Well Testing Report

Client = STATOIL

FLOPETROL

DIVISION : NAR/NUD

BASE : STAVANGER

REPORT N°:

Well Testing Report

Client : STATOIL

Field :

Well : 1/9 - 3

Zone :

Date : 01.9.78 - 21.9.78

FLOPETROL	Client : STATOIL	Section : INDEX
Base : STAVANGER	Field : Well : 1/9-3	Page : Report N° :

INDEX

- ☐ 1 _ TEST PROCEDURE _
- ☐ 2 _ MAIN RESULTS _
- ☒ 3 _ OPERATING AND MEASURING CONDITIONS _
- ☐ 4 _ SURFACE EQUIPMENT DATA _
- ☐ 5 _ WELL COMPLETION DATA _
- ☒ 6 _ SEQUENCE OF EVENTS _
- ☒ 7 _ WELL TESTING DATA _

DOP 101

Flopetrol chief operator	Client representative
Name : C. Kerr	Name : G. Hele

FLOPETROL	Client : STATOIL	Section : 3
Base : STAVANGER	Field : Well : 1/9-3	Page : Report N° :

- OPERATING AND MEASURING CONDITIONS -

A - TYPE OF GAUGE -

BOTTOM HOLE :
Pressure : AMERADA
Temperature : RT1 - AMERADA

WELL HEAD :
Pressure : PWT. + FOXBORO
Temperature : FOXBORO

SEPARATOR :
Pressure : BARTON
Temperature : BARTON

B - PRODUCTION RATE CONDITIONS AND SOURCES -

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

Reference conditions :
- ☒ Separator
- ☐ ~~Atmospheric pressure - 60°F~~ °C - 750.1 mm Hg.

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

GAS PRODUCTION RATE
- ☒ Orifice meter
- ☐ _____

Standard conditions :

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

C - WELL DATA -

WELL STATE DURING SURVEY :

Well producing through : 3½" tubing / ~~drill pipe / casing~~
Main casing size _____ set at _____ Total well depth _____
Tubing size _____ set at _____ Packer _____ set at _____
Perforations :
- Zone _____ From _____ to _____ From _____ to _____
- Zone _____ From _____ to _____ From _____ to _____
-

WELL STATE BEFORE TEST :

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

DOP 104

FLOPETROL	Client : Statoil	Section : 6
Base : STAVANGER	Field : Well : 1/9-3	Page : 1 Report N°:

- SEQUENCE OF EVENTS -

D.S.T. 1

DATE	TIME	OPERATION
31.8.78	20.00	Clocks & Stylii on Amerada's
	20.30	Amerada's installed in tail pipe. R.I.H.
		with test string.
1.9.78	18.41	Set packer at 3181 m.
	18.46	Open circulating valve
	18.51	Start pumping
	18.58	Close wing valve on kill line
	18.59	Open choke manifold
	19.00	Pressure test line to wing valve
	19.05	Close master valve - open wing valve
	19.09	Pressure test master valve - leak due to
		one way valve
	19.30	Strip & check master valve
	20.30	Close circulating valve
	20.50	Open circulating valve
	21.00	Shut master valve
	21.30	Disconnect surface lines & connect together
		pressure test to 8000 psi against choke
		manifold
	21.50	Open choke manifold & close inlet to
		heater
	21.52	Pressure test lines to heater 5000 psi
	22.17	Reconnect flowhead
	22.18	Close circulating valve
	22.20	Open master valve
	22.30	Close choke manifold. Pressure test against
		A.P.R. tool - 4000 psi.
	23.22	Open circulating valve

FLOPETROL

D.S.T. 1

_ SEQUENCE OF EVENTS _(Continuation)

Section : 6

Page : 2

Report N°:

DATE	TIME	OPERATION
1.9.78	23.25	Start displacement of string with water
2.9.78	00.15	Complete displacement
	00.25	Close circulating valve
	01.40	Pressure test chicksans & string to A.P.R.
		Tool - 7000 p.s.i.
	02.15	Open A.P.R. tool
	02.19	Open well on 48/64" choke - Pressure bled
		down to zero
	02.22	Close choke manifold - flow to B.J. tank
	02.49	Close A.P.R. tool - initial build up
	02.50	Close line to B.J. unit
	06.05	Pressure tubing to 1780 psi
	06.08	Open A.P.R. tool 2005 psi
	06.12	Start injection
	06.20	Completion of injection - 4 bbls - flow to
		B.J. tank (12 bbls)
	06.45	Flow overboard 48/64" choke
	08.05	Rat hole mud to surface
	17.59	Shut in for build up. Close A.P.R. tool
3.9.78	06.16	Open A.P.R. tool
	06.28	Start bullhead into formation
	07.15	Bullhead completed
	07.25	Close A.P.R. tool
	08.03	Open circulating v/v & circulate
	08.30	Close circulating valve
	08.35	Shear A.P.R. "A" valve
	12.37	Unseat packer
		End of DST 1
	23.50	Gauges out of hole

FLOPETROL	Client : Statoil	Section : 6
Base : Stavanger	Field : Well : 1/9-3	Page : Report N° :

- SEQUENCE OF EVENTS - D.S.T. 2

DATE	TIME	OPERATION
5/9-78	17.20-25	Clocks & styli on Ameradas'
	17.35	Ameradas installed in tail pipe. R.I.H.
		with test string
6/9-78	05.55	Pressure test line to wing valve 8.000 psi
	06.01	Pressure test against upper master valve
		and wing valve choke manifold side. 8.000 psi
	06.13	Pressure test against lower master valve
		and choke manifold to 8.000 psi
	06.20	Begin to set packer
	06.32	Packer set at 3137 m
	06.35	Pressure test against APR valve 4.000 psi
	06.46	Open circulating valve
	06.47	Start pumping water cushion
	07.20	Circulation completed
	07.21	Close circulating valve
	07.25	Pressure test APR valve to 7.000 psi
	07.40	Open APR valve
	07.42	Open to B.J. tank
	08.12	Close APR valve, initial build up
	11.09	Pressurise tubing to 1800 psi
	11.13	Open APR valve
	11.15	Commence injection
	11.20	Injection completed - flow to B.J. tank
	12.03	Flow overboard on 48/64" choke
	13.00	Rat hole mud to surface
	13.15	Gas to surface
	15.03	Decrease choke to 32/64"

N° DOP 107

FLOPETROL

Section : 6

Page :

Report N°:

DST 2

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
6.9.78	15.30	Decrease choke to 24/64"
	16.45	Flow thro' separator
	20.45	Recombination sample taken
	21.15	Recombination sample taken
	22.03	Bypass separator
	22.07	Shut A.P.R. valve for build up
	22.25	Shut choke manifold
7.9.78	08.55	Open wing valve to B.J. unit
	09.20	Start bullhead into formation - A.P.R. valve
		open
	11.25	Shut A.P.R. valve
	11.29	Shut wing valve to B.J. unit
	11.35	Open circulating valve
	11.36	Start circulation
	12.25	Complete circulation
	12.27	Shear A.P.R. "A" valve
		End of DST 2

FLOPETROL	Client : Statoil	Section : 6
Base : Stavanger	Field : Well : 1/9-3	Page : Report N°:

- SEQUENCE OF EVENTS -

DST 3

DATE	TIME	OPERATION
12.9.78	13.00	Dresser Atlas perforated interval 3126-3135 m
	15.00	Exercised Ameradas P.E. before running in
	from 15.50	
	to 16.05	Put the stylus- on Wound and engaged clocks
	16.15	Ameradas in tail pipe. Started B.I.H.
13.9.78		
	02.25	Flushed lines with water for pressure testing
		surface equipment (flowhead, chicksans, manifold)
	02.35	Pressure tested against choke manifold and
		lower master valve at 8000 psi
	02.50	Open lower master valve
	03.05	Set packer at 3099 m
	03.10	Pressure tested against APR 4000 psi
	03.25	Open circulating valve
	03.30	Started circulating. Displace mud with water
	04.08	Closed circulating valve
		Tested to 7250 psi on APR
	04.55	Pressure up string to 1800 psi
	05.00	Close wing valve kill line
	05.21	Open APR "N"
	05.24	WHP 2360 psi
	05.26	Open well on 3/4" choke
	05.29	Shut in at choke manifold. Flow through bubblehose
	05.56	Shut in at APR for initial build up
	08.57	Open wing valve to B.J. unit
	09.20	Open APR "N"
	09.25	WHP 2350 psi
	09.28	Inject 1.5 Bbls of water into formation

N° DOP 107

SEQUENCE OF EVENTS (Continuation)

DATE	TIME	OPERATION
13.9.78	09.40	Injection complete W.H.P. 3.715 psi
	09.43	Open choke manifold on 48/64" choke
	09.44	Shut in at choke manifold flow through
		bubble hose to oil barrel
	16.35	Close swab valve, rig up lubricator
	17.40	Set clock on botton hole sampler for 2 hrs.
	17.45	Install B.H.S. in lubricator
	17.55	Open swab valve
	18.00	R.I.H.
	18.35	Depth indicator mounting broken at
		1500 m
	19.40	Clock run out, mounting repaired, P.O.O.H.
	20.00	Out of hole
	20.02	Close swab valve
	20.04	Bleed off lubricator
	20.10	Set clock on bottom hole sampler for 2 hrs.
	20.15	Open swab valve
	20.25	R.I.H.
	21.00	Arrive at sampling depth of 3075 m
	22.10	Sample taken
	22.30	P.O.O.H.
	23.00	Out of hole
	23.05	Close swab valve
	23.07	Bleed off lubricator
	23.10	Remove sampler
14.9.78	01.25	Oil to surface
	07.50	Set clock on BHS for 2 hrs.
	08.00	Start running in with wire line
	08.52	Reach sampling depth 3075 m
	10.20	Start pulling out of hole

FLOPETROL

D.S.T. 3

_ SEQUENCE OF EVENTS _(Continuation)

Section : 6

Page :

Report N°:

DATE	TIME	OPERATION
14.9.78	11.00	Wire line out of hole
	11.15	Examination of sample (mud and traces of oil)
	11.50	Make BHS ready for another run
	12.05	Start running in the hole
	12.50	Reach depth of 3075 m
	13.40	Start P.O.O.H.
	14.15	Wire line out of the hole
	14.25	Examination of sample (mud). Sampler had been
		run without filter
	15.13	Well shut in at APR tool
	15.23	Pressure up the tubing to 2000 psi
	15.33	Pull up the string open circulating valve
		and start reverse circulating back to the
		gauge tank. Gas to surface
	17.45	Reverse circulation completed
		End DST 3

FLOPETROL	Client : Statoil	Section : 6
Base : Stavanger	Field : Well : 1/9-3	Page : Report N° :

- SEQUENCE OF EVENTS -

DST 4

DATE	TIME	OPERATION
16.9.78	19.10	Ameradas ready to be run in DST
		Styliis on and clocks on
	20.20	Made up string on hanger kit - run in tail pipe
17.9.78	08.40	Pressure test upstream of choke manifold to 8000 psi
	08.50	Pressure test upstream of steam exch. to 5000 psi
	09.16	Set packer at 3065 m
	09.41	Pressure test entire string to the APR to 4000 psi
	10.03	Open RTTS circulating valve
	10.08	Start displacing mud with water
	10.41	Displacement completed
	11.05	Pressure test entire string to the APR to 7250 psi
	11.20	Bleed off pressure down to 1800 psi
	11.40	Open APR "N"
	11.43	Open the well at choke manifold on 3/4" adjs.
		choke
	12.15	Well shut in at choke manifold. Initial build up.
	12.16	Shut down hole at APR "N" valve
	15.20	Pressure up string to 1800 psi
	15.27	Open APR "N" valve
	15.31	B.J. start water injection into formation
	15.37	Injection completed. Shut wing valve
	15.38	Open the well on 3/4" adjs. choke to the tank
	16.45	Rat hole mud to surface
	16.46	Gas to surface
	17.13	Well slugging water. Clean up

N°: DOP 107

FLOPETROL

Section : 6

Page :

Report N°:

DST 4

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
19.9.78	21.40	Start surface sampling. Gas No. A7318
		Oil No. 20438-36
	23.30	Take another PVT sample gas No. A7631
		Oil No. 14068-64
		Statoil samples gas No. G.003
		oil No. L.007
	23.55	Bypass separator
	23.56	Close choke manifold
	23.57	Close downhole APR "N" valve
		for 12hours build up
20.9.78	13.17	Open APR "N" valve
	13.25	Start pumping water cushion
	13.55	Finish pumping
	13.59	Wire line start RIH for fishing Ameradas
	14.36	Down at depth 3070 metres
	15.15	Pull out of the hole. Ameradas still downhole
		Put more stem
	15.50	Start second run in hole
	16.18	Down at depth 3070 metres
	17.05	Latched on the tool. Start jarring to
		get loose. Problem with counter assy_damaging
		the wire
	18.00	Get free. Pin of pulling tool sheared
	18.55	Out of the hole

