

FLOPETROL

DIVISION : NSD
BASE : NWB
REPORT N° : 83/2301/36

Well Testing Report

Client :	STATOIL	RIG:	ROSS ISLE
Field :	34/10 ALPHA	Well :	34/10-16 DST NO. 1
Zone :	ETIVE	Date :	09.09.83 - 12.09.83

FLOPETROL

Client : STATOILSection : INDEXBase : NWBField : 34/10 ALPHAPage : 1Well : 34/10-16Report N° : 83/2301/36

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N° DOP 101

Flopetrol chief operator
Name : S. LØVIKClient representative
Name : B. HULTBERG

- TEST PROCEDURE -**OBJECTIVES**

TO ESTIMATE PRODUCTIVITY, OBTAIN FLUID SAMPLES, ESTIMATE PRESSURE AND TEMPERATURE, EVALUATE RESERVOIR PROPERTIES.

AFTER SCHLUMBERGER HAS PERFORATED 3397-3407 METERS, THE TEST STRING WAS RUN USING HALLIBURTON TEST TOOLS, FLOPETROL EZ-TREE, LUBRICATOR, FLOWHEAD AND SURFACE TESTING EQUIPMENT, ONE FLOPETROL SDP AND ONE SPERRY SUN MK III IN F-NIPPLE. TWO SPERRY SUN MKIII IN BUNDLE CARRIER. GAUGES RUN IN WITH TEST STRING.

AFTER ALL TEST EQUIPMENT HAD BEEN PRESSURE TESTED TO 6000 PSI, THE PACKER WAS SET AT 3383.09 M.

AFTER SEVERAL ATTEMPTS TO OPEN UP LPR-N, THE STRING WAS LIFTED, RESET AGAIN, AND IT WAS TRIED TO OPEN IT AGAIN. IT WAS OPENED AT 07:55 HRS ON THE 10.09.83 AND THE WELL WAS OPENED THROUGH A 48/64" FIXED CHOKE TO THE SURGE TANK FOR INITIAL FLOW AT 08:05 ON THE 10.09.83. A TOTAL OF 1.12 m³ WATER CUSHION WAS FLOWED BACK BEFORE SHUTTING IN FOR INITIAL SHUT IN AT 08:08 HRS. THE WELL WAS OPENED FOR THE MAIN FLOW AT 09:12 HRS. GAS REACHED SURFACE AFTER 22 MIN. THE FLOW WAS DIVERTED THROUGH THE TEST SEPARATOR AFTER 220 MIN ON THIS CHOKE WHEN B.S.W. WAS DOWN TO 0%.

3 SETS OF PVT SAMPLES, DEAD OIL SAMPLES, AND WATER SAMPLES WERE OBTAINED BEFORE SHUTTING IN FOR FINAL BUILD UP. TOTAL MAIN FLOW WAS 667 MIN AND THE FINAL SHUT IN PERIOD WAS 656 MIN.

AFTER THE BUILD UP THE WELL WAS FLOWED ON 20/64" ADJUSTABLE CHOKE FOR 28 MIN AND THEN CHANGE TO 12/64" FIXED CHOKE FOR 26 MIN. THE WELL WAS THEN SHUT IN FOR 41 MIN, AND OPENED ON 28/64" FIXED CHOKE FOR 68 MIN TO FLOW OUT THE GAS PRIOR TO RUN BOTTOM HOLE SAMPLERS. THE WIRE LINE EQUIPMENT AND WIRE LINE STRING WITH 1 CCL-L, 1 TPT AND 2 BOTTOM HOLE SAMPLERS WERE RIGGED UP AND PRESSURE TESTED AND RUN IN HOLE. THE WELL WAS OPENED ON A 8/64" FIXED CHOKE FOR 35 MIN BUT ONLY GAS CAME TO SURFACE. THE ADJUSTABLE CHOKE WAS OPENED ON 12/64" FIXED + ADJUSTABLE 14/64" FOR 9 MIN. THEN THE ADJUSTABLE CHOKE WAS CLOSED AND THE WELL WAS FLOWED ON 8/64" FIXED CHOKE FOR 99 MIN, WHEN THE 2 BOTTOM HOLE SAMPLERS WERE TAKEN. WHEN WIRE LINE STRING WAS BACK ON SURFACE, KILLING PROCEDURES STARTED.

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- MAIN RESULTS -

Tested interval: ETIVE Perforations: 3397-3407m RKB

OPERATION	DURATION	BOTTOM HOLE PRESSURE	WELL HEAD PRESSURE	OIL PROD.RATE	GAS PROD.RATE	G.O.R
Units	MIN	BARS	BARS	M ³ /M	MSM ³ /M	SCM/M ³
INITIAL FLOW 48/64" FIXED	3	348.1	38.9			
INITIAL BUILD UP	62	458.8	125.8			
MAIN FLOW 48/64" FIXED	667	306.7	106.5	955.4	182.8	191
MAIN BUILD UP	656	457.3	234.3			
SAMPLE FLOW 20/64" FIXED	30	430.1	204.5			
SAMPLE FLOW 12/64" FIXED	26	442.5	218.5			
SAMPLE FLOW 28/64" FIXED	68	390.1	175.9			
SAMPLE FLOW 8/64" FIXED	35	451.0	230.6			
SAMPLE FLOW 14/64" FIXED AND ADJ	9	440.0	225.8			
SAMPLE FLOW 8/64" FIXED	99	450.6	211.3	68.3	14.9	218

Depth of bottom hole measurements : * 3405.64m Reference : MRKBTemperature : 129°C at : 3405.64m depthSeparator gas gravity (air : 1) at choke size : 48/64" FIXED .670STO gravity at choke size 48/64" : 0.8547 60/100BSW : 0 Water cut : _____

REMARKS AND OTHER OPERATIONS

ALL MEASUREMENTS ARE THOSE LAST RECORDED.

* SPERRY SUN GAUGE.

- OPERATING AND MEASURING CONDITIONS -

A - TYPE OF GAUGE -

BOTTOM HOLE :

Pressure : FLOPETROL SDP, SPERRY SUN MK-IIITemperature : FLOPETROL SDP

WELL HEAD :

Pressure : FOXBORO 0-10000 PSI DWT 50-10000 PSITemperature : FOXBORO 32-180°F

SEPARATOR :

Pressure : BARTON 0-1500 PSITemperature : BARTON 0-300°FDIFFERENTIAL: 0-400 Hw

B - PRODUCTION RATE CONDITIONS AND SOURCES -

OIL PRODUCTION RATE

- Tank
 Meter
 Dump

- Floco
 Rotron

Reference conditions

- Separator
 Atmospheric
 pressure 60°F

Shrinkage measurement

- With tank
 With shrinkage
 tester

GAS PRODUCTION RATE

- Orifice meter

Standard conditions

15°C 760 mm HG

WATER PRODUCTION RATE

- Tank
 Meter

C - WELL DATA -

WELL STATE DURING SURVEY :

Well producing through : _____ tubing / drill pipe / casing

Main casing size 9 5/8" set at _____ Total well depth _____Tubing size 5" VAM set at 3411.65 M Packer 3383.09 M set at _____

Perforations :

- Zone ETIVE From 3397m to 3407m From _____ to _____

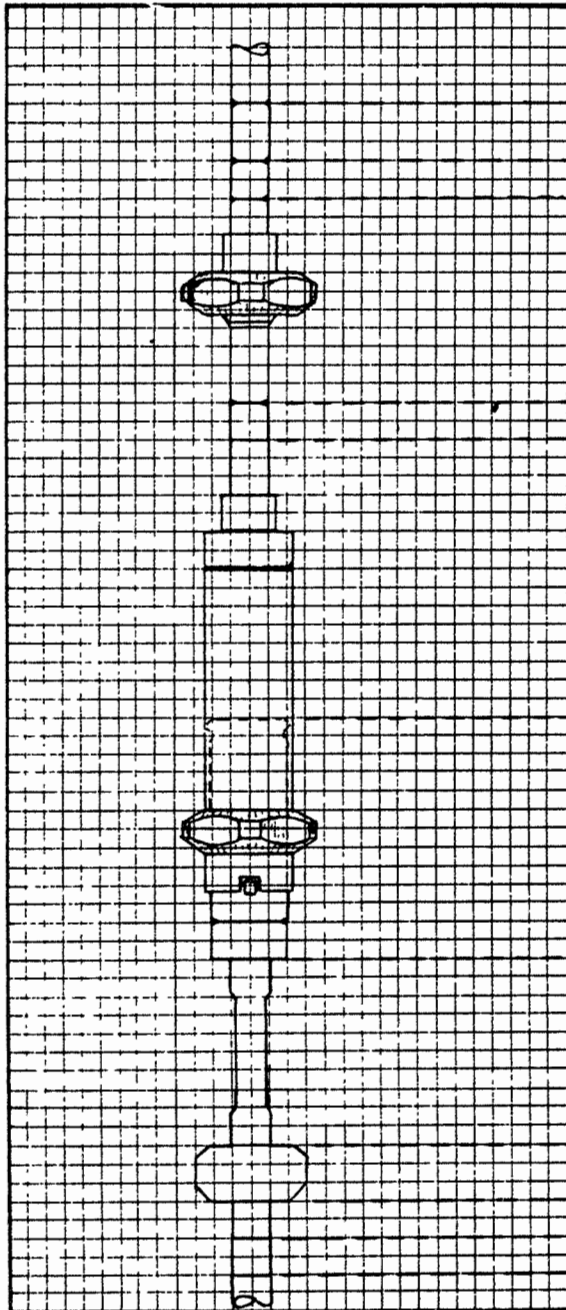
- Zone _____ From _____ to _____ From _____ to _____

