : 02.07.83
	Temperature	: 72.6°C	at depth : 1834.27M	date : 02.07.83

B - MEASUREMENT AND SAMPLING CONDITIONS -

Time at which sample was taken : 03:48 Time elapsed since stabilisation : 6 HRS 48 MIN

Bottom hole dynamic conditions	Choke size : 40/64"	since : 14:45 30/6	Well head pressure : 1596PSIG	Well head temp : 126°F
	Bottom hole pressure : 251.76BARA	at depth : 1834.27M	date : 01.07.83	
	Bottom hole temp : 75.6°C	at depth : 1834.27M	date : 01.07.83	

Flow measurement of sampled gas - Gravity (air 1) : 0.681 Factor Fpv = $\frac{1}{\sqrt{Z}}$: 1.
Values used for calculations : F_b=1039.5, F_g=1.2118, Y=1.0006, F_{tf}=0.9477

Separator	Pressure : 375 PSIG (GAS) Temp : 119 °F	Rates - Gas : 98.9MSCM/DAY ~~SCFD~~ Oil (separator cond) : 850 M^3/DAY ~~BOPD~~ B	GOR : 116SCM/M^3 (separator cond)
Stock tank	Atmosphere : _____ mmHg - _____ °F Tank temperature : _____ °F	Oil at 60 °F : 810.5M^3/DAY ~~BOPD~~ B a	

BSW : 0 % WLR : 0 %

Transfering fluid : VACUUM Transfer duration : 21 MIN

Final conditions of the shipping bottle :
Pressure : 375PSIG Temp : 55°F

C - IDENTIFICATION OF THE SAMPLE -

Shipping bottle No : A-1472.8 sent on : _____ by : _____ Shipping order No : _____
Addressee : _____

Coupled with	LIQUID	GAS
Bottom hole samples No		
Surface samples No	1422	

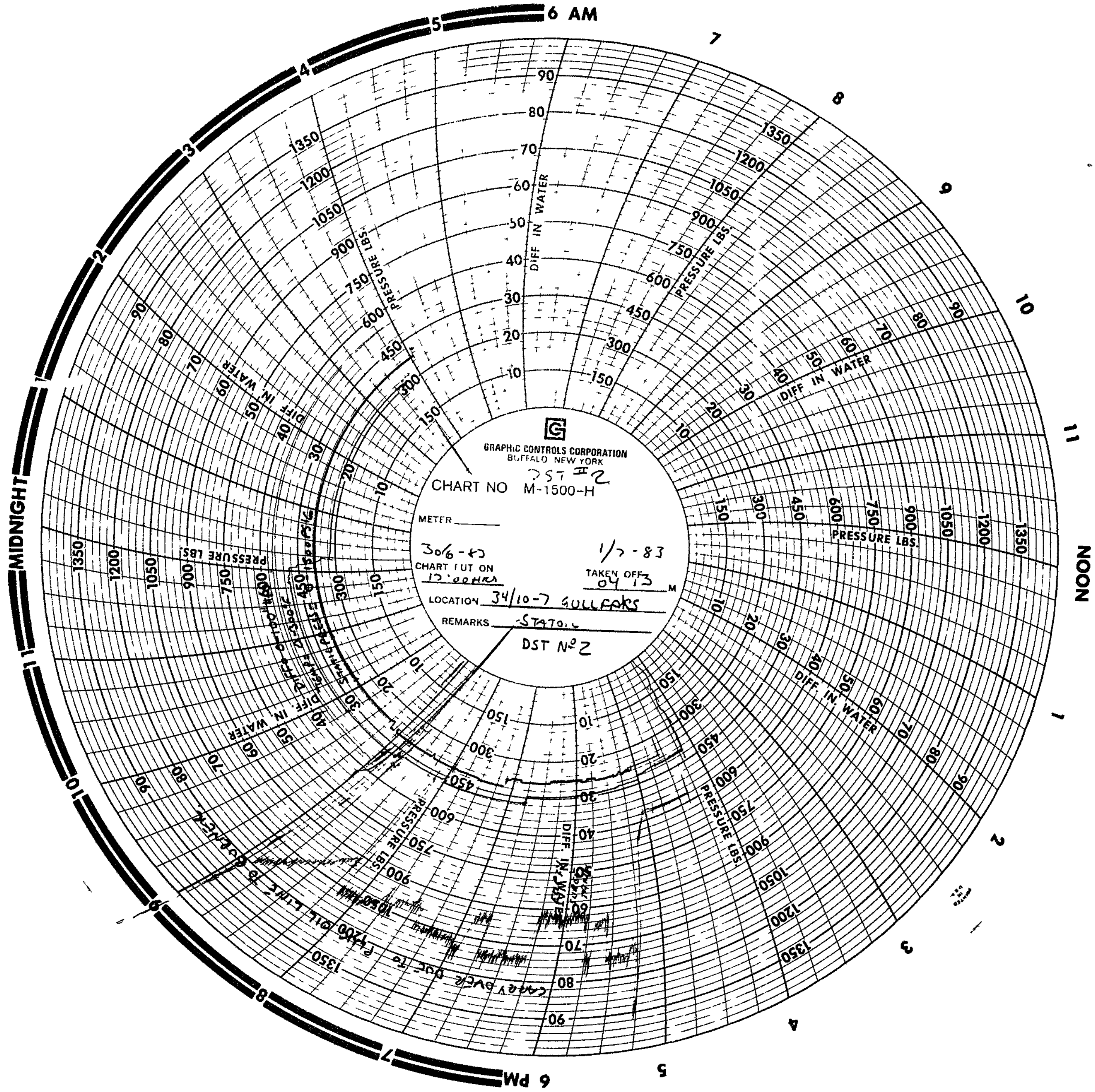
Measurement conditions,
A - Tank . B - Meter . C - Dump .
a - Corrected with shrinkage tester. b - Corrected with tank .

D - REMARKS -

ALL READINGS FROM 04:00 HRS
SHRINKAGE TAKEN AT SEPARATOR = 8%

Visa Chief Operator

A. Austlid
(Sampler)


GRAPHIC CONTROLS CORPORATION
BUFFALO NEW YORK
DST #2
CHART NO M-1500-H
METER
30/6-83
CHART PUT ON
13:00HRS
1/7-83
TAKEN OFF
04 13
M
LOCATION 34/10-7 GULLFAKS
REMARKS STATOIL
DST No 2
6 AM
NOON
6 PM
MIDNIGHT
PRESSURE LBS.
DIFF. IN WATER