

FLOPET

Denne rapport
tilhører

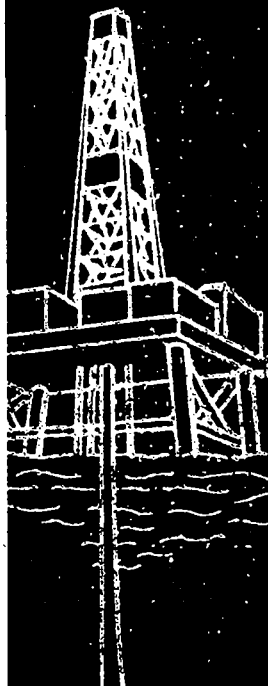


L&U DOK. SENTER

L. NR. 30284050003

KODE Well 31/2-11 nr 13

Returneres etter bruk



Well Testing Report

: NORSKE SHELL

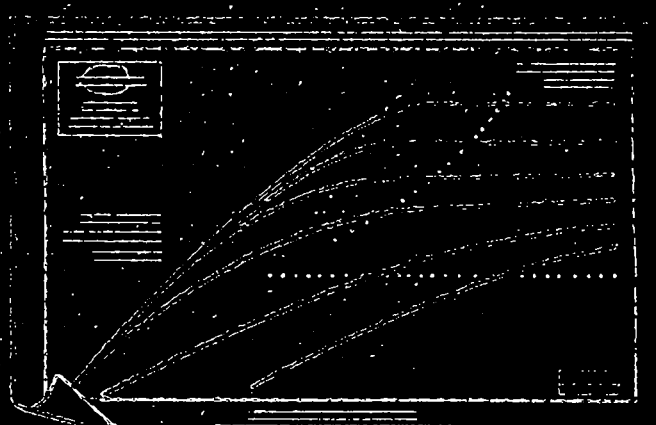
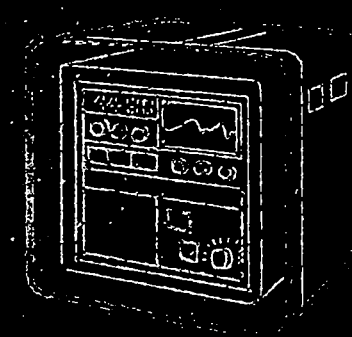
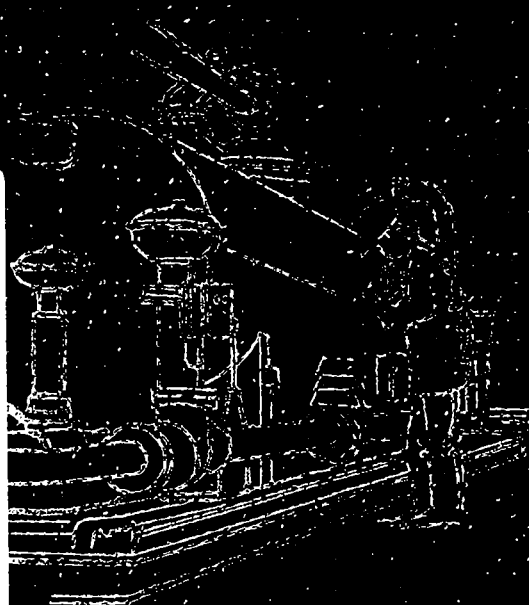
: TROLL

Well: 31/2-11

Statoil	
Well	31/2-11
Date	11.11.1983
Page	8310-1499

Dato	Sgn.	Opp. Sirk.	Dato	Sgn.

FLOPETROL
Schlumberger



FLOPETROL

DIVISION : NSD

BASE : NWB

REPORT N°: 83/2301/24

Well Testing Report

Client : NORSKE SHELL

Field : TROLL

Well : 31/2-11

Zone : UPPER JURASSIC
SANDSTONE

Date : 20-21.05.83

FRACTURE TEST

FLOPETROLClient : NORSKE SHELLSection : INDEXBase : NWBField : TROLLPage : 1Well : 32/2-11Report N°: 83/2301/24

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

D. RABDTN

Client representative

Name : G. RUNDGREN

FLOPETROL

Client : NORSKE SHELL

Section :

1

Field : TROLL

Page : 2

Base : NWB

Well : 31/2-11

Report No : 83/2301/24

- TEST PROCEDURE -

THE OBJECTIVE OF THIS TEST WAS TO FIND OUT AT WHICH PRESSURE THE OIL ZONE FORMATION WOULD BREAK DOWN.