-

WELL STATE BEFORE TEST :

 Well closed since RE-ENTRY Well flowing since _____ Producing zone ETIVEChoke size 48/64" FIXED CHOKE

-WELL COMPLETION DATA-



PUP JOINT

199

X-OVER

31.5

CENTRALIZER

105

SAVER SUB

25.5

EZ-TREE

244

SLICK JOINT

294

FLUTED HANGER

29

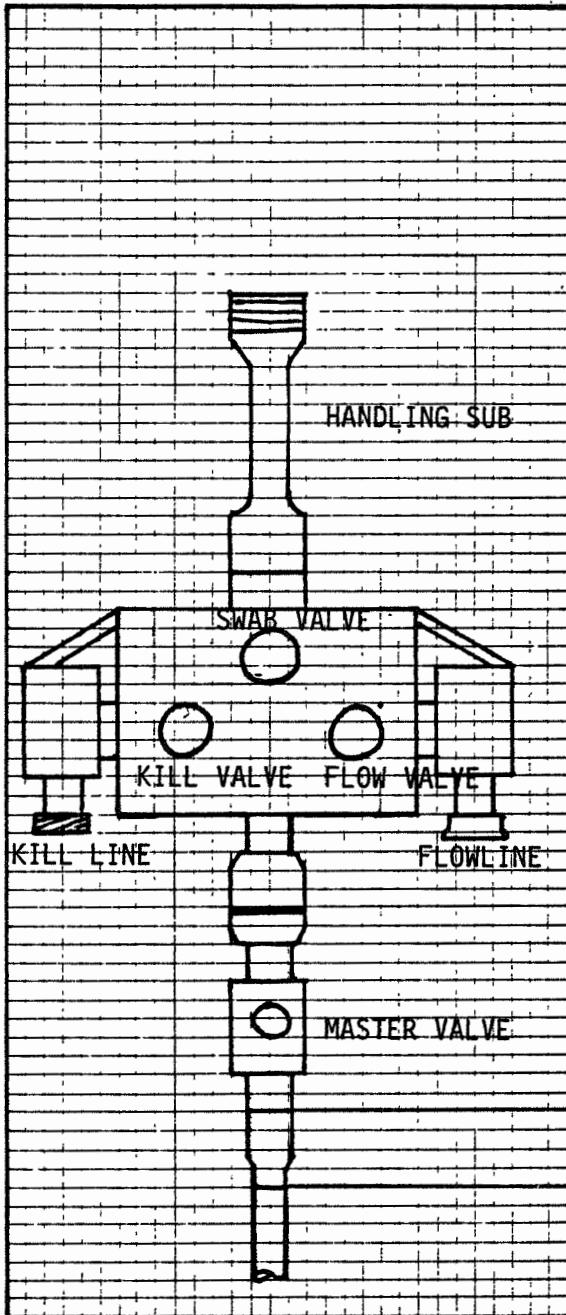
X-OVER

28.5

REMARKS

NOT TO SCALE

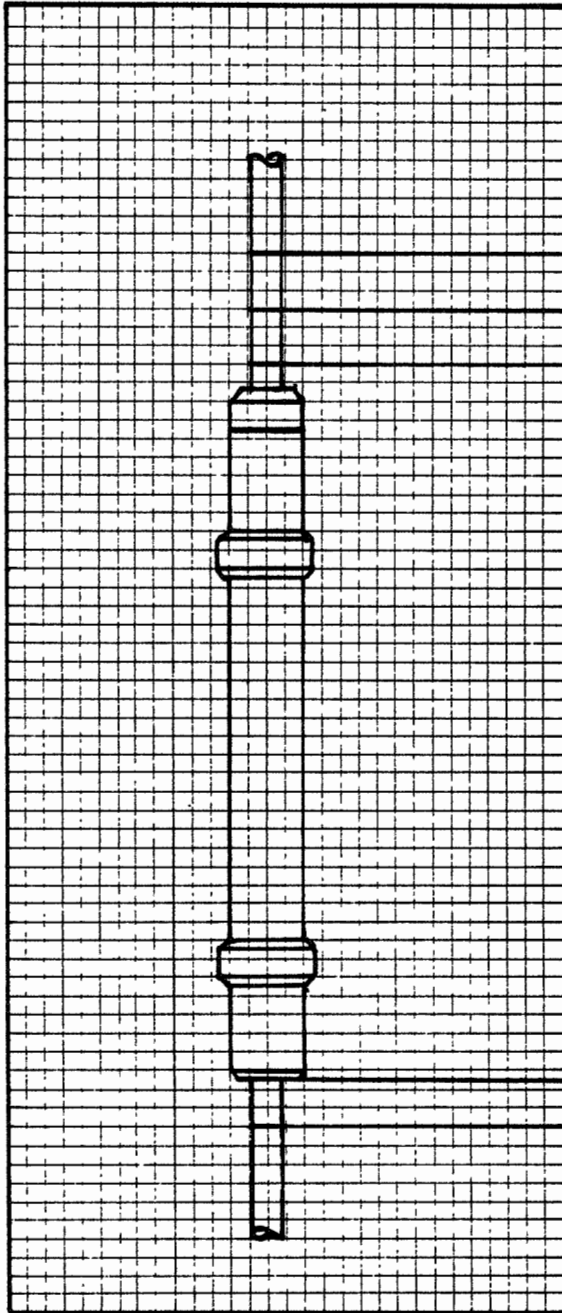
-WELL COMPLETION DATA-



REMARKS

NOT TO SCALE

-WELL COMPLETION DATA-



PUP JOINT 107

X-OVER 33

LUBRICATOR VALVE 177

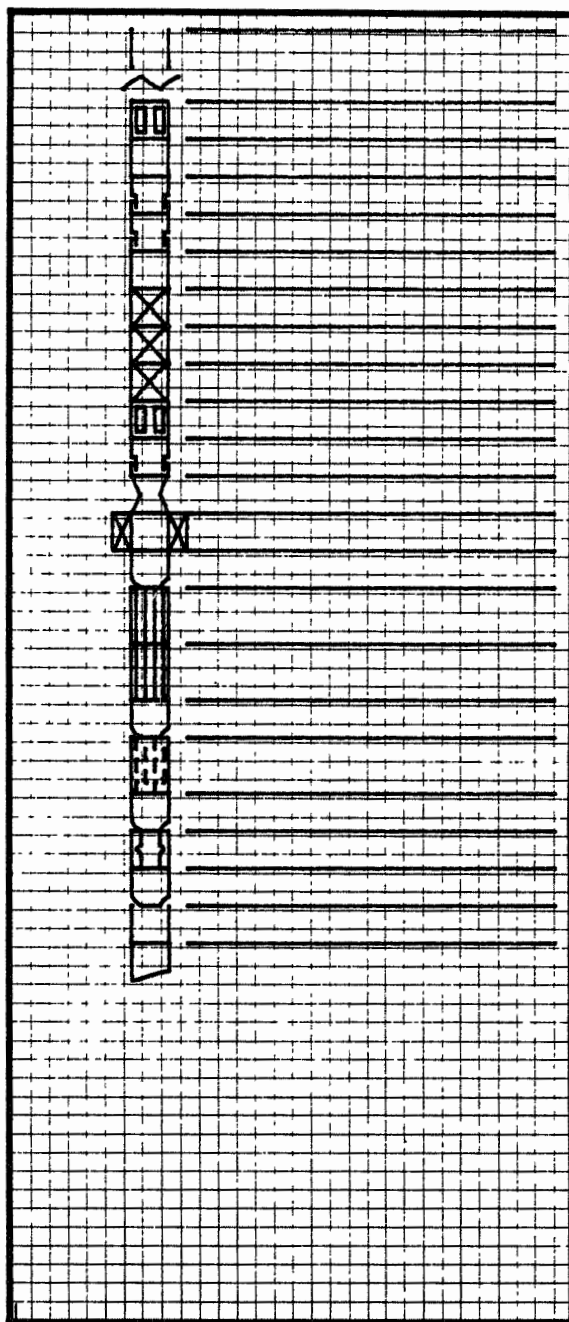
X-OVER 30.5

PUP JOINT 106

REMARKS

NOT TO SCALE

- WELL COMPLETION DATA -



	DEPTH M
DRILL COLLAR	3302.48
RTTS CIRC. VALVE	3303.58
1 STD DRILL COLLAR	3332.07
SLIP JOINT	3336.09
SLIP JOINT	3340.11
1 STAND DRILL COLLAR	3368.60
APR-M VALVE	3370.89
DRILL PIPE TESTER VALVE	3372.24
LPR-N TESTER VALVE	3377.23
FULL FLO HYDRAULIC BY-PASS	3379.25
BIG JOHN JAR	3380.83
SAFETY JOINT	3381.71
RTTS PACKER	3383.09
X-OVER 2 7/8" EUE BOX x 3 1/2"	
IF PIN	3383.34
BUNDLE CARRIER	3387.67
BUNDLE CARRIER	3391.97
x-OVER 3 1/2" IF BOX x 2 7/8"	
EUE PIN	3392.20
PERFORATED 2 7/8" EUE TUBING Jo.	3392.2
x-over 2 7/8" EUE BOX x 2 3/8	
F-NIPPLE 2 3/8" EUE	3401.87
EUE PIN	3402.14
1 JOINT 2 7/8" EUE TUBING	3411.50
BULL PLUG WITH CROSS 2 7/8"	
EUE BOX	3411.65

REMARKS :

NOT TO SCALE

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Client : STATOIL

Section : 6

Base : NWB

Field : 34/10-16 ALPHA

Well : 34/10-16

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- SEQUENCE OF EVENTS -

DATE	TIME	OPERATION
03.09.83		D. BARDIN, G. LOTHE, P. GULBRANDSEN; S. BREZINA, K. VARGEVIK TRAVELLED TO ROSS ISLE.
	10:00	REPAIR LAB CABIN WHOSE DOOR WAS OFF AND THE INSIDE WAS UPSIDE-DOWN. RIG UP IGNITION SYSTEM ON BURNERS.
	13:00 to	CHECK BOTTOM HOLE SAMPLERS. MAKE UP EZ-TREE AND FUNCTION
	18:30	TEST. MAKE UP LUB VALVE. RIG UP SAFETY VALVE ON SEPARATOR. CHECK E.L.S. UNIT.
04.09.83	06:00 to	CARRY ON CHECKING B.H.S.
	12:00	PRESSURE TEST EZ-TREE TO 6000 PSI, BODY, VALVE AND GLYCOL INJECTION. PRESSURE TEST CHOKE MANIFOLD, BODY TO 6000 PSI, UPSTREAM VALVES TO 6000 PSI, 3000, 2000 AND 1000 PSI. DOWNSTREAM VALVES TO 5000 PSI, 2000, AND 1000 PSI.
	12:00 to	PRESSURE TEST LUB VALVE TO 6000 PSI, BODY AND VALVE.
	20:00	PRESSURE TEST FLOWHEAD AND WIRE LINE B.O.P. AND LUBRICATOR SECTIONS TO 6000 PSI. VALVES ALL TESTED TO 6000 PSI. PRESSURE TEST BURNER HEADS TO 1000 PSI. PRESSURE TEST OIL AND GAS DIVERTERS TO 1000 PSI. PRESSURE TEST OIL MANIFOLD TO 1000 PSI. PRESSURE TEST SEPARATOR TO 1200 PSI AND INLET TO 1400 PSI. PRESSURE TEST HEATER TO 3000 PSI, INLET AND BLIND CHOKE TO 6000 PSI.
05.09.83		RIG UP PROPANE AND CHECK BURNERS. RIG UP DEGASSER FOR STEAM EXCHANGER. MAKE UP CHICKSANS AND PRESSURE TEST TO 6000 PSI. CHECK CALIBRATION ON FOXBORO AND BARTON. REPAIRS ON SUNDYNE PUMP AND GLYCOL INJECTION PUMP. MAKE UP DATA HEADER. MAINTENANCE ON EZ-TREE. T. ÅSLAND, A. LØVDAL, O: SALTE, A. LUNDEN, S. LØVIK, H. GEHIN ARRIVED RIG.