FLOPETROL

Section : 6

Page :

Report N°:

DST 4

_ SEQUENCE OF EVENTS _(Continuation)

DATE	TIME	OPERATION
17.9.78	22.30	Switch flow through steam exchanger
	22.37	Go on 7/8" adjustable choke at heater
	23.02	Increase choke to 1"
18.9.78	02.10	Switch flow through separator
	05.54	Take gas surface sample (No. A 4477)
	06.18	Take gas and oil sample (No. A 7616 oil No. 22024-73)
	08.00	Bypass separator
	08.01	Well shut in at choke manifold
	08.23	Close downhole APR "N" for 24 hours build up
19.9.78	08.12	Open APR "N" valve. Commence acid job
	11.25	Acidising completed
	11.30	Rig wire line equipment
	12.25	Test lubricator and BOP to 3500 psi
	12.35	BOP leaking. Bleed off and repair
	13.12	Test lubricator and BOP to 3500 psi
	13.13	Leaking at quick union. Bleed off - repair
	13.45	Test lubricator and BOP to 3500 psi. Test OK
	13.46	Close wing valve kill line
	13.47	Open upper master valve
	13.48	Open lower master valve
	13.49	Start R.I.H. 3 Ameradas 10.000 psi
	14.35	Latch bombs in No go nipple. Start POOH
	15.20	Wire line out of the hole. Rig down
	15.25	Open the well on 3/4" adjs. choke on choke
		manifold
	15.33	Gas to surface
	16.20	By pass steam exchanger
	16.55	Switch flow through separator

No.: DOP 109

FLOPETROL

Base : STAVANGER

Client : STATOIL

Field :

Well : 1/9-3

- WELL TESTING DATA SHEET -

Section : 7

Page : 1

Report N° :

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 Air = 1				Units
31-8.78																	
20.00			Clocks + styli on Amerada's														
20.30			Amerada's installed in tail pipe - start running in with test string														
	1-9.78																
18.41			Set packer at 3181 m.														
18.46			Open circulating valve														
18.51			Start pumping														
18.58			Close wing valve on kill line														
18.59			Open choke manifold														
19.00			Pressure test line to wing valve														
19.05			Close master valve - open wing valve														
19.09			Pressure test master valve - leak due to one way valve														
19.30			Strip + check master valve														
20.30			Close circulating valve														
20.50			Open circulating valve														

LIQUID FLOW RATE MEASURING CONDITIONS :

TESTED INTERVAL : 3205 - 3214 m.

DEPTH REFERENCE : R.K.B.

DEPTH OF B.H. MEASUREMENTS :

No. : DOP 110

DST 1

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page : 2
Report N° :

Section : 7

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				
					Bar								Air=1				Units
1-9.78																	
21.00			Shut master valve - (leaking from above due to one way valve														
21.30			Disconnect surface line + connect together pressure test 8000 psi														
									against choke manifold								
21.50			Open choke manifold + close inlet of heater														
21.52			Pressure test line to heater 5000 psi														
22.17			Reconnect flowhead														
22.18			Close circulating valve														
22.20			Open master valve														
22.30			Close choke manifold pressure test against A.P.R. Tool - 4000 psi														
23.22			Open circulating valve														
23.25			Start displacement of string with water														
	2.9.78																
00.15			Complete displacement														
00.25			Close circulating valve														
01.40			Pressure test chicksands + string to A.P.R. Tool 7000 psi														
02.00					123.84												
02.05					125.49												

No. : DOP 110

DST 1

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page : 3
Report N° :

Section : 7

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				
			bars	PC	BAR								Air=1				Units
2.9.78																	
02.15					144.8 open A.P.R. Tool												
02.19				Open well on 47/64" choke - pressure bleed down to zero													
02.22				Close choke manifold - flow to B.J. Tank													
02.30					0												
02.45			333		0												
02.49				Close A.P.R. Tool - initial build up													
02.50				Close line to B.J. unit													
06.05				Pressure tubing to 1780 psi													
06.08			481	Open A.P.R. Tool - 2005 psi													
06.12			579	Start injection													
06.15				"	229.61												
06.20				Completion of injection - 4 BBLS - Flow to BJ. Tank (12BBLS)													
06.45					Flow overboard 48/64" choke.												
07.00				24	0												
07.15				26	0												
07.30				27	0												
07.45				29	0												

No. : DOP 110

DST 1

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page : 4
Report N° :

Section : 7

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				
				°C	BAR								Air=1				Units
2.9.78																	
08.00				29	0												
08.05			Rat hole mud to surface														
08.15				31													
08.30				31	0.83												
08.45				31	0.69												
09.00				32	1.03				4% Solids		30% mud		66%	H^2O			
09.15				33	0.83												
09.30				33	"				1,5% "		14%	"	84,5%	"			
09.45				36	"												
10.00				36	"										ccc 17800 ppm		
10.15				37	"						11%	"	89%	"			
10.30				38	"						10%	"	90%	"			
10.45				36	"						8%	"	92%	"			
11.00				40	0.90						15%	"	85%	"	ccc 22.700 ppm		
11.15				42	0.90						7%		93%	"	—		
11.30				43	0.90						2.5%		97.5%	"	ccc 22.500 ppm		
11.45				44	1,24						3%		97%	"			

No.: DOP 110

DST 1

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page : 5
Report N°:

Section : 7

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				
			bars	oc	Bar psig				water rate				Air=1				Units
2.9.78																	
12.00				44	1.31				m3		7%	mud	93%	H_2O	cc.	24,800	ppm
12.15			320	46	1.38						1%	"	99%	"	cc.	24,400	ppm
12.30			320	47	1.52						,1%	"	99%	"	cc.	25,600	ppm
12.45			318	48	1.52						1,5%	"	98,5%	"	cc	26.800	ppm
13.00			318	49	1.45						0,8	"	99,2%	"	ccl	29.400	ppm
13.15			316	49	1.31						0,8%	"	99,2%	"	ccl	32.000	ppm
13.30			318	49	1.17						0,7%	"	99,3%	"	ccl	34.000	ppm
13.45			319	51	1.86						0,4%	"	99,6%	"	ccl	31.000	ppm
14.00			319	51	1.93						0,4%	"	99,6%	"	ccl	34.000	ppm
14.15			319	52	2,00						0,35%	"	99,65%	"			
14.30			319	53	2.41												
14.45			319	54	"				318,6		0,35%	"	99,65%	"	ccc	36.000	ppm
15.00			319	54	"				310.5								
15.15			319	55	"				242.0		0,25%	"	99,75%	"	ccc	36,000	ppm
15.30			319	55	2.48				298.4								
15.45			319	56	2.55				318.6		0,2%	"	99,8%	"	ccc	40.000	ppm
16.00			316	55	1.93				306.4								