TO THIS POINT PUMPING FROM THE HALLIBURTON UNIT 3 DIFFERENT FRAC TEST WERE CARRIED OUT. EACH TEST WAS DIVIDED INTO 2 DIFFERENT RATES, ONE AT 1/2 BBL/MIN AND 3 BBL/MIN.

ALL PRESSURES WERE OBSERVED ON SURFACE DURING PUMPING AND SHUT-IN OPERATIONS THROUGH T.P.T. DOWNHOLE GAUGE HANGED AT 1590 M ON ELECTRIC WIRE-LINE. AFTER A SIMILAR INSTANTANEOUS SHUT-IN PRESSURE WERE REGISTERED FOR EACH DIFFERENT TEST, THE FRACTURE TEST ENDED.

FLOPETROL

Client : NORSKE SHELLSection : **6**Base : NWBField : TROLLWell : 3T/2-11Page : 3
Report N° : 83/2301/24

- SEQUENCE OF EVENTS -

DATE	TIME	OPERATION
20.05.83	15:00	START TO RIG UP WIRE LINE
	16:45	PRESSURE TEST B.O.P.
	17:00	R.I.H. WITH C.C.L. + T.P.T. + AMERADA
	17:51	ON DEPTH AT 1592 M (AMERADA DEPTH)
	18:00	START $\text{CaCl}_2 / \text{CaCO}_3$ MUD INJECTION
	18:10	STOP INJECTION
	18:29	START INJECTION
	18:30	STOP INJECTION
	18:35	START INJECTION
	18:36	STOP INJECTION
	18:39	START INJECTION
	18:40	STOP INJECTION
	18:42	START INJECTION
	18:43	STOP INJECTION
	18:50	START INJECTION
	18:51	STOP INJECTION
	18:52	START INJECTION
	18:54	STOP INJECTION
	18:56	START INJECTION
	18:57	STOP INJECTION
	18:58	START INJECTION
	18:59	STOP INJECTION
	19:01	START INJECTION
	19:02	STOP INJECTION
	19:03	START INJECTION
	19:04	STOP INJECTION
	19:06	START INJECTION

: DOP 107

FLOPETROL

Section : **6**

SEQUENCE OF EVENTS (Continuation)

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Report N°: 83/2301/24

DATE	TIME	OPERATION
20.05.83	19:07	STOP INJECTION
	19:08	START INJECTION
	19:10	STOP INJECTION
	19:12	START INJECTION
	19:13	STOP INJECTION
	19:17	START INJECTION
	19:18	STOP INJECTION
	19:21	START INJECTION
	19:23	STOP INJECTION
	19:24	START INJECTION
	19:26	STOP INJECTION
	19:28	START INJECTION
	19:31	STOP INJECTION
	19:33	START INJECTION
	19:36	STOP INJECTION
	19:37	START INJECTION
	19:40	STOP INJECTION
	19:42	START INJECTION
	19:45	STOP INJECTION
	19:48	START INJECTION
	19:51	STOP INJECTION
	20:20	START INJECTION
	20:26	STOP INJECTION 1/2 BBL/MIN
	20:31	START INJECTION 3 BBL/MIN
	20:43	STOP INJECTION
	21:00	BLEED OFF
	21:23	START INJECTION 1/2 BBL/MIN
	22:17	CHANGE RATE TO 3 BBL/MIN
	22:23	STOP INJECTION
	22:40	BLEED OFF

I. DOP 108

No.: DOP 109

FLOPETROL

Client : NORSKE SHELL
 Field : TROLL
 Well : 31/2-11

Section : 7
 Page : 6
 Report N : 83/2301/24

Base : NWB

- WELL TESTING DATA SHEET -

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS						PROD. RATES AND FLUID PROPERTIES						GOR	
		BOTTOM HOLE		WELL HEAD		SEPARATOR		OIL OR CONDENSATE			GAS				
Time	Cumul	Pressure	Temp	Tg.press.	Tg.press.	Cg.press.	Temp.	Press.	Rate	Gravity	BSW	Rate	Gravity	Rate	Units
HR-MIN	MIN	DSTC		DSTC		DSTC									
18:00	0			START		MUD INJECTION									
18:01	1	2554		50											
18:02	2	2565		50											
18:03	3	2585		70											
18:04	4	2596		70											
18:05	5	2617		70											
18:06	6	2647		80											
18:07	7	2704		100											
18:08	8	2869		400											
18:09	9	2994		350											
18:10	10	2987		500											
18:11	11/0	3040		500		STOP INJECTION									
18:12	1	2943		330											