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SEQUENCE OF EVENTS (Continuation)

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DATE	TIME	OPERATION
06.09.83		METER FACTORS ON SEPERATOR. 2" FLOCO OIL = 1.0179, 3" ROTRON OIL = 0.9938, 2" FLOCO WATER = 0.9794. PREPARE BOTTOM HOLE SAMPLERS FOR RUN IN HOLE. EVACUATED 11 GAS BOTTLES. CHECKED OUT ELS WINCH, MAKE UP ROPE SOCKET. CHECK T.P.T.'s. RIG UP SURFACE SAMPLING KIT.
07.09.83	08:30	PICK UP EZ-TREE FOR DUMMY RUN.
	09:24	UNLATCH EZ-TREE
	09:28	LATCH EZ-TREE.
	09:33	EZ-TREE TORQUED UP. R.I.H.
	10:41	PICK UP LUB VALVE FOR DUMMY RUN.
	11:00	LUB VALVE TORQUED UP. R.I.H.
	11:20	CLOSE RAMS. TEST AGAINST SLICK JOINT.
	11:25	P.O.O.H.
	11:30	LUB VALVE ON DERRICK.
	12:00	EZ-TREE AT SURFACE, FLUSHED AND SET BACK IN DERRICK.
	13:30	PICK UP FLOWHEAD AND TORQUED UP X-OVERS.
	14:00	LAY DOWN FLOWHEAD ON PIPE DECK. GENERAL MAINTENANCE.
08.09.83	07:30	PRESSURE TEST SINGLE ON FLOWHEAD TO 6000 PSI. CHECK UP BACK UP GAUGE. GENERAL MAINTENANCE.
09.09.83	06:15	SCHLUMBERGER PERFORATED AT 3397-3407 m.
	07:22	CONNECT SDP No. 82016 WEITH 18 HRS DELAY AND 10 SEC. SAMPLING RATE.
	07:31	SDP ON "F" NIPPLE. R.I.H. WITH STRING.
	19:43	EZ-TREE ON STRING.
	19:50	CHECK SHEAR PIN AND FUNCTION TEST EZ-TREE.
	20:03	EZ-TREE THROUGH ROTARY WITH CLOSED VALVE.
	20:10	FILL UP TUBING WITH WATER. OPEN EZ-TREE TO OBSERVE WATER FALL. OK.
	20:12	R.I.H. WITH STRING.
	20:30	LUB VALVE ON STRING.

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DATE	TIME	OPERATION
09.09.83	20:37	LUB VALVE THROUGH ROTARY AND R.I.H.
	21:00	PRESSURE TEST STRING TO 420 BARS.
	21:17	CLOSE EZ-TREE, BLEED OFF PRESSURE ABOVE TO 33 BARS.
	21:30	TEST OK. PRESSURE UP TO EQUALIZE.
	21:33	OPEN EZ-TREE VALVE. BLEED OFF AND OBSERVE THE RETURN. 45 LITERS
	21:35	PUMP UP STRING TO 420 BAR.
	21:45	CLOSE LUB VALVE, BLEED OFF TO 35 BAR AND OBSERVE PRESS.
	22:00	TEST OK. EQUALIZE AND OPEN LUB VALVE TO BLEED OFF THE WHOLE STRING.
	22:10	CLOSE LUB VALVE AND PRESSURE TEST FROM ABOVE TO 420, NOT HOLDING.
	22:20	OPEN LUB VALVE AND PRESSURE TEST THE WHOLE STRING. NOT HOLDING PRESSURE.
	22:30	OBSERVE LEAK AT DRILL FLOOR. DISCONNECT LINES. DISCONNECT ONE SINGLE JOINT AND RIG UP TEST LINE AGAIN.
	23:04	PRESSURE TEST LUB VALVE FROM ABOVE TO 420 BARS.
	23:14	PRESSURE TEST OK. BLEED OFF AND CONNECT A NEW SINGLE.
	23:15	START PICKING UP FLOWHEAD AND WEIGHT BEARING EQUIPMENT. OPEN LUB VALVE.
	23:30	HOOK UP B.O.P. ON FLOW HEAD.
10.09.83	01:00	FLOWHEAD CONNECTED TO THE STRING. START TO RIG UP SURFACE LINES AND CHOKE MANIFOLD.
	02:40	FLUSH LINES WITH WATER.
	02:50	CLOSE KILL VALVE.
	02:53	PRESSURE AT KILL VALVE. LEAK.
	03:02	OPEN AND CLOSE KILL VALVE.
	03:06	PRESSURE AT KILL VALVE. 6000 PSI. LEAK.
	03:09	OPEN KILL VALVE, CLOSE MASTER VALVE, CLOSED SWAB VALVE AND FAILSAFE VALVE. START PRESSURE TEST.