No. : DOP 110

DST 1

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page : 6
Report N° :

Section : 7

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				
			BAR	OC	BAR				WATER RATE				Air=1				Units
2/9.78																	
16.15			318	55	2.00				262.0		0,2%	solids	99,8%	H_2O	ccc	40.000	ppm
16.30			318	56	2.07				245.9								
16.45			317	57	2.69				314.5		0,15%	"	99,85%	"	ccc	42.000	ppm
17.00			317	57	2.41				282.2								
17.15			320	57	2.34				270.1		0,1%	"	99,9%	"	ccc	41.000	ppm
17.30			319	58	2.76				314,5								
17.45			319	59	"				302.4		0,2%	"	99,8%	"	ccc	41,000	ppm
17.59				60	"				306.4								
17.59		Shut in down hole, for build up (A.P.R. Tool)															
06.16	3/9.78		479	Open A.P.R. Tool													
06.25					152.04												
06.28				Bullhead back into formation													
07.15				Complete bullheading													
07.25				Close A.P.R. Tool													
08.03				Open circulating valve + circulate.													
08.30				Close circulation valve.													
08.35				Shear A.P.R. A' valve with 2600 psi													

No.: DOP 110

DST 1

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page : 7
Report N°:

Section : 7

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 Air=1				Units
3.9.78																	
12.37			Unseat packer														
				End of D.S.T.			1										

No.: DOP 109

FLOPETROL

Base : STAVANGER

Client : STATOIL

Field :

Well : 1/9-3

D.S.T. 2

- WELL TESTING DATA SHEET -

Section : 7

Page :

Report N° :

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 Air = 1				Units
5/9.78																	
17-20-25			Clocks styli on Ameradas														
17-35			Ameradas installed in tail pipe, R.I.H. with test string														
6.9.78																	
05-55			Pressure test line to wing valve														
06-01			pressure test against upper master valve and wing valve, choke manifold side														
06-13			Pressure test against lower master valve and choke manifold														
06.20			Begin to set packer														
06.32			Packer set at 3137 m														
06.35			Pressure test against A.P.R. valve														
06.46			Open circulating valve														
06.47			Start pumping water cushion														
07.20			Circulation competed														
07.21			Close circulating valve														
07.25			Pressure test against A.P.R. valve														

LIQUID FLOW RATE MEASURING CONDITIONS :

TESTED INTERVAL : 3157 - 3180 m

DEPTH REFERENCE : R.K.B.

DEPTH OF B.H. MEASUREMENTS :

No DOP 110

D.S.T. 2

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

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 Air=1				Units
				°C	BAR												
6/9-78																	
07.38			W.H.P.		128.59												
07.40			Open A.P.R. valve														
07.41					158.59												
07.42			Open to B.J. tank														
07.43					0.83												
08.12			Close A.P.R. valve, initial build up														
11.09			Pressurise tubing to 1800 psi														
11.13			Open A.P.R. valve														
11.15			Commence injection - 4 BBLS														
11.20			Completed injection - flow to B.J. tank 23 BBLS														
11.21					0.83												
12.03			Flow overboard on 48/64"														
13.00			Rat hole mud to surface														
13.15					4.83	Gas to surface - slugging											
13.20				31	2.76												
13.25				31	4.07												
13.30				31	4.14												

No. : DOP 110

D.S.T. 2

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

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				
				OC	BAR								Air=1				Units
6/9.78																	
13.35				31	7.24												
13.40				32	14.48												
13.45				32	11.03												
13.50				31	7.58												
13.55				31	10.34												
14.00				31	10.34		45%	oil	5%	solids		50% mud + H_2O					
14.05				29	5.17												
14.10				29	5.52												
14.15				29	8.27												
14.30				29	13.45		28%	oil	5%	solids		67%	H_2O				
14.45				27	7.58		17%	"	3%	"		80%	"				
15.00				31	8.96												
15.03			Decrease choke to			24/64"											
15.15				31	7.58		2,5%	"	2%	"		95.5%	"				
15.30				31	6.55												
15.45				31	10.69		20%	"	1,3%	"		78,7%	"				
16.00				32	14.41		10%	"	2%	"		88%	"	chloride 24,000 ppm			

No DOP 110

D.S.T. 2

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N°:

Section : 7

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	SCF	WATER		
			bars	OC	BAR		OC	BAR	m3/D	API	%	m3/D	Air=1	m3/m3	m3/D		Units
6/9.78																	
16.15			250	33	12.89												
16.30			250	33	13.79												
16.45			253	34	10.76												
17.00			256	34	11.10				8% oil	1,2%	solids	90,8%		H_2O	chloride	35000	ppm
17.15			255	36	14.20												
17.30			253	36	14.41		26.7	6.2			90	5505.53	0.725				
17.45			253	36	13.58		29.4	6.2	23.33		90	5480	"	235	210,		
18.00			253	36	13.51		32.2	6.07	23.60		90	5614	"	238	213	37000	ppm
18.15			253	37	14.34		33.3	6.07	23.71		-	5500	0.750	232	214		
18.30			254	37	14.69		33.8	6.2	22.94		90	5503	"	240	207		
18.45			253	37	14.00		34.4	6.2	25.15		-	5476	"	218	286		
19.00			253	38	14.14		34.4	6.2	11.90		95	5450	"	658	227	38000	ppm
19.15			253	38	13.17		34.4	6.2	12.09		-	5450	0.750	451	230		
19.30			252	38	13.31		34.4	6.14	15.55	29.4	94	5344	"	344	244		
19.45			252	38	14.00		34.4	6.14	14.11		-	5317	"	377	220		
20.00			254	38	14.14		33.8	6.2	20.06	33.5	92	5348	"	267	231	40000	ppm
20.15			254	39	14,48		33.	.2	20,92		-	5322	0,750	254	240		