20.05.83

LIQUID FLOW RATE MEASURING CONDITIONS :

TESTED INTERVAL :
 DEPTH REFERENCE :
 DEPTH OF B.H. MEASUREMENTS :

: RKB
 : 1590 m (T.P.T) 1592 m (AMERADA)

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

Page Report N°: 83/2301/24

Section : 7

DATE - TIME	PRESSURE AND TEMPERATURE MEASUREMENTS		WELL HEAD		SEPARATOR		PROD. RATES AND FLUID PROPERTIES				GOR	
	BOTTOM HOLE	Pressure	Tg. temp	Pg. press.	Cg. press.	Temp.	Press.	Rate	Gravity	BSW		Rate
20.05.83	Temp.	PSIG	PSIG	PSIG							Air=1	Units
HR MIN	MIN											
18:13	2	2916		290								
18:14	3	2898		260								
18:15	4	2879		240								
18:20	5	2827		180								
18:25	6	2796		120								
18:29	7/0	2785					START INJECTION					
18:30	1	2986		500								
18:31	2/0	3012		500			STOP INJECTION					
18:32	1	2989		350								
18:33	2	2970		330								
18:34	3	2954		305								
18:35	4/0	3012					START INJECTION					
18:36	1/0	3075		510			STOP INJECTION					
18:37	1	3045		350								
18:38	2	3025		330								
18:39	3/0	3046		500			START INJECTION					

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

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Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS				SEPARATOR				PROD. RATES AND FLUID PROPERTIES				GOR	
HR	MIN	BOTTOM HOLE		WELL HEAD		TEMP.		PRESS.		OIL OR CONDENSATE		GAS		Rate	Units
		Temp.	Pressure	Tg. temp.	Cg. press.	Temp.	Press.	Rate	Gravity	Rate	Gravity				
		PSIG	PSIG	PSIG	PSIG										
20:05	83														
19:44	2		3315		820										
19:45	3/0		3308		800			STOP		INJECTION					
19:46	1		3282		620										
19:47	2		3265		600										
19:48	3/0		3257		590			START		INJECTION					
19:50	2		3297		770										
19:51	3/0		3316		785			STOP		INJECTION					
19:52	1		3307		650										
19:53	2		3267		520										
19:54	3		3263		410										
19:55	4		3263		330										
20:00	9		3203												
20:05	14		3140												
20:10	19		3080		410										
20:15	24		3028												
20:20	29/0		2985		330			START		INJECTION				1/2 BBL/MIN	

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

Page Report N°: 83/2301/24

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Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS			SEPARATOR			PROD. RATES AND FLUID PROPERTIES			GOR	
20.05.83 Time HR MIN	Cumul MIN	BOTTOM HOLE		WELL HEAD		Temp.	Press.	OIL OR CONDENSATE		GAS		Units
		Temp.	Pressure	Tq.temp	Tq.press			Cg.press.	PSIG	Rate	Gravity	
			PSIG		PSIG							
20:21	1		3027									
20:22	2		3261		800							
20:23	3		3320		830							
20:24	4		3350		850							
20:25	5		3370		880							
20:26	6/0		3346		900							
20:27	1		3306		640							
20:28	2		3289		635							
20:29	3		3259		610							
20:30	4		3259		600							
20:31	5/0		3254									
20:32	1		3289		750							
20:33	2		3310		790							
20:34	3		3331		850							
20:35	4		3369		870							
20:36	5		3369		900							

START INJECTION

START INJECTION 3 BBL/MIN

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

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Section : 7

DATE - TIME	PRESSURE AND TEMPERATURE MEASUREMENTS		SEPARATOR		PROD. RATES AND FLUID PROPERTIES				GOR
	BOTTOM HOLE Temp. PSIG	WELL HEAD Tg. temp. PSIG	Cg. press. PSIG	Temp. PSIG	Press. PSIG	OIL OR CONDENSATE Rate	Grav. BSW	GAS Rate	
20.05.83 Time									
HR MIN									Units
21:57	34	3438		935					
21:58	35	3445		940					
21:59	36	3456		950					
22:00	37	3459		955					
22:01	38	3465		960					
22:02	39	3473		970					
22:03	40	3480		975					
22:04	41	3485		980					
22:05	42	3494		985					
22:06	43	3498		990					
22:07	44	3502		995					
22:08	45	3509		1000					
22:09	46	3512		1005					
22:10	47	3518		1010					
22:11	48	3522		1010					
22:12	49	3525		1015					