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SEQUENCE OF EVENTS (Continuation)

DATE	TIME	OPERATION
10.09.83	03:12	CHICKSAN LEAK ON KILL LINE. REPAIR.
	03:22	PRESSURE TEST AGAIN TO 6000 PSI. OK.
	03:37	OPEN MASTER VALVE; CLOSE KILL VALVE. PRESSURE TEST KILL VALVE TO 6000 PSI. OK.
	03:50	OPEN KILL VALVE. START TO PRESSURE TEST STRING TO 6000 PSI.
	04:07	PRESSURE TEST OK. CLOSED MASTER VALVE AND OPEN FAILSAFE VALVE. OPEN FIXED SIDE OF CHOKE MANIFOLD. TEST AGAINST INLET HEATER AND ADJUSTABLE SIDE VALVES ON CHOKE MANIFOLD TO 5000 PSI.
	04:23	CLOSE FIXED SIDE ON CHOKE MANIFOLD, OPEN ADJUSTABLE SIDE AND PRESSURE TEST TO 5000 PSI.
	04:37	CLOSE UPSTREAM VALVES ON CHOKE MANIFOLD, TEST TO 6000 PSI
	04:51	PRESSURE TEST OK.
	04:54	OPEN MASTER VALVE.
	04:57	CLOSE KILL VALVE.
	06:14	PACKER SET.
	06:32	PRESSURE UP ANNULUS TO OPEN LPR-N VALVE.
	06:39	BLEED OFF ANNULUS.
	06:47	PRESSURE UP ANNULUS.
	06:57	BLEED OFF ANNULUS.
	07:00	PRESSURE UP ANNULUS.
	07:03	ATTEMPT TO OPEN LPR-N VALVE.
	07:14	OPEN CHOKE ON 48/64" FIXED TO SURGE TANK.
	07:15	CLOSE IN AT CHOKE MANIFOLD.
	07:32	CLOSE LPR-N.
	07:50	PICK UP STRING TO CHECK PACKER. LOWER DOWN STRING.
	07:53	PRESSURE UP ANNULUS.
	07:55	LPR-N OPENED FOR INITIAL FLOW.
	08:05	OPEN UP CHOKE MANIFOLD. CLOSE LPR-N FOR INITIAL BUILD

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DATE	TIME	OPERATION
10.09.83		UP: FLOW BACK 1.12 m ³ CAUTION.
	09:11	OPEN LPR-N TO CHOKE MANIFOLD.
	09:12	OPEN CHOKE MANIFOLD TO BURNERS ON 48/64" POS. CHOKE.
	09:34	GAS TO SURFACE.
	11:30	SWITCH FLOW THROUGH HEATER.
	12:10	CHANGE TO STARBOARD BURNER DUE TO PLUGGING.
	12:50	CHANGE TO PORT BURNER.
	12:52	FLOW THROUGH SEPARATOR.
	13:30	SWITCH FLOW TO TANK FOR METER FACTOR.
	13:40	SWITCH FLOW BACK TO PORT BURNER.
	15:10	NEW METER FACTOR: 0.9411.
	15:17	START TAKING 1ST SET PVT SAMPLING. OIL BOTTLE #83021001, GAS BOTTLE #A-14799.
	15:37	SWITCH FLOW TO SURGE TANK TO PUMP OUT TANK.
	16:02	SWITCH FLOW BACK TO BURNER.
	16:51	START TAKING 2ND SET PVT SAMPLES. OIL BOTTLE #83021302, GAS BOTTLE #A-14754.
	18:53	START TAKING 3RD SET PVT SAMPLES. OIL BOTTLE #83021412, GAS BOTTLE #A-14693.
	19:25	START FILLING UP 2 JERRY CANS + 1 DRUM WITH OIL AT ATMOSPHERIC PRESSURE.
	20:00	BYPASS SEPARATOR
	20:04	SHUTN IN WELL AT CHOKE MANIFOLD + LPR-N VALVE FOR FINAL BUILD UP.
11.09.83	07:00	OPEN CHOKE MANIFOLD TO 20/64" ADJUSTABLE CHOKE.
	07:02	OPEN LPR-N VALVE TO FLOW GAS OUT OF STRING PRIOR TO RUN BOTTOM HOLE SAMPLERS.
	07:30	CHANGE TO 12/64" FIXED CHOKE.
	07:37	FLOW THROUGH SEPARATOR TOE ESTIMATE RATE.
	07:56	BY-PASS SEPARATOR, CLOSE IN WELL AT CHOKE MANIFOLD.

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DATE	TIME	OPERATION
11.09.83	08:00	CLOSE LUBRICATOR VALVE.
	08:02	BLEED DOWN TEST STRING TO 500 PSI (35.5 BARA).
	08:28	OPEN KILL VALVE TO EQUALIZE PRESSURE ABOVE LUBRICATOR VALVE.
	08:33	CLOSE KILL VALVE, OPEN LUBRICATOR VALVE.
	08:37	OPEN WELL AT CHOKE MANIFOLD ON 28/64" FIXED CHOKE TO OBTAIN HIGHER TEMPERATURE IN FLUID.
	09:46	CLOSE IN AT CHOKE MANIFOLD.
	09:47	CLOSE LUBRICATOR VALVE.
	09:48	BLEED OFF STRING TO 35.5 BARA (500 PSI) TO CHECK LUBRICATOR VALVE.
	09:58	OPEN SWAB VALVE. START TO RIG UP WIRE LINE.
	10:25	TOOL STRING MADE UP IN MOUSE HOLE.
	10:40	STRING IN LUBRICATOR.
	10:45	STUFFING BOX ON.
	11:02	OPEN KILL VALVE. PRESSURE TEST LUBRICATOR.
	11:05	LEAK IN CHICKSAN FLOWLINE.
	11:10	CHANGE 3" WECO SEAL.
	11:17	PRESSURE TEST TO 6000 PSI.
	11:42	BLEED OFF TO 3500 PSI IN LUBRICATOR.
	11:43	CLOSED KILL VALVE. OPEN LUBRICATOR VALVE.
	11:44	START R.I.H. WITH CCL-L, TPT AND TWO BOTTOM HOLE SAMPLERS.
	12:20	OPEN WELL AT CHOKE MANIFOLD ON 8/64" POS. CHOKE, BUT ONLY GAS TO SURFACE.
	12:55	OPEN ADJUSTABLE CHOKE TO 12/64" TO GET OIL FLOWING TO SURFACE, TOTAL APPROXIMATELY 14/64".
	13:04	CLOSE ADJUSTABLE CHOKE.
	13:05	SWITCH FLOW THROUGH SEPARATOR FOR SAMPLING FLOW.
	13:08	TOOL AT SAMPLING DEPTH, 3393m RKB.

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DATE	TIME	OPERATION
11.09.83	13:17	BHS 281797 FIRED.
	13:23	BHS 283889 FIRED.
	13:50	LIFT ORIFICE PLATE, START TO P.O.O.H.
	14:43	CLOSE IN WELL AT CHOKE MANIFOLD & DOWNHOLE (LPR-N) AND BYPASS SEPARATOR.
	15:02	TOOL AT SURFACE AND CLOSE LUBRICATOR VALVE.
	15:03	BLEED OFF PRESSURE AT CHOKE MANIFOLD TO 35 BAR TO OBSERVE PRESSURE.
	15:13	BLEED OFF PRESSURE TO ZERO.
	15:17	START TO RIG DOWN WIRELINE EQUIPMENT AND WIRELINE STRING, START TRANSFERRING B.H.S. BOTTLES # 16251/33 AND #9214/315.
	15:42	OPEN KILL VALVE, CLOSE MASTER AND SWAB VALVE TO FLUSH THROUGH SEPARATOR AND THE LINES.
	16:25	CLOSE FAILSAFE AND OPEN MASTER VALVE.
	16:31	PUMP UP ABOVE LUBRICATOR VALVE TO 3500 PSI TO EQUALIZE AND OPEN LUBRICATOR VALVE.
	16:45	START BULLHEADING.
	18:00	STOP BULLHEADING.
	19:15	CLOSED KILL VALVE, PLUG IN RIG LINES.
	19:25	OPEN KILL VALVE.
	19:34	OPEN APR-M VALVE, START REVERSE CIRCULATION.
	20:05	CLOSED KILL VALVE TO CHECK RIG MANIFOLD.
	20:09	OPEN KILL VALVE, CONTINUE REVERSE CIRCULATION.
	20:50	SWITCH CIRCULATION FLOW THROUGH BURNERS.
	21:05	SWITCH CIRCULATION FLOW THROUGH FLARE.
	21:20	SWITCH TO DOWELL PUMP TO CONTINUE REVERSE OUT.
	21:45	START CIRCULATION THE "LONG WAY" WITH RIG PUMP.
	21:55	STOP RIG PUMP DUE TO PROBLEMS; SWITCH TO DOWELL.
	22:20	START REVERSE CIRCULATION WITH DOWELL PUMP.