No.: DOP 110

D.S.T. 2

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			WATER		
Time	Cumul	Temp.	Pressure	Tg temp	Tg press.	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity				
			BAR	°C	BAR		°C	BAR	m3/D	API	%	m3/D	Air=1	m3/m3	m3/D		Units
6/9.78			254														
20.30		Recombination samples taken		39	14.48		33.3	6.2	21.79		90	5336	0.750	245	196		
20.45				40	14.69		33.3	6.2	21.40			5322	"	249	193		
21.00			254	39	13.51		33.3	6.2	21.88	34.2	90	5349	"	244	197	chloride	46000 ppm
21.15			253	39	14.00		32.8	6.2	18.97			5268	0.768	277	176		
21.30		Recombination samples taken		40	15.45		33.3	6.2	9.80		94	5268	"	537	158		
2145			256	40	15.17		32.2	6.2	10.39			5508	"	530	168		
22.00			257	40	14.62		32.2	6.2	15.38		91	5806	0.768	377	174		
						Bypass separator.											
22.07			Shut in down hole for build up (A.P.R. valve)														
22.25			Shut choke manifold														
7/9.78																	
08.55			Open wing valve to B.J. unit														
0920			475 Start bullhead into formation - A.P.R. valve open														
11.25			Shut A.P.R. valve														
11.29			Shut wing valve to B.J. unit														
11.35			Open circulating valve														
11.36			Start circulation														

No.: DOP 110

D.S.T. 2

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

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 Air=1				Units
7/9-78																	
12.25			Complete circulation														
12.27			Shear APR A' valve with 189.6 BARS														
					End of DST 2												
					P.O.O.H.												
8/9-78			Ganges on surface														

No.: DOP 109

FLOPETROL

Base : STAVANGER

Client : STATOIL

Field :

Well : 1/9-3

DST 3

- WELL TESTING DATA SHEET -

Section : 7

Page :

Report N° :

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 Air = 1				Units
12/9-78																	
16.05	-15		Clocks a styli on Ameradas														
16.15			Ameradas installed in tail pipe - start running in with test string.														
13/9-78																	
02.25			Flushed lines with water for pressure testing surface equipment														
02.35			Pressure tested against choke manifold and lower master valve to 8.000 psi														
02.50			Open lower master valve														
03.05			Set packer at 3099 M														
03.10			Pressure tested against APR to 4000 psi														
03.29			Opened circulating valve														
03.30			Started circulating, displacing mud with water														
04.08			Closed circulating valve, pressure test against APR to 7250 psi														
04.50			Bleed off pressure														
04.55			pressure up string to 1800 psi														
05.00			Close wing valve to kill line														

LIQUID FLOW RATE MEASURING CONDITIONS :

TESTED INTERVAL :

DEPTH REFERENCE :

DEPTH OF B.H. MEASUREMENTS :

No.: DOP 110

D.S.T. 3

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N°:

Section : 7

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				
			BAR		BAR								Air=1				Units
13/9-78																	
05.21			Open APR		"N"												
05.24			H.H.P.		162.72												
05.26			Open well at choke manifold on 48/64" choke														
05.28			W.H.P.		0.83												
05.29			Shut in at choke manifold, flow through bubble hose														
05.30			318.76		0.83												
05.35					0.83												
05.40			318.80		0.83												
05.45					0.83												
05.50			318.97		0.83												
05.55					0.83												
05.56			Shut in at A.P.R. for initial build up														
08.57			Open wing valve to B.J. unit														
09.20			Open A.P.R.														
09.25			W.H.P.		162.04												
09.28			Inject 1.5 BBLS of water into formation														
09.40			Injection complete W.H.P. 256.2 BAR														

No.: DOP 110

D.S.T. 3

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N°:

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			water rate	water cumul	
Time	Cumul	Temp.	Pressure	Tg temp	Tg. press.	Cg. press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity				
			BAR		BAR								Air=1			m3	Units
13/9-78																	
09.43			Open choke manifold on 48/64" choke.														
09.44			Shut in at choke manifold, flow through bubble hose to oil barrel.														
09.45					0.83				Water back in the tank after initial flow and							0,29	
09.50					"				after injection								
09.55					"												
10.00			319.04		"												
10.05					"												
10.10					"												
10.15			319.04		"												
11.00			320.76		"												
12.00			321.52		"												
13.00			322.69		"											0,89	
14.00			323.93		"												
15.00			324.76		"												
16.00			325.45		"												
16.35			Close swab valve, rig up wireline lubricator														
16.45					"												

No. : DOP 110

D.S.T. 3

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			water rate	water cumul	
Time	Cumul	Temp.	Pressure BAR	Tg temp	Tg. press. BAR	Cg. press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity Air=1		m3/D	m3	Units
13/9.78																	
17.00			326.21		0.83										2.66		
18.00			326.62		"				Drum (200 l) full						2.96	1.49	
19.00			326.62		"										2.89		
19.35					"				Drum (200 l) full							1.70	
20.00			327.17		"										2.08		
21.00			329.10		"										2.77		
21.20					"				Drum (200 l) full							1.89	
22.00			328.07		"										2.48		
23.00			328.69		"										1.84		
23.29					"				Drum (200 l) full							2.1	
14/9.78																	
00.00			328.49		"										2.02		
01.00			328.49		"										2.16		
01.25			oil to	surface					Drum (200 l) full							2.29	
02.00			328.49		"										2.26		
03.00					"										2.23		
03.45			328.49		"				Drum (200 l) full							2.5	

D.S.T. 3

No : DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			water	water	
Time	Cumul	Temp.	Pressure	Tg. temp	Tg. press.	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		rate	cumul	
			BAR		BAR								Air=1		m3/D	m3	Units
04.00			328.49		0.83										2.26		
05.00			328.49		"										2.42		
05.47									Drum (200l) full							2.69	
06.00			328.69		"										2.31		
07.00			328.69		"										2.35		
07.55									Drum (200 l) full							2.89	
08.00			328.28		"					.854					2.91		
09.00			328.69		"										2.56		
10.00			328.49						Drum (200l) full						2.37	3.10	
11.00			328.28		"										2.00		
12.00			327.76							.8465					2.29		
12.30									Drum (200 l) full							3.29	
13.00			327.49		"										2.62		
14.00			327.49		"										1.72		
14.50									Drum (200 l) full						—	3.50	
15.13					Shut in well downhole				at APR "N" Valve							3.51	
					total oil recovery 30				liters								