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

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Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS				PROD. RATES AND FLUID PROPERTIES				GOR		
HR	MIN	BOTTOM HOLE		WELL HEAD		SEPARATOR		OIL OR CONDENSATE		GAS		Units
		Temp.	Pressure	Tg temp.	Tg press.	Cg press.	Temp.	Press.	Rate	Gravity	Rate	
			PSIG		PSIG						Air=1	
20,05	83											
22:13	50		3527		1020							
22:14	51		3527		1020							
22:15	52		3528		1025							
22:16	53		3531		1030							
22:17	54/0		3487		1045		CHANGE RATE TO 3 BBL/MIN					
22:18	1		3486		1100							
22:19	2		3486		-1200							
22:20	3		3491		-1200							
22:21	4		3499		-1200							
22:22	5		3492		-1200							
22:23	6/0		3486		-1200		STOP INJECTION					
22:24	1		3494		-1200							
22:25	2		3489		1000							
22:30	7		3396		800							
22:35	12		3370		660							
22:40	17		3346		660		BLEED OFF					

FLOPETROL

DIVISION : NSD

BASE : NWB

REPORT N°: 83/2301/24

Well Testing Report Annexes —

Client : NORSKE SHELL

Field : TROLL Well : 31/2-11

Zone : UPPER JURASSIC Date : 20-21.05.83
 SANDSTONE

FRACTURE TEST

INDEX of ANNEXES

- 1 - BOTTOM HOLE PRESSURE AND TEMPERATURE MEASUREMENT -
 - 1.1 - B.H. gauge calibration .
 - 1.2 - B.H. pressure calculation .
 - 1.3 - B.H. temperature calculation .

- 2 - LIQUID PRODUCTION RATE MEASUREMENT -
 - 2.1 - Measurements with tank .
 - 2.2 - Measurements with meter .

- 3 - GAS PRODUCTION RATE MEASUREMENT -

- 4 - SAMPLING SHEETS -
 - 4.1 - Bottom hole sampling .
 - 4.2 - Surface sampling .

- 5 - CHARTS AND MISCELLANEOUS -

BOTTOM HOLE PRESSURE AND TEMPERATURE MEASUREMENTS**A - PRESSURE -****a) READING USING CALIBRATED CHART :**

Chart is read using as reference line the base line drawn at atmospheric pressure.

$$P = KY + a + C$$

Y is the deflection for pressure P.

K, a and C (non linearity correction) are obtained from calibration by least square calculation.

b) READING USING REFERENCE LINE METHOD :

Chart is read using as reference line a line drawn at pressure P_R .

$$P = KY + P_{RC} + C$$

Y is the deflection for pressure P read from the reference line.

$P_{RC} = KY_R + a$: calculated pressure for reference line.

P_{RC} , K and C are obtained from calibration data.

B - TEMPERATURE -

Chart is read from zero at base line.

Bottom hole temperature is read from constructor's calibration tables at the point corresponding to the deflection

Base line is drawn with adjusting knob held against the stop.
Therefore $Y_0 = 0$

Base line is drawn at temperature $T_0 =$ _____
From calibration tables the corresponding deflection $Y_0 =$ _____

C - GENERAL INFORMATION -

Reference depth : _____

Difference level between the two pressure elements : _____

FLOPETROL

Client: NORSKE SHELLSection: ANNEX 1.1Base: NWBField: TROLLPage: 24Well: 32/2-11Report N: 83/2301/24

BOTTOM HOLE PRESSURE GAUGE CALIBRATION SHEET

DATE: _____ CALIBRATION No.: 1

EQUIPMENT DATA

Calibration cell No.: 2147 Manufacturer: FLOPETROL
Dead weight tester No.: 338 Manufacturer: COLEMAN Range: 50-10000
Recording element No.: 57279 Manufacturer: G.R.C.
Pressure element No.: 48485 Manufacturer: G.R.C. Range: 0-5000

MISCELLANEOUS INFORMATION

Base line drawing temperature: Ambient
Reference line data - temperature: Ambient pressure P_R : _____ reading Y_R : _____
Calibration data - temperature: 150°F step drawing: with crank
 with clock
Equivalent pressure p of level difference between Dwt and bellows
Level difference: 1.90m + in case of Dwt above
Oil specific gravity: 0.874 ρ = 2.36psi - in case of Dwt beneath bellows.