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 Field : 34/10 ALPHA
 Well : 34/10-16

Base : NWB

- WELL TESTING DATA SHEET -

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS				SEPARATOR				PROD RATES AND FLUID PROPERTIES				GOR
Time	Cumul	BOTTOM HOLE		WELL HEAD		Temp	Cg press	Temp	Press	OIL OR CONDENSATE		GAS		GOR
		Temp	Pressure	Tg temp	Tg press					Rate	Gravity	Rate	Gravity	
HR/MIN	MIN	OC	BARA	OC	BARA	OF	PSIG	M3/D	M3/D	%	SCM/D	SCM/D	SCM/M3	Units
06:14		10.09	53											
							SET PACKER							
06:32	0						OPEN LPR-N TO CHOKE	MANIFOLD						
06:35	3													
06:39	7						BLEED OFF ANNULUS TO	CLOSE LPR-N						
06:47	0						PRESSURE UP ANNULUS	TO OPEN LPR-N						
06:57	10/0						BLEED OFF ANNULUS TO	CLOSE LPR-N						
07:03	0	123	660.4	13	4.4		OPEN LPR-N TO CHOKE	MANIFOLD						
07:04	1			13	4.4									
07:05	2	123	654.0	13	4.4									
07:06	3			13	4.4									
07:07	4	123	652.1	13	4.4									
07:08	5			13	4.5									
07:09	6	123	650.7	13	4.5									
07:10	7			13	4.6									

LIQUID FLOW RATE MEASURING CONDITIONS :

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

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS				SEPARATOR				PROD. RATES AND FLUID PROPERTIES				
Time HR/MIN	Cumul MIN	BOTTOM HOLE		WELL HEAD		Temp. °C	Temp. °F	Cg.press. BARA	Temp. PSIG	OIL OR CONDENSATE		GAS		GOR
		Temp. °C	Pressure BARA	Ig.press. BARA	Ig.press. °C					Rate M3/D	Gravity 60/60	Rate SCM/D	Gravity Air=1	
07:10	7			10.09.83										
07:12	9			13		4.8								
07:13	10	123	647.5	13		4.8								
07:14	11/0													
07:15	1/0	123	647.5											
07:16	1													
07:32	17/0													
07:50														
07:53		122	522.7											
07:55	0	122	388.0	13		63.0								
07:56	1			13		73.4								
07:57	2	122	422.9	13		94.1								
07:58	3			13		103.7								
07:59	4	122	456.2	13		109.2								
08:00	5			13		111.0								
08:01	6	122	458.3	13		112.7								
08:02	7			13		113.0								
08:03	8	122	458.3	13		113.0								

OPEN CHOKE ON 48/64" TO SURGE TANK

CLOSE IN AT CHOKE MANIFOLD

CLOSE LPR-N VALVE

PICK UP STRING TO CHECK PACKER. LOWER DOWN STRING

PRESSURE UP ANNULUS

LPR-N OPENED

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

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DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS				SEPARATOR				PROD. RATES AND FLUID PROPERTIES				GOR						
Time	Cumul HR/MIN	BOTTOM HOLE		WELL HEAD		SEPARATOR		OIL OR CONDENSATE		GAS		Rate	Gravity	BSW	Rate	Gravity	Air=1	GOR	CO ₂ H ₂ S %	Units
		Temp. OC	Pressure BARA	Ig.temp OC	Ig.press. BARA	Cg.press. BARA	Temp. OC	Press. BARA	Rate	Rate	Rate									
09:34																				
09:35	23	126	310.3	39	53.4															
09:36	24			41	61.0															
09:37	25	126	307.7	42	64.1															
09:38	26			43	69.9															
09:39	27	126	305.2	46	78.2															
09:40	28			49	85.5															
09:45	33	127	301.1	50	104.4															
09:50	38			47	95.5															
09:55	43	128	294.1	44	94.4															
10:00	48			44	94.4															
10:05	53	128	293.9	44	94.7															
10:10	58			44	95.1															
10:15	63	128	294.5	45	95.8															
10:20	68			46	96.0															
10:25	73	129	298.2	47	97.5															
10:30	78			49	99.4															
10:45	93	129	301.8	53	100.6															

DEMULSION
+ MUT

2.2/0

2.5/0

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS				SEPARATOR				OIL OR CONDENSATE				PROD. RATES AND FLUID PROPERTIES				GOR	
Time HR/MIN	Cumul MIN	BOTTOM HOLE		WELL HEAD		SEPARATOR		Rate		Gravity		Rate		Gravity		CL- /PH	CO ₂ H ₂ S %	SHR Units	
		Temp. °C	Pressure BARA	Tg.temp °C	Tg.press. BARA	Temp. OF	Press. PSIG	M ³ /D	M ³ /D	60/60 %	BSW %	MSCM/D	Air=1	SCM/M ³					
13:00																			
13:15	258	129	303.5	71	103.0			132	320	954.0	.8558	0	184.5	.660					
13:30	273			71	103.0			132	320	955.4	.8558	0	184.5	.660			1.0/0		
13:45	288	129	304.0	72	103.2			135	320	955.4	.8558	0	184.8	.660					
14:00	303			72	103.5			136	315	954.0	.8558	0	184.0	.660					
14:30	333			73	103.9			138	315	957.5	.8558	0	182.4	.669			1.5/0		
15:00	363			73	104.2			139	315	958.2	.8558	0	182.7	.669					
15:30	393			73	104.4			139	315	958.2	.8558	0	182.7	.669					
16:00	423			73	104.4			139	315	959.7	.8558	0	181.5	.669			1.0/0		
16:30	453			74	104.7			139	315	957.5	.8558	0	181.5	.669					
17:00	483			75	104.8			139	315	958.2	.8566	0	181.7	.668					
17:30	513			75	104.8			139	315	958.2	.8566	0	181.7	.668					
18:00	543			76	105.0			139	315	959.0	.8566	0	181.7	.668					
18:30	573			76	105.2			139	315	961.8	.8574	0	181.6	.668			1.5/0	42%/66	
19:00	603			77	105.4			140	315	963.2	.8574	0	180.8	.670			10.000ppm 7.0		
19:30	633			77	105.7			140	315	962.5	.8574	0	181.6	.670			2.0/0+		
20:00	663			77	106.1			144	310	955.4	.8574	0	182.8	.670					
20:00																			

BYPASS SEPARATOR

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

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Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS				SEPARATOR				OIL OR CONDENSATE				GAS				GOR	
Time HR/MIN	Cumul MIN	BOTTOM HOLE		WELL HEAD		Temp. OF	Temp. PSIG	Press.	Rate M ³ /D	Gravity 60/60	BSW %	Rate MSCM/D	Rate MSCM/D	Gravity Air=1	GOR	GOR	CO ₂	H ₂ S %	Units
		Temp. °C	Pressure BARA	Ig. temp. °C	Ig. press. BARA														
07:39	9																		
07:40	10			27															
07:45	15	127		27	442.4														
07:50	20			26															
07:55	25	126		26	442.5														
07:56	26/0			26															
07:57	1	126		26	450.9														
07:58	2			26															
07:59	3	126		26	454.1														
08:00	4																		
08:02	6																		
08:20	24			19															
08:28	32																		
08:33	37	126			456.5														
08:35	39	126		20	456.6														
08:37	41/0	126			424.2														
08:38	1			21															
08:39	2	126		21	408.6														

BY-PASS SEPARATOR, CLOSE IN WELL AT CHOKE MANIFOLD.

CLOSE LUBRICATOR VALVE.

BLEED OFF TEST STRING TO 35.5 BARA (500PSI)

OPEN KILL VALVE TO EQUALIZE PRESSURE ABOVE LUBRICATOR VALVE.

CLOSE KILL VALVE AND OPEN LUBRICATOR VALVE.

OPEN WELL AT CHOKE MANIFOLD ON 28/64" FIXED CHOKE TO GET HIGHER TEMPERATURE.