DOP 109

FLOPETROL

Base : STAVANGER

Client : STATOIL

Field :

Well : 1/9-3

DST 4

- WELL TESTING DATA SHEET -

Section : 7

Page :

Report N° :

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. BAR	Cg. press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity Air = 1				Units
6/2.78																	
9.10			Ameradas ready to be run - stylus on and clocks engaged														
0.20			Made up string on hanger kit - run in tail pipe														
7/9-78																	
8.40			Pressure Test upstream of choke manifold to 8000 PSI														
8.50			Pressure Test upstream of steam exch. to 5000 PSI														
9.41			Pressure Test string on the APR to 4000 PSI														
0.03			Open RTTS circulating Valve														
0.08			Start displacing mud with water														
0.41			Displacement completed														
0.43			Close circulating Valve														
1.05			Pressure Test string on the APR to 7250 PSI														
1.20			Bleed off pressure down to 1800 PSI														
1.30					130.32												
1.40			Open APR "N" Valve														

LIQUID FLOW RATE: MEASURING CONDITIONS :

TESTED INTERVAL :

DEPTH REFERENCE :

DEPTH OF B.H. MEASUREMENTS :

No. : DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N° :

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			water rate	water cumul	
Time	Cumul	Temp.	Pressure	Tg. temp	Tg. press.	Cg. press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity Air=1				Units
			BAR		BAR											m3	
17/9.78																	
11.40					158.93												
11.43			Open the well on 3/4" adjs. choke														
11.45					0.83												
11.50					"												
12.00			324.07		"												
12.05					"												
12.10					"												
12.15			329.10		"	shut in at choke manifold											
12.16			shut in at APR "N" valve for initial build up													1.49	
15.20			Pressure up string to 1800 PSI														
15.27			Open APR "N" valve														
15.30			478.45	"	149.76												
15.31			BJ Start injection of water into formation														
15.37			Injection complete close wing valve on kill line														
15.38			Open the well on 3/4" adjs. choke to gauge tank														
15.40					0.83												
15.45			317.38		"												

No.: DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N°:

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS				chlorides	
Time	Cumul	Temp.	Pressure	Tg.temp	Tg. press.	Cg. press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity Air=1			PPM	Units
			BAR	OC	BAR												
17/9.78																	
16.00			293.78	18	0.83												
16.15				21	"												
16.30			243.12	23	"												
16.45				27	3.45	Rat hole mud To surface											
16.46				29	17.24	Gas to surface											
17.00			119.84	40	45.51												
17.05				39	72.40												
17.10				34	50.33												
17.13			Flare lit. Well slugging water														
17.15				33	40.00							H_2S: Oppm		CO_2 2.5%			
17.30			102.39	31	27.58												
17.45				32	29.65												
18.00			98.81	31	28.27				BSW= 10% mud, 30% Water, 60%					condensate 13000			
18.15				31	27.58				BSW= 2% mud, 18% Water, 80%					Condensate			
18.30			94.88	31	26.00												
18.45				32	25.51				BSW= 6% mud, 15% Water, 79%					Condensate			
19.00			92,53	31	24.82												

No.: DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

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				
			BAR	OC	BAR								Air=1				Units
17/9-78																	
19.15				31	20.69												
19.30			89.64	32	23.44												
19.45				32	22.41												
20.00			89.64	32	21.37												
20.15				32	20.69												
20.30				32	21.37	BSW= 3% mud, 17% Water, 80% Condensate. H_2S Oppm $C/_2$ 2% mercaptans Oppm											
20.45				32	20.00												
21.00			85.64	32	21.37												
21.15				32	20.34												
21.30				33	21.37												
21.45				33	21.03												
22.00			86.46	32	20.00												
22.15				33	20.69												
22.30			Switch	flow	through steam exchanger												
22.37			flow 7/8" adj. choke on steam exchanger														
22.45				36	26.20												
23.00			85.43	36	24.82												

No.: DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N°:

Section : 7

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				
			BAR	OC	BAR								Air=1				Units
17/9-78																	
23.02			85.43	increase choke to 1"													
23.05				34	22.40												
23.15				33	23.09												
23.30				33	20.69												
23.45				33	23.79												
18/9-78																	
00.00			83.57	33	23.79												
00.15				33	21.37												
00.30				33	"												
00.45				34	22.75												
01.00			81.64	34	20.69												
01.15				33	22.75												
01.30				33	21.37												
01.45				34	22.06												
02.00			81.22	33	21.72												
02.10			Switch	flow	through	separator											
02.15				34	24.82												

No.: DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N°:

Section : 7

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				
			BAR	OC	BAR		OC	BAR	m3/D	API		m3/D	Air=1	m3/m3			Units
18/9-78									Net STO	60°/60°							
02.30				34	24.82												
02.45				34	25.51												
03.00			81.85	34	"												
03.15				33	"												
03.30				33	24.48												
03.45				33	24.89												
04.00			80.40	34	25.51												
04.15				34	26.55												
04.30				34	25.51				53.04	49.9							
04.45				34	25.17				62.88	"							
05.00			80.19	33	22.06				70.17	"							
05.15				33	25.17		42.2	14.48	60.90	"	0	111305	.692	1828			
05.30				34	24.82		"	"	64.71	"	0	111305	"	1720			
05.45				34	25.86		"	"	57.69	"	0	112885	"	1957			
06.00			78.54	34	24.13		42.8	14.80	53.88	"	0	114038	"	2116			
06.15				34	23.44		"	"	69.29	"	0	110942	.715	1601			
06.30				36	23.10		"	"	63.80	50.4	0	110942	"	1739			

No. DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N°:

Section : 7

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	
			BAR	°C	BAR		°C	BAR	m3/D	API		m3/D	Air=1	m3/m3
18/9-78									Net STO 60°/60°F					Units
06.45				36	24.48		42.8	14.8	57.54	50.4	0	110942	.715	1928
07.00			79.16	36	22.75		"	"	56.01	"	"	110512	.700	1973
07.15				36	23.44		"	"	54.49	"	"	108875	"	1998
07.30				36	23.44		"	"	72.19	"	"	110512	"	1531
07.45				36	23.10		"	"	47.31	"	"	112124	"	2370
08.00			77.02	36	24.82		"	"	44.41	"	"	112124	"	2525
									Total water recovery 5.2 Bbls					
08.00			By pass separator											
08.01			Well shut in at choke manifold											
08.02					48.96									
08.03					54.47									
08.04					58.61									
08.05			93.84		63.44									
08.06					66.88									
08.07					71.71									
08.08					75.85									
08.09					79.98									