CALIBRATION READING AND CALCULATIONS

P (Dwt)	Y	ΔY	Y^2	YP	$P_c = KY + a$	$C = P - P_c$
			Units on this line -			
1000	0.394		0.155	394.76	1001.01	0.18
1500	0.591	0.196	0.349	886.93	1501.58	0.20
2000	0.787	0.196	0.619	1575.88	2002.45	-0.08
2500	0.983	0.196	0.967	2461.18	2503.02	-0.06
3000	1.180	0.196	1.392	3543.12	3003.69	-0.14
3500	1.376	0.196	1.894	4822.06	3504.66	-0.52
4000	1.572	0.196	2.472	6296.73	4005.03	-0.30
4500	1.768	0.196	3.127	7966.44	4504.59	0.73
		Σ			$\Sigma + = 1.10$	$\Sigma - = 1.10$

$$A = \frac{\sum P}{n} = \text{_____} \quad B = \frac{\sum Y}{n} = \text{_____} \quad K = \frac{D - A}{C - B} = \text{_____}$$
$$D = \frac{\sum (YP)}{\sum Y} = \text{_____} \quad C = \frac{\sum (Y^2)}{\sum Y} = \text{_____}$$
$$a' = A - BK = \text{_____} \quad a' = D - CK = \text{_____}$$

No.: DOP 114

FINAL RESULTS

$$K = \text{2550.0351 PSI/INCH} \quad PRC = KY_R + a = \text{_____}$$
$$a = a' + p = \text{-2.0894 PSI}$$

FLOPETROL

Client : NORSKE SHELL

Section: **ANNEX 1.2**

Base : NWB

Field : TROLL

Page : 25

Well : 31/2-11

Report N°: 83/230T/24

_ BOTTOM HOLE PRESSURE CALCULATIONS _

Well producing through . casing / tubing / drill pipe
 Bottom hole temperature : _____ at depth _____ with _____

INSTRUMENT DATA	LOWER GAUGE	UPPER GAUGE
Instrument type :	AMERADA	
Press. element No. and range:	No. 57279 - 5000 PSI	
Recording element No.:	No. 48485	
Clock No. and capacity:	12 HR	
CALIBRATION DATA		
Calibration No. and date :	NO. 1	
Calibration temperature :	150°F	
Calibration range :	4500 PSI	
K :	2550.0351	
a. (calibrated chart) :	-2.0894	
PC. (non calibrated chart) :		

DATE - TIME		Choke size	W.H. pressure	Depth	Y	C *	P	Y	C *	P
Time	Cumul									
HR/MIN	min		PSIG	M	INCH		PSIG			
							20.05.83			
17:00		R. I. H.	WITH C.C.L.	+ T.P.T.	+ AMERADA					
17:51		ON DEPTH AT	1592 M	(AMERADA	DEPTH.)					
18:00	0	START	INJECTING MUD.							
18:01	1		50	1592	1.0022		2554			
18:02	2		50	1592	1.0068		2565			
18:03	3		70	1592	1.0145		2585			
18:04	4		70	1592	1.0190		2596			
18:05	5		70	1592	1.0269		2617			
18:06	6		80	1592	1.0388		2647			
18:07	7		100	1592	1.0611		2704			
18:08	8		400	1592	1.1259		2869			
18:09	9		350	1592	1.1751		2994			
18:10	10		500	1592	1.1720		2987			
18:11	11/0		500	1592	1.1930		3040	STOP INJECTION		
18:12	1		330	1592	1.1549		2943			
18:13	2		290	1592	1.1443		2916			

REMARKS :

* Only used if its value is significant compared to the accuracy of the gauge.