FLOPETROL

WELL TESTING DATA SHEET(Continuation)

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Report N°: 83/2301/36

Section : 7

DATE - TIME		PRESSURE AND TEMPERATURE MEASUREMENTS				SEPARATOR				OIL OR CONDENSATE				PROD. RATES AND FLUID PROPERTIES				GOR					
Time	Cumul HR/MIN	BOTTOM HOLE		WELL HEAD		Temp. OF	Press. PSIG	Rate M ³ /D	Gravity 60/60	BSW %	Rate MSCM/D	Gravity Air=1	GOR	GOR	GOR	GOR	GOR	GOR	GOR				
		Temp. °C	Pressure BARA	Ig.temp. °C	Ig.press. BARA															Cg.press. PSIG	Temp. OF	Press. PSIG	Rate M ³ /D
13:00	5																						
13:04	9/0			20	225.8																		
13:05	1	126	446.4	21	225.1																		
13:08	4																						
13:10	6			22	224.4																		
13:15	11	126	450.4	22	223.7	75	195							15.94									
13:17	13	126	450.5																				
13:25	21	126	450.6																				
13:30	26			21	223.7	90	195	68.4		.8566	0			15.22							0/0		
13:45	41	126	450.7	20	230.6	96	195	68.3		.8566	0			14.89									
14:00	56			20	221.6			68.6		.8566	0												
14:15	71	126	450.6	20	211.3			69.3		.8566	0												
14:30	86			20	211.3			69.9		.8566	0												
14:43	99/0	126	453.5	20	211.3																		
14:44	1			20	211.3																		
14:45	2	126	455.5	20	211.3																		
14:46	3			20	210.9																		
14:47	4	126	456.1	20	210.9																		

DOWNHOLE LPR-N)

FLOPETROL

DIVISION = EMR/NSD

BASE = NWB

REPORT N°: 83/2301/36

Well Testing Report Annexes —

Client = STATOIL

Field = 34/10 ALPHA Well = 34/10-16

Zone = ETIVE Date = 09.09.83 - 12.09.83

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 _

- LIQUID PRODUCTION RATE MEASUREMENT -**2.1 - MEASUREMENT WITH TANK -**

$$V_o = V \times K \times (1 - BSW)$$

V_o : 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.

$$V_o = V_s \times f \times (1 - Shr) \times K \times (1 - BSW)$$

V_o : Net oil volume at 60° F and atmospheric pressure.

V_s : Gross oil volume measured by meter under separator conditions.

f : Meter correction factor = $\frac{\text{Volume measured in tank}}{\text{Volume measured by meter}}$

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.

$$V_o = V_s \times (1 - Shr') \times K \times (1 - BSW)$$

V_o , V_s , K and BSW : Same meaning as in a).

$(1 - Shr')$: Shrinkage factor including meter correction factor.

FLOPETROL

Client : STATOIL
 Field : 34/10 ALPHA
 Well : 34/10-16

Base : NWB

- OIL PRODUCTION RATE - - MEASUREMENT WITH METER -

Section : Annex **2.2**
 Page : 40
 Report N° : 83/2301/36

Date - time Time	Date - time Interval	Meter reading	Vs	BSW %	V'o°	1 - Shr		Oil Gravity		K	Net volume of STO: Vo	Net STO product. rate M3 /day	Cumulative production BCM	Units	
						Factor	Temp. OF	Gravity	Temp. OF						Grav. 60°F
		BRLS	BRLS	10.09	BRLS						BRLS				
			ESTIMATED OIL PRODUCTION DURING CLEAN-UP												
13:00		4482.3		0									139.1		
13:15	15	4549.3	67.00	0	63.06	1	80	.839	110	.8558	62.5	954.0	139.1		
13:30	15	4616.4	67.10	0	63.15	1	80	.839	110	.8558	62.6	955.4	149.0		
13:45	15	4683.5	67.10	0	63.15	1	80	.839	110	.8558	62.6	955.4	159.0		
14:00	15	4750.5	67.00	0	63.04	1	80	.839	110	.8558	62.5	954.0	178.9		
14:30	30	4885.0	134.5	0	126.58	1	80	.839	110	.8558	125.5	957.5	198.8		
15:00	30	5019.6	134.6	0	126.68	1	80	.839	110	.8558	125.6	958.2	218.8		
15:30	30	5154.2	134.6	0	126.68	1	80	.839	110	.8558	125.6	958.2	238.8		
16:00	30	5289.0	134.8	0	126.87	1	80	.839	110	.8558	125.8	959.7	258.7		
16:30	30	5423.5	134.5	0	126.58	1	80	.839	110	.8558	125.5	957.5	278.7		
17:00	30	5558.1	134.6	0	126.68	1	80	.837	118	.8566	125.6	958.2	298.7		
17:30	30	5692.7	134.6	0	126.68	1	80	.837	118	.8566	125.6	958.2	318.6		
18:00	30	5827.4	134.7	0	126.77	1	80	.837	118	.8566	125.7	959.0	338.6		

Shrinkage factor measured by Shrinkage tester Tank

* V'o = Vs x f x (1 - BSW) = Net oil volume at separator conditions. f = 0.9411 *

Tested interval : DST NO. 1
 Perforations : 3397-3407

* INCLUDE SHRINKAGE

- GAS PRODUCTION RATE MEASUREMENT by orifice meter -

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

a) EQUATIONS -

$$Q = C \sqrt{h_w \times P_f}$$

Q : Production rate at reference conditions.

C : Orifice flow coefficient.

h_w: Differential pressure in inches of water.

P_f: Flowing pressure in psia.

$$C = F_u \times F_b \times F_g \times Y \times F_{tf} \times F_{pv}$$

F_u: Unit conversion factor in desired reference conditions.

F_b: Basic orifice factor (Q in Cu.ft / hour).

F_g: Specific gravity factor.

Y : Expansion factor

F_{tf}: Flowing temperature factor.

F_{pv}: Supercompressibility factor (estimated).

Remarks

F_m: Manometer factor is equal one since only bellows type meters are used.

F_r: Reynolds factor is considered to be one.

UNITS	TABLE OF F _u FACTOR			
	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 Flange taps - P_f taken down/up stream
Flow recorder type: BARTON ID of meter tube : 5.761

c) SPECIFIC GRAVITY SOURCE -

Sampling point : TOP GAS LINE Gravitometer type: KIMRAY

d) SUPERCOMPRESSIBILITY FACTOR F_{pv} -

All coefficients are taken from AGA NX 19 manual for natural gas free of air, CO₂ and H₂S. More accurate values could only be determined by laboratory measurement.

FLOPETROL		Client : STATOIL		Section : ANNEX 3											
Base : NWB		Field : 34/10 ALPHA		Page : 43											
		Well : 34/10-16		Report N : 83/2301/36											
- GAS PRODUCT. RATE MEASUREMENT -															
DATE	TIME	Flowing Temp. OF	Pf absolute psia	h _w "of wat.	$\sqrt{h_w \times P_f}$	Orifice diameter Inches	Gas gravity (air=1)	F _b	F _g	Y	F _{tf}	F _{pv}	C	Gas production rate Q MSCM/D	Cumulative Production MSCM
HR/MIN	Interval MIN.														
09:12															
12:52															
13:00															26.0
13:00	15	117	365	196	267.470	2.0	.660	816.13	1.2309	1.0035	.9493	1.0247	667	178.3	26.0
13:15	15	132	335	236	281.176	2.0	.660	816.13	1.2309	1.0046	.9372	1.0206	656	184.5	27.9
13:30	15	132	335	236	281.176	2.0	.660	816.13	1.2309	1.0046	.9372	1.0206	656	184.5	29.8
13:45	15	135	335	238	282.365	2.0	.660	816.13	1.2309	1.0047	.9349	1.0203	654	184.8	31.8
14:00	15	136	330	240	281.425	2.0	.660	816.13	1.2309	1.0048	.9341	1.0198	654	184.0	33.7
14:30	30	138	330	240	281.425	2.0	.669	816.13	1.2226	1.0048	.9325	1.0200	648	182.4	37.5
15:00	30	139	330	241	282.011	2.0	.669	816.13	1.2226	1.0048	.9317	1.0198	648	182.7	41.3
15:30	30	139	330	241	282.011	2.0	.669	816.13	1.2226	1.0048	.9317	1.0198	648	182.7	45.1
16:00	30	139	330	238	280.250	2.0	.669	816.13	1.2226	1.0047	.9317	1.0200	648	181.5	48.9
16:30	30	139	330	238	280.250	2.0	.669	816.13	1.2226	1.0047	.9317	1.0200	648	181.5	52.7
17:00	30	139	330	238	280.250	2.0	.668	816.13	1.2235	1.0047	.9317	1.0199	648	181.7	56.4
17:30	30	139	330	238	280.250	2.0	.668	816.13	1.2235	1.0047	.9317	1.0199	648	181.7	60.2

F_u = .6799
 Recorder ranges : P_f = 0-1500 PSIG
 h_w = 0-400" H₂O Temp. = 0-300°F
 TESTED INTERVAL : 3397-3407 PERFORATIONS

FLOPETROL

Client : STATOIL

Section :

1Base : NWBField : 34/10 ALPHAPage : 45Well : 34/10-16Report N° : 83/2301/36

SURFACE SAMPLES

SAMPLES TAKEN FROM SEPARATOR FOR PVT

15:17 HRS	OIL BOTTLES NO. 82021001	GAS BOTTLES NO. A-14799
16:51 HRS	OIL BOTTLES NO. 83021302	GAS BOTTLES NO. A-14754
18:53 HRS	OIL BOTTLES NO. 83021412	GAS BOTTLES NO. A-14693

DEAD OIL SAMPLES TAKEN FROM SEPARATOR

6 x 1 LITER GLASES

2 x 20 LITER JERRY CANS

1 DRUM

WATER SAMPLES

1 x 5 LITER PLASTIC CANS

FLOPETROL

Client : STATOILSection: ANNEXBase : NWBField : 34/10 ALPHAPage : 47Well : 34/10-16Report N° 83/2301/36

- SURFACE SAMPLING -

Date of sampling : 10.09.83 Service order : _____ Sampling No : 2
Sample nature : GAS Sampling point : TOP OF GAS OUTLET SEP.