No.: DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N°:

Section : 7

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				
			BAR		BAR								Air=1				Units
18/9-78																	
08.10			114.39		82.74												
08.11					86.86												
08.12					89.64												
08.13					93.08												
08.14					96.53												
08.15			131.56		99.29												
08.16					101.70												
08.17					104.81												
08.18					107.22												
08.19					109.63												
08.20			148.90		112.05												
08.22					117.91												
08.23			Close APR "N" Valve for build up														
19/9.78																	
08.12			Open APR "N' valve														
			Commence acid job														

D.S.T. 4
(POST ACID)

No.: DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N°:

Section : 7

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 Air=1				Units
19/9-78																	
11.25			Acidising complete														
						DST 4 (post acid)											
11.30			Rig up wireline equipment														
12.05			Clock and styli on Ameradas														
12.25			Pressure test lubricator to 3,500 PSI														
12.35			B.O.P. leaking bleed off to repair														
13.12			Pressure test lubricator to 3,500 PSI														
13.13			B.O.P. Quick union leaking, bleed off repair														
13.45			Pressure test lubricator to 3,500 PSI, test OK														
13.46			Close kill line wing valve														
13.47			Open upper master valve														
13.48			Open lower master valve														
13.49			R.I.H. with 3 Ameradas 0-10,000 PSI Range														
14.35			Latch bombs in baker nipple P.O.O.H.														
15.20			Out of hole, Rig down lubricator														
15.25			Open well slowly on 3/4" choke														
15.29					31.72												

D.S.T. 4
(POST ACID)

No. : DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :
Report N° :

Section : 7

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				
			Bar	°C	BAR		°C	BAR	m3/D	API/ 60°F	%	m3/D	Air=1	m3/m3			Units
19/9-78																	
15.30				75	36.54												
15.33			Gas to	surface													
15.35			438.39	44	127.56												
15.40			433.15	46	147.56												
1545			428.11	47	147.90												
15.50			422.67	49	146.18												
15.55			418.47	50	145.83												
16.00			414.26	53	145.49												
16.15				57	143.42												
16.20			Bypass	heater,	not	required											
16.30			392.26	60	111.70												
16.45			383.02	60	104.12												
16.55			Flow	through	separator												
17.00			374.89	62	102.19												
17.15			366.92	62	101.15		38.9	35.2				584303	0.700				
17.30			360.41	63	99.63		40	35.2	498	50.42	0.45	583272	"	1172			
17.45				63	98.46		41.1	35.2	412	"	"	582239	"	1610			

D.S.T. 4

(POST ACID)

No. : DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :

Report N°:

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			water		
Time	Cumul	Temp.	Pressure	Tg.temp	Tg. press.	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		rate		
			BAR	OC	BAR		OC	BAR	m3/D	API/	%	m3/D	Air=1	m3/m3	m3/D		Units
19/9-78										60°F							
18.00			347.58	63	96.81		40.5	34.5	463	50.42	0.45	575173	0.700	1242			
18.15				63	95.84		41.1	34.48	433	"	"	570532	0.705	1318			
18.30			332.52	63	94.81		41.1	35.17	411	"	"	569783	"	1386	15.14		
18.45				64	93.91		41.1	35.17	419	"	"	567699	"	1355			
19.00			328.07	"	92.6		41.1	35.17	383	"	"	561291	"	1465			
19.15				"	91.57		41.1	35.17	352	"	"	561291	"	1595			
19.30			319.38	"	90.81		41.1	35.17	363	"	"	561291	"	1546	13.04		
19.45				"	89.98		41.1	35.17	350	"	"	561291	"	1604			
20.00			311.25	"	88.95		41.1	35.17	335	51.86	0.6	561291	"	1675			
20.15				"	88.26		41.1	34.48	329	"	"	545370	"	1658			
20.30			303.94	"	87.43		41.1	34.48	304	"	"	541092	"	1780	10.38		
20.45				"	86.53		41.1	34.48	320	52.72	0.4	538941	"	1684			
21.00			297.59	"	85.64		41.1	34.48	285	"	"	534554	"	1876			
21.15				"	85.15		41.1	34.48	285	"	"	534559	"	1876			
21.30			290.97	"	84.26		41.1	34.48	280	"	"	530195	"	1894	95.53		
21.45				"	83.22		41.7	34.48	284	53.06	0.5	530518	"	1868			
22.00			285.11	"	82.88		41.7	34.48	239	"	"	528252	"	2210			

D.S.T. 4

(POST ACID)

No. : DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			water rate		
Time	Cumul	Temp.	Pressure	Tg. temp	Tg. press.	Cg. press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity				
			BAR	OC	BAR		OC	BAR	m3/D	API/60°	%	m3/D	Air=1	m3/m3	Bbls/day		Units
22.15				64	82.19		41.7	34.43	367	53.06	0.5	527695	0.705	1976			
22.30			279.25	64	81.36		41.7	33.41	238	"	"	525142	0.700	2206	9.12		
22.45				"	80.81		41.7	33.41	268	"	"	511745	"	1909			
23.00			274.36	"	80.12		41.7	33.41	212	"	"	510228	"	2407	8.66		
23.15				63	79.43		41.7	33.41	220	"	"	510228	"	2319			
23.30			269.39	"	78.74		41.7	33.41	223	"	"	505652	"	2267	6.98		
23.45				"	78.26		41.7	33.41	229	"	"	502578	"	2195			
23.55			Bypass separator												Total water		
23.57			Close APR for build up												Recovery 3.03		m3

No.: DOP 109

FLOPETROL

Base : STAVANGER

Client : STATOIL

Field :

Well : 1/9-3

- WELL TESTING DATA SHEET -

Section : 7

Page :

Report N°:

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 Air = 1				Units
20/9-78																	
13.17			Open APR valve														
13.25			Begin pumping water cushion														
13.55			Finish pumping water cushion														
13.59			Start to R.I.H. with wireline														
14.36			Wireline at depth of 3.070 m.														
15.15			Unable to pull Ameradas. P.O.O.H. Fit More stem														
15.50			Start 2nd R.I.H.														
16.18			Wireline at depth of 3070 m.														
17.05			Latch on to bombs, unable to pull from nipple, begin jarring.														
18.00			Sheared pin on pulling tool. P.O.O.H.														
18.55			Out of hole														
19.00			Begin to acidise														

LIQUID FLOW RATE MEASURING CONDITIONS :

TESTED INTERVAL : 3094-3112 M

DEPTH REFERENCE : R.K.B.