No. : DOP 115 Litografen 8175

FLOPETROL

Section: ANNEX 1.2

_ B.H. PRESSURE CALCULATIONS (Continuation) _

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DATE - TIME		Choke size	W. H. pressure	LOWER GAUGE			UPPER GAUGE		
Time	Cumul			Depth	Y	C *	P	Y	C *
HR/MIN	min		PSIG	M	INCH		PSIG		
					20.05.83				
18:14	3		260	1592	1.1372		2898		
18:15	4		240	1592	1.1300		2879		
18:20	9		180	1592	1.1094		2827		
18:25	14		120	1592	1.0974		2796		
18:29	18/0			1592	1.0931		2785	START INJECTION	
18:30	1		500	1592	1.1718		2986		
18:31	2/0		500	1592	1.1821		3012	STOP INJECTION	
18:32	1		350	1592	1.1731		2989		
18:33	2		330	1592	1.1656		2970		
18:34	3		305	1592	1.1593		2954		
18:35	4/0			1592	1.1821		3012	START INJECTION	
18:36	1/0		510	1592	1.2068		3075	STOP INJECTION	
18:37	1		350	1592	1.1948		3045		
18:38	2		330	1592	1.1870		3025		
18:39	3/0		500	1592	1.1952		3046	START INJECTION	
18:40	1/0		420	1592	1.2121		3089	STOP INJECTION	
18:41	1		400	1592	1.2172		3102		
18:42	2/0			1592	1.1881		3028	START INJECTION	
18:43	1/0		450	1592	1.2052		3071	STOP INJECTION	
18:44	1		420	1592	1.2099		3083		
18:45	2		395	1592	1.1977		3052		
18:46	3		370	1592	1.1898		3032		
18:47	4		350	1592	1.1820		3012		
18:48	5		330	1592	1.1749		2994		
18:49	6		315	1592	1.1682		2977		
18:50	7/0		300	1592	1.1636		2965	START INJECTION	
18:51	1/0		470	1592	1.2187		3106	STOP INJECTION	
18:52	1/0		425	1592	1.2108		3085	START INJECTION	

No. DOP 116 Litograften 8175

FLOPETROL

Section: ANNEX 1.2

- B. H. PRESSURE CALCULATIONS (Continuation) -

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Report N°: 83/2301/24

DATE - TIME		Choke size	W. H pressure	Depth	LOWER GAUGE			UPPER GAUGE		
Time	Cumul				Y	C *	P	Y	C *	P
HR/MIN	min		PSIG	M	INCH		PSIG			
					20.05.83					
18:53	1		620	1592	1.2295		3133			
18:54	2/0		625	1592	1.2378		3154	STOP INJECTION		
18:55	1		470	1592	1.2297		3134			
18:56	2/0		440	1592	1.2163		3100	START INJECTION		
18:57	1/0		505	1592	1.2432		3168	STOP INJECTION		
18:58	1/0		480	1592	1.2312		3138	START INJECTION		
18:59	1/0		650	1592	1.2471		3178	STOP INJECTION		
19:00	1		510	1592	1.2471		3178			
19:01	2/0		490	1592	1.2422		3166	START INJECTION		
19:02	1/0		650	1592	1.2603		3212	STOP INJECTION		
19:03	1/0		520	1592	1.2520		3191	START INJECTION		
19:04	1/0		690	1592	1.2699		3236	STOP INJECTION		
19:05	1		550	1592	1.2637		3220			
19:06	2/0		540	1592	1.2566		3202	START INJECTION		
19:07	1/0		590	1592	1.2775		3256	STOP INJECTION		
19:08	1/0		550	1592	1.2538		3195	START INJECTION		
19:09	1		710	1592	1.2544		3197			
19:10	2/0		730	1592	1.2798		3261	STOP INJECTION		
19:11	1		540	1592	1.2499		3185			
19:12	2/0		485	1592	1.2344		3146	START INJECTION		
19:13	1/0		650	1592	1.2514		3189	STOP INJECTION		
19:14	1		550	1592	1.2601		3211			
19:15	2		530	1592	1.2491		3183			
19:16	3		495	1592	1.2381		3155			
19:17	4/0		470	1592	1.2300		3134	START INJECTION		
19:18	1/0		660	1592	1.2617		3215	STOP INJECTION		
19:19	1		530	1592	1.2559		3200			
19:20	2		505	1592	1.2361		3150			

FLOPETROL

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_ B.H. PRESSURE CALCULATIONS (Continuation) _

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				LOWER GAUGE			UPPER GAUGE			
DATE - TIME		Choke size	W. H. pressure	Depth	Y	C *	P	Y	C *	P
Time	Cumul									
HR/MIN	min		PSIG	M	INCH		PSIG			
					20.05.83					
19:21	3/0		495	1592	1.2361		3125			START INJECTION
19:22	1		730	1592	1.2751		3249			
19:23	2/0		730	1592	1.2564		3202			STOP INJECTION
19:24	1/0		540	1592	1.2533		3194			START INJECTION
19:25	1		735	1592	1.2699		3236			
19:26	2/0		735	1592	1.2787		3259			STOP INJECTION
19:27	1		560	1592	1.2576		3205			
19:28	2/0		545	1592	1.2576		3205			START INJECTION
19:29	1		740	1592	1.2579		3206			
19:30	2		775	1592	1.2920		3293			
19:31	3/0		780	1592	1.2862		3278			STOP INJECTION
19:32	1		600	1592	1.2623		3217			
19:33	2/0		560	1592	1.2623		3217			START INJECTION
19:34	1		745	1592	1.2811		3265			
19:35	2		775	1592	1.2937		3297			
19:36	3/0		785	1592	1.2923		3293			STOP INJECTION
19:37	1		590	1592	1.2715		3240			START INJECTION
19:38	2		740	1592	1.2735		3245			
19:39	3		770	1592	1.2918		3292			
19:40	4/0		800	1592	1.2990		3310			STOP INJECTION
19:41	1		645	1592	1.2957		3302			
19:42	2/0		625	1592	1.2898		3287			START INJECTION
19:43	1		800	1592	1.3032		3321			
19:44	2		820	1592	1.3008		3315			
19:45	3/0		800	1592	1.2979		3308			STOP INJECTION
19:46	1		620	1592	1.2878		3282			
19:47	2		600	1592	1.2812		3265			
19:48	3/0		590	1592	1.2779		3257			START INJECTION

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FLOPETROL

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_ B.H. PRESSURE CALCULATIONS (Continuation) _

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			LOWER GAUGE				UPPER GAUGE			
DATE - TIME		Choke size	W. H. pressure PSIG	Depth M	Y INCH	C *	P PSIG	Y	C *	P
Time HR/MIN	Cumul min									
					20.05.83					
19:50	1		770	1592	1.2939		3297			
19:51	2/0		785	1592	1.3013		3316	STOP INJECTION		
19:52	1		650	1592	1.2975		3307			
19:53	2		520	1592	1.2820		3267			
19:54	3		410	1592	1.2804		3263			
19:55	4		330	1592	1.2804		3263			
20:00	9		800	1592	1.2568		3203			
20:05	14			1592	1.2323		3140			
20:10	19		410	1592	1.2087		3080			
20:15	24			1592	1.1884		3028			
20:20	29/0		330	1592	1.1712		2985	START INJECTION		
20:21	1			1592	1.1880		3027	1/2 BBL/MIN		
20:22	2		800	1592	1.2797		3261			
20:23	3		830	1592	1.3028		3320			
20:24	4		850	1592	1.3147		3350			
20:25	5		880	1592	1.3222		3370			
20:26	6/0		900	1592	1.3131		3346	STOP INJECTION		
20:27	1		640	1592	1.2971		3306			
20:28	2		635	1592	1.2908		3289			
20:29	3		610	1592	1.2788		3259			
20:30	4		600	1592	1.2788		3259			
20:31	5/0			1592	1.2769		3254	START INJECTION		
20:32	1		750	1592	1.2906		3289	TO 3 BBL/MIN		
20:33	2		790	1592	1.2988		3310			
20:34	3		850	1592	1.3072		3331			
20:35	4		870	1592	1.3219		3369			
20:36	5		900	1592	1.3219		3369			
20:37	6		1000	1592	1.3158		3353			

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- B.H. PRESSURE CALCULATIONS (Continuation) -

Page : 30
Report N°: 83/2301/24

DATE - TIME		Choke size	W. H. pressure	LOWER GAUGE			UPPER GAUGE		
Time	Cumul			Depth	Y	C *	P	Y	C *
HR/MIN	min		PSIG	M	INCH		PSIG		
					20.05.83				
20:38	7			1592	1.3158		3353		
20:39	8			1592	1.3266		3381		
20:40	9		=1200	1592	1.3250		3377		
20:41	10		=1200	1592	1.3287		3377		
20:42	11		=1200	1592	1.3499		3440		
20:43	12/0		=1200	1592	1.3798		3516	STOP INJECTION	
20:44	1		1000	1592	1.3780		3512		
20:45	2		950	1592	1.3637		3475		
20:50	7		800	1592	1.3419		3420		
21:00	17/0		665	1592	1.3112		3342	BLEED OFF	
21:05				1592	1.2982		3308		
21:15				1592	1.0715		2730		
21:20				1592	1.0641		2711		
21:23	0			1592	1.0631		2709	START INJECTION	
21:24	1		150	1592	1.0771		2745	1/2 BBL/MIN	
21:25	2		380	1592	1.1482		2926		
21:26	3		580	1592	1.2145		3095		
21:27	4		675	1592	1.2403		3161		
21:28	5		720	1592	1.2622		3217		
21:29	6		750	1592	1.2742		3247		
21:30	7		775	1592	1.2823		3268		
21:31	8		780	1592	1.2898		3287		
21:32	9		795	1592	1.2952		3301		
21:33	10		810	1592	1.2984		3309		
21:34	11		810	1592	1.2997		3312		
21:35	12		815	1592	1.3016		3317		
21:36	13		820	1592	1.3027		3320		
21:37	14		820	1592	1.3037		3322		