A - RESERVOIR AND WELL CHARACTERISTICS -

Producing zone : ETIVE Perforations : 3397-3407M Sampling interval : _____
Depth origin : m RKB Tubing Dia : 5" VAM Casing Dia : 9 5/8"
Surface elevation : 160 m RKB Shoe : 3411.65 Shoe : _____

Bottom hole static conditions	Initial pressure : <u>540 BAR</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Latest pressure measured : <u>458.8 °C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Temperature : <u>123.9 °C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>

B - MEASUREMENT AND SAMPLING CONDITIONS -

Time at which sample was taken : 15:27 Time elapsed since stabilisation : 2 hr 27 min

Bottom hole dynamic conditions	Choke size : <u>48/64"</u> since : <u>09:12</u> Well head pressure : <u>104.46</u> Well head temp : <u>73°F</u>
	Bottom hole pressure : <u>304.9 BAR</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Bottom hole temp : <u>128.6°C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>

Flow measurement of sampled gas - Gravity (air 1) : 0.669 Factor Fpv = $\frac{1}{\sqrt{Z}}$: 1.0198
Values used for calculations : $F_b = 816.13, F_g = 1.2226, y = 1.0048, F_{tf} = 0.9317$

Separator	Pressure : <u>315</u> PSIG	Rates - Gas : <u>6.46</u> MM SCFD	GOR : <u>1006</u>
	Temp : <u>139</u> °F	Oil (separator cond) : <u>6421</u> BOPD	(separator cond)

Stock tank	Atmosphere : _____ mmHg. _____ °F	Oil at 60 °F : <u>6029</u> BOPD
	Tank temperature : _____ °F	<input type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> a <input type="checkbox"/> b

BSW : 0 % WLR : _____ %Transferring fluid : EVACUATED CYLINDER Transfer duration : 40 MINFinal conditions of the shipping bottle :
Pressure : 23 BAR Temp : 56°F

C - IDENTIFICATION OF THE SAMPLE -

Shipping bottle No : A-14799 sent on : _____ by : STATOIL Shipping order No : _____
Addressee : _____

Coupled with	LIQUID	GAS
Bottom hole samples No	_____	_____
	_____	_____
	<u>83021001</u>	_____
Surface samples No	_____	_____

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

D - REMARKS -

Visa Chief Operator

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FLOPETROL

Client : STATOILSection: ANNEX **42**Base : NWBField : 34/10 ALPHAPage : 48Well : 34/10-16Report N° 83/2301/36

- SURFACE SAMPLING -

Date of sampling : 10_09_83 Service order : _____ Sampling No : 3
Sample nature : OIL Sampling point : OIL SIGHT GLASS-SEP.

A - RESERVOIR AND WELL CHARACTERISTICS -

Producing zone : ETIVE Perforations : 3397-3407M Sampling interval : _____Depth origin : m_RKB Tubing Dia : 5" VAM Casing Dia : 9 5/8"
Surface elevation : 160 m_RKB Shoe : 3411.65 Shoe : _____

Bottom hole static conditions	Initial pressure : <u>540 BAR</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Latest pressure measured : <u>458.8 °C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Temperature : <u>123.9 °C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>

B - MEASUREMENT AND SAMPLING CONDITIONS -

Time at which sample was taken : 16:51 Time elapsed since stabilisation : 3 hr 51 min

Bottom hole dynamic conditions	Choke size : <u>48/64</u> Inlet : <u>09:17</u> Well head pressure : <u>104.8</u> Well head temp : <u>75°F</u>
	Bottom hole pressure : <u>305.3 BAR</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Bottom hole temp : <u>128.6°C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>

Flow measurement of sampled gas - Gravity (air 1) : 0.668 Factor Fpv = 1 : 1.0199
Values used for calculations : $F_b = 816.13, F_g = 1.2235, \gamma = 1.0047, F_{tf} = 0.9317$

Separator	Pressure : <u>315 PSIG</u>	Rates - Gas : <u>6.43 MM</u> SCFD	GOR : <u>1001</u>
	Temp : <u>139 °F</u>	Oil (separator cond) : <u>6421</u> BOPD	(separator cond)

Stock tank	Atmosphere : _____ mmHg. _____ °F	Oil at 60 °F : <u>6029 BOPD</u> BOPD				
	Tank temperature : _____ °F	<table border="1"><tr><td>A</td><td>B</td><td>C</td><td>a</td><td>b</td></tr></table>	A	B	C	a
A	B	C	a	b		

BSW : 0 % WLR : _____ %Transferring fluid : Hg Transfer duration : 47 MINFinal conditions of the shipping bottle : _____
Pressure : 185 PSIG Temp : 56°F

C - IDENTIFICATION OF THE SAMPLE -

Shipping bottle No : 83021302 sent on : _____ by : STATOIL Shipping order No : _____
Addressee : _____

Coupled with	LIQUID	GAS
Bottom hole samples No _____	_____	_____
Surface samples No _____	_____	<u>A-14754</u>

Measurement conditions

 Tank . Meter . Dump .
 Corrected with shrinkage tester . Corrected with tank .

D - REMARKS -

20 cc Hg LEFT IN OIL BOTTLE
SEPARATOR SHINKAGE: 4.2%
METER CATOR: .9938
SEPARATOR CONDITION

Visa Chief Operator

FLOPETROL

Client : STATOILSection: ANNEX **4.2**Base : NWBField : 34/10 ALPHAPage : 49Well : 34/10-16Report N^o 83/2301/36

- SURFACE SAMPLING -

Date of sampling : 10.09.83 Service order : _____ Sampling No : 4
Sample nature : GAS Sampling point : TOP OF GAS OUTLET SEP.

A - RESERVOIR AND WELL CHARACTERISTICS -

Producing zone : ETIVE Perforations : 3397-3407M Sampling interval : _____Depth origin : m RKB Tubing Dia : 5" VAM Casing Dia : 9 5/8"
Surface elevation : 160 m RKB Shoe : 3411.65 Shoe : _____

Bottom hole static conditions	Initial pressure	: <u>540 BAR</u>	at depth:	<u>3405.64m</u>	date:	<u>10.09.83</u>
	Latest pressure measured	: <u>458.8 °C</u>	at depth:	<u>3405.64m</u>	date:	<u>10.09.83</u>
	Temperature	: <u>123.9 °C</u>	at depth:	<u>3405.64m</u>	date:	<u>10.09.83</u>

B - MEASUREMENT AND SAMPLING CONDITIONS -

Time at which sample was taken : 16:55 Time elapsed since stabilisation : 3 hr 55 min

Bottom hole dynamic conditions	Choke size : <u>48/64"</u> since : <u>09:12</u> Well head pressure : <u>104.8</u> Well head temp : <u>75°F</u>
	Bottom hole pressure : <u>305.3 BAR</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Bottom hole temp : <u>128.6°C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>

Flow measurement of sampled gas - Gravity (air 1) : 0.668 Factor Fpv = 1 : 1.0199Values used for calculations : $F_b = 816.13, F_g = 1.2235, \gamma = 1.0047, F_{tf} = 0.9317$

Separator	Pressure : <u>315</u> PSIG	Rates - Gas : <u>6.43</u> MM SCFD	GOR : <u>1001</u> (separator cond.)
	Temp : <u>139</u> °F	Oil (separator cond) : <u>6421</u> BOPD	

Stock tank	Atmosphere : _____ mmHg. _____ °F	Oil at 60 °F : <u>6029</u> BOPD	BOPD
	Tank temperature : _____ °F		

BSW : 0 % WLR : _____ %Transferring fluid : EVACUATED CYLINDER Transfer duration : 38 MINFinal conditions of the shipping bottle :
Pressure : 23 BAR Temp : 56°F

C - IDENTIFICATION OF THE SAMPLE -

Shipping bottle No : A-14754 sent on : _____ by : _____ Shipping order No : _____
Addressee : _____

Copied with	LIQUID	GAS
Bottom hole samples No	_____	_____
	_____	_____
	_____	_____
Surface samples No	<u>83021302</u>	_____
	_____	_____

Measurement conditions

 Tank . Meter . Dump .
 Corrected with shrinkage tester . Corrected with tank .

D - REMARKS -

Visa Chief Operator

FLOPETROL

Client : STATOIL

Section: ANNEX 42

Base : NWB

Field : 34/10 ALPHA

Page : 50

Well : 34/10-16

Report N°83/2301/36

- SURFACE SAMPLING -

Date of sampling : 10.09.83 Service order : Sampling No : 5
Sample nature : OIL Sampling point : OIL SIGHT GLASS-SEP.

A - RESERVOIR AND WELL CHARACTERISTICS -

Producing zone : ETIVE Perforations : 3397-3407M Sampling interval : _____

Depth origin : m RKB Tubing Dia. : 5" VAM Casing Dia. : 9 5/8"
Surface elevation : 160 m RKB Shoe : 3411.65 Shoe : _____

Bottom hole static conditions	Initial pressure : 540 BAR at depth : 3405.64m date : 10.09.83
	Latest pressure measured : 458.8 °C at depth : 3405.64m date : 10.09.83
	Temperature : 123.9 °C at depth : 3405.64m date : 10.09.83

B - MEASUREMENT AND SAMPLING CONDITIONS -

Time at which sample was taken : 18:53 Time elapsed since stabilisation : 5 hr 53 min

Bottom hole dynamic conditions	Choke size : 48/64" Ince : 09:12 Well head pressure : 105.4 b Well head temp : 77°F
	Bottom hole pressure : 306.2 BAR at depth : 3405.64m date : 10.09.83
	Bottom hole temp : 128.6°C at depth : 3405.64m date : 10.09.83

Flow measurement of sampled gas - Gravity (air 1) : 0.670 Factor Fpv = 1 : 1.0198

Values used for calculations : $F_b = 816.13$, $F_g = 1.2217$, $y = 1.0047$, $F_{tf} = 0.9309$

Separator	Pressure : 315 PSIG	Rates - Gas : 6.40 MM SCFD	GOR : 982 (separator cond)
	Temp : 140 °F	Oil (separator cond) : 6454 BOPD	

Stock tank	Atmosphere : _____ mmHg - _____ °F	Oil at 60 °F : 6029 BOPD
	Tank temperature : _____ °F	

BSW : 0 % WLR : _____ %

Transferring fluid : Hg Transfer duration : 41 MIN

Final conditions of the shipping bottle :
Pressure : 195 PSIG Temp : 56°F

C - IDENTIFICATION OF THE SAMPLE -

Shipping bottle No : 83021412 sent on : _____ by : _____ Shipping order No : _____
Addressee : _____

Coupled with	LIQUID	GAS
Bottom hole samples No	_____	_____
Surface samples No	_____	A-14693

Measurement conditions

 Tank . Meter . Dump .
 - Corrected with shrinkage tester. - Corrected with tank .

D - REMARKS -

25 cc Hg LEFT IN OIL BOTTLE
SEPARATOR SHINKAGE: 4.2%
METER FACTOR: .9938
FOR SEPARATOR CONDITION.

Visa Chief Operator

FLOPETROL

Client : STATOILSection: ANNEX **42**Base : NWBField : 34/10 ALPHAPage : 51Well : 34/10-16

Report N83/2301/36

- SURFACE SAMPLING -

Date of sampling : 10.09.83 Service order : _____ Sampling No : 6
Sample nature : GAS Sampling point : TOP OF GAS OUTLET SEP.

A - RESERVOIR AND WELL CHARACTERISTICS -

Producing zone : ETIVE Perforations : 3397-3407M Sampling interval : _____Depth origin : m RKB Tubing Dia : 5" VAM Casing Dia : 9 5/8"
Surface elevation : 160 m RKB Shoe : 3411.65 Shoe : _____

<u>Bottom hole static conditions</u>	Initial pressure : <u>540 BAR</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Latest pressure measured : <u>458.8 °C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Temperature : <u>123.9 °C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>

B - MEASUREMENT AND SAMPLING CONDITIONS -

Time at which sample was taken : 18:56 Time elapsed since stabilisation : 5 hr 56 min

<u>Bottom hole dynamic conditions</u>	Choke size : <u>48/64"</u> since : <u>09:12</u> Well head pressure : <u>105.4 b</u> Well head temp : <u>77°F</u>
	Bottom hole pressure : <u>306.1 BAR</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>
	Bottom hole temp : <u>128.6°C</u> at depth : <u>3405.64m</u> date : <u>10.09.83</u>

Flow measurement of sampled gas - Gravity (air 1) : 0.670 Factor Fpv = $\frac{1}{\sqrt{Z}}$: 1.0198Values used for calculations : $F_b = 816.13, F_g = 1.2217, y = 1.0047, F_{tf} = 0.9309$

<u>Separator</u>	Pressure : <u>315 PSIG</u> Rates - Gas : <u>6.40 MM</u> SCFD GOR : <u>992</u>			
	Temp : <u>140 °F</u> Oil (separator cond) : <u>6454</u> BOPD <table border="1"><tr><td>B</td><td>(separator cond)</td></tr><tr><td>C</td><td></td></tr></table>	B	(separator cond)	C
B	(separator cond)			
C				

<u>Stock tank</u>	Atmosphere : _____ mmHg. _____ °F Oil at 60 °F : <u>6058</u> BOPD				
	Tank temperature : _____ °F <table border="1"><tr><td>A</td><td>B</td><td>C</td><td>a</td><td>b</td></tr></table>	A	B	C	a
A	B	C	a	b	

BSW : 0 % WLR : _____ %Transferring fluid : EVACUATED CYLINDER Transfer duration : 33 MINFinal conditions of the shipping bottle :
Pressure : 23 BAR Temp : 56°F

C - IDENTIFICATION OF THE SAMPLE -

Shipping bottle No : A-14593 sent on : _____ by : _____ Shipping order No : _____
Addressee : _____

Coupled with	LIQUID	GAS
<u>Bottom hole samples No</u>	_____	_____
	_____	_____
	<u>83021412</u>	_____
<u>Surface samples No</u>	_____	_____

Measurement conditions.

 Tank . Meter . Dump .
 Corrected with shrinkage tester. Corrected with tank .

D - REMARKS -

Visa Chief Operator

FLOPETROL

Client : STATOIL

Section: ANNEX **4.1**

Base : NWB

Field : 34/10 ALPHA

Page : 52

Well : 34/10-16

Report N°: 83/2301/35

BOTTOM HOLE SAMPLING

Date of sampling : 11.09.83 Service order : _____ Sampling No : _____
 Sample nature : OIL Sampling depth : 3392.65 M

A - RESERVOIR AND WELL CHARACTERISTICS

Producing zone : ETIVE Perforations : 3397-3407 Sampling interval : _____
 m RKB
 Depth origin : mRKB Tubing Dia : 5" VAM Casing Dia : 9 5/8"
 Surface elevation : 160 mRKB Shoe : _____ Shoe : _____

Bottom hole static conditions	Initial pressure : <u>540 BAR</u> at depth : <u>3405.64</u> date : <u>10.08.83</u>
	Latest pressure measured : <u>458.8BAR</u> at depth : <u>3405.64</u> date : <u>10.08.83</u>
	Temperature : <u>123.9°C</u> at depth : <u>3405.64</u> date : <u>10.08.83</u>

B - SAMPLING AND TRANSFER CHARACTERISTICS

Sampler Type and No : SCHLUMBERGER PSM-C 2-83-889 Capacity : 600 cc

Time at which sample was taken : 13:25 Test duration : _____ Running start : 11:46 Pulling end : 15:02

Well shut in since : _____ Time elapsed since closing well : _____
 Well flowing through choke : 9/64" Production duration through this choke : 40 MIN

Production cond. during sampling or before closing	Bottom hole pressure : <u>449.267 BAR</u> head pressure : <u>223.7 BAR</u> Separator pressure : <u>195 PSIG</u>
	temp. : <u>125.5°C</u> temp. : <u>22°C</u> temp. : <u>75°C</u>
Flow rates : <u>537 M</u> SCFD W.L.R. : _____ Specific gravity : _____ Gas (air:1) : <u>.672</u>	
<u>450.5</u> BOPD Prod.GOR : <u>1193</u> Oil : <u>.846</u>	

Opening pressure of the first valve (if necessary) : 2650 PSI

ESTIMATED BUBBLE POINT 5530 PSI AT SURFACE CONDITIONS AT 50°F Estimated bubble point under bottom hole conditions : Temp. : _____ Pressure : _____

Transfer conditions. By gravity By pumping Hg collected at transferring end : 600 cc
 Temp. : 50°F Pressure : 6000 PSI volume remaining in the shipping bottle : 28 cc

Final conditions of shipping bottle after decompression : Hg volume withdrawn for bottle decompression :
 Temp. : 50°F Pressure : 4300 PSI 25 cc

C - IDENTIFICATION OF THE SAMPLE

Shipping bottle No : 18251/33 sent on : _____ by : _____ Shipping order No : _____
 Addressee : _____

Coupled with	LIQUID	GAS