DEPTH OF B.H. MEASUREMENTS :

[redacted] T. [redacted]4

(POST ACID)

No. : DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

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				
					BAR								Air=1				Units
20/9-78																	
22.00			Acidising complete														
22.02			Close wing valve on kill line														
22.06					22.62												
22.07			Open at choke manifold slowly														
22.1o			Well open on 48/64" choke														
22.11			Shut in leaking weco union, repair														
22.23			Close master valves														
22.25			Open wing valve on kill line														
22.26			Open choke manifold, flush lines														
22.28			Close in at heater, pressure test to 5.000 PSI														
22.29			Bleed off leaking weco union, repair														
22.43			Close in at heater, pressure test to 5.000 PSI														
22.48			Bleed off test OK														
22.50			Close wing valve to kill line, open master valve														
22.51			Open at choke manifold slowly														
22.53			Well open on 48/64" choke														
22.54					21.37												

No. : DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

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				
				OC	BAR								Air=1				Units
20/9=78 22.55																	
					22.75												
23.00	Gas	to surface		102	72.40												
23.05				37	81.36												
23.10				39	87.22												
23.15					105.50												
23.16			Close in leak on gas line, weco union, repair														
23.29			Open at choke manifold slowly														
23.31			Well open on 48/64" choke														
23.32					106.87												
23.33					107.56												
23.34.					107.56												
23.35.				39	107.56												
23.38			Close in at SSV, swivel leaking between choke manifold - well head														
23.43			Open wing valve to kill line close at choke manifold														
23.49			Close wing valve to choke manifold leaking swivel														
23.53			Close wing valve to kill line														
23.57			Open wing valve to choke manifold														

No.: DOP 110

FLOPETROL — WELL TESTING DATA SHEET (Continuation)

Page :
Report N°:

Section : 7

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				
				°C	BAR								Air=1				Units
20/9-78																	
23.58			Open wing valve to kill line														
23.59			Flush water through lines														
21/9-78																	
00.01			Close in at choke manifold, pressure test to 8.000 PSI														
00.08			Open master valve														
00.18					284.4												
00.19			Open well at choke manifold slowly						3/4" choke								
00.22					12.07												
00.23				29	118.60												
00.24				29	116.53												
00.25				31	117.91												
00.26				32	118.25												
00.27				35	107.56												
00.28				36	110.32												
00.29				36	110.32												
00.30			467.14	37	110.67												
00.35				44	111.70												

No.: DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____ Report N°:_____ Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD. RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			water		
Time	Cumul	Temp.	Pressure	Tg.temp	Tg. press	Cg. press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		rate		
			BAR	°C	BAR		°C	BAR	m3/D	API/	%	m3/D	Air=1	m3/m3	m3/D		Units
21/9-78										60°F							
00.40			461.08	50	113.08												
00.45			458.11	55	114.11												
00.50			454.53	57	114.60												
00.55			451.22	59	114.81												
01.00			447.84	60	115.29												
01.15				63	115.15												
01.30			432.12	64	114.46												
01.45				65	114.11						10% H_2O 90% Condensate						
02.00			420.40	66	113.42						4% H_2O 96%		"				
02.10			Flow through separator														
02.15			415.98	67	112.39												
07.30			411.57	67	112.05		45	37.2			0.8	612884	0.722				
02.45			407.57	67	111.49		45	"	552	48.34	"	615096	0.714	1114			
03.00			404.19	68	111.15		46	"	557	"		614063	"	1102			
03.15				68	110.46		46	"	569	"	"	614063	"	1119			
03.30			397.71	68	109.77		46	"	527	"	"	614063	"	1165	47.5		
03.45				68	109.29		46	"	526	"	"	620826	"	1180			

No.: DOP 110

FLOPETROL — WELL TESTING DATA SHEET (Continuation)

Page : _____ Report N°: _____ Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS							PROD RATES AND FLUID PROPERTIES					GOR			
		BOTTOM HOLE		WELL HEAD			SEPARATOR		OIL OR CONDENSATE			GAS			water		
Time	Cumul	Temp.	Pressure	Tg temp	Tg press	Cg press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity		rate		
			BAR	OC	BAR		OC	BAR	m3/D		%	m3/D	Air=1	m3/m3	m3/D		Units
21/9-78																	
04.00			392.06	69	108.74		46.1	37.28	531	49.03	0.8	621948	0.714	1171	37.84		
04.15				"	108.25		"	"	500	"	"	621948	"	1244			
04.30			386.82	"	107.91		"	"	488	"	"	621948	"	1274	38.00		
04.45				"	107.43		"	"	496	"	"	621948	"	1254			
05.00			382.20	"	106.87		"	"	470	49.47	0.6	621948	"	1323	28.30		
05.15				"	106.53		"	"	473	"	"	621948	"	1315			
05.30			377.78	"	105.98		46.7	"	444	"	"	621359	"	1399	29.57		
05.45				"	105.50		"	"	464	"	"	625297	0.705	1347			
06.00			373.16	"	105.15		"	"	444	"	"	625297	"	1408	26.71		
06.15				70	104.81		47.2	"	432	"	"	624771	"	1446			
06.30			369.37	"	104.25		"	"	429	50.63	"	622620	0.71	1451	24.96		
06.45				"	103.91		"	"	427	"	"	622620	"	1458			
07.00			366.06	"	103.96		"	"	412	"	"	622620	"	1511	2130		
07.15				"	103.08		"	"	376	"	"	622620	"	1656			
07.30			362.48	71	102.74		"	"	394	"	"	622620	"	1580	—		
07.45			360.62	"	102.39		"	"	397	"	"	622620	"	1568			
07.46			Bypass separator. Leaking chicksan														

No.: DOP 110

FLOPETROL _WELL TESTING DATA SHEET_(Continuation)

Page :_____
Report N°:_____

Section : 7

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 Air=1				Units
21.9.78																	
07.47			Shut in at S.S.V.														
07.48			Replace leaking chicksans														
08.10			Flush throug lines														
08.15			Pressure test to 8.000 psi at choke manifold														
08.39			Open master valves														
08.40			Open choke slowly to 48/64"														
08.47			Shut in at SSV, leaking check valve on separator														
09.45			Diconnect flow line from flowhead to choke manifold														
			End of test.														