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- B. H. PRESSURE CALCULATIONS (Continuation) -

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Report N°: 83/2301/24

DATE - TIME		Choke size	W. H. pressure	Depth	LOWER GAUGE			UPPER GAUGE		
Time	Cumul				Y	C *	P	Y	C *	P
HR/MIN	min		PSIG	M	INCH		PSIG			
					20.05.83					
21:38	15		825	1592	1.3058		3328			
21:39	16		825	1592	1.3068		3330			
21:40	17		830	1592	1.3102		3339			
21:41	18		840	1592	1.3115		3342			
21:42	19		840	1592	1.3119		3343			
21:43	20		840	1592	1.3122		3344			
21:44	21		840	1592	1.3142		3349			
21:45	22		845	1592	1.3167		3356			
21:46	23		850	1592	1.3193		3362			
21:47	24		850	1592	1.3220		3369			
21:48	25		860	1592	1.3241		3374			
21:49	26		865	1592	1.3271		3382			
21:50	27		875	1592	1.3299		3389			
21:51	28		885	1592	1.3332		3398			
21:52	29		890	1592	1.3358		3404			
21:53	30		900	1592	1.3383		3411			
21:54	31		915	1592	1.3408		3417			
21:55	32		920	1592	1.3440		3425			
21:56	33		930	1592	1.3470		3433			
21:57	34		935	1592	1.3491		3438			
21:58	35		940	1592	1.3519		3445			
21:59	36		950	1592	1.3561		3456			
22:00	37		955	1592	1.3572		3459			
22:01	38		960	1592	1.3598		3465			
22:02	39		970	1592	1.3627		3473			
22:03	40		975	1592	1.3655		3480			
22:04	41		980	1592	1.3673		3485			
22:05	42		985	1592	1.3711		3494			

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_ B.H. PRESSURE CALCULATIONS (Continuation) _

Page : 32
Report N°: 83/2301/24

DATE - TIME			Choke size	W H. pressure	LOWER GAUGE			UPPER GAUGE		
Time	Cumul	Depth			Y	C *	P	Y	C *	P
HR/MTN	min		PSIG	M	INCH		PSIG			
					20.05.83					
22:06	43		990	1592	1.3724		3498			
22:07	44		995	1592	1.3742		3502			
22:08	45		1000	1592	1.3768		3509			
22:09	46		1005	1592	1.3779		3512			
22:10	47		1010	1592	1.3804		3518			
22:11	48		1010	1592	1.3818		3522			
22:12	49		1015	1592	1.3831		3525			
22:13	50		1020	1592	1.3839		3527			
22:14	51		1020	1592	1.3840		3527			
22:15	52		1025	1592	1.3843		3528			
22:16	53		1030	1592	1.3854		3531			
22:17	54/0		1045	1592	1.3682		3487	CHANGE RATE TO		
22:18	1		1100	1592	1.3679		3486	3 BBL/MIN		
22:19	2		=1200	1592	1.3679		3486			
22:20	3		=1200	1592	1.3697		3491			
22:21	4		=1200	1592	1.3728		3499			
22:22	5		=1200	1592	1.3703		3492			
22:23	6		=1200	1592	1.3679		3486			
22:24	7		=1200	1592	1.3711		3494			
22:25	8/0		1000	1592	1.3692		3489	STOP INJECTION		
22:30	5		800	1592	1.3326		3396			
22:35	10		660	1592	1.3223		3370			
22:40	15		660	1592	1.3131		3346	BLEED OFF		
					END OF CHART					

Division: ... E.M.R.

FLOPETROL JOHNSTON
Schlumberger

Centre: ... STAVANGER

Service order:

AMERADA CHART

Customer: ... NORSKE SHELL
Field: ... TROLL
Well: ... 31/2-11
Date: ... 20-21.05.83

Remarks:
... FRACTURE TEST
.....
.....
Pressure element No. 57279.... Range D-5000.PSI
Clock No. Range 12.HR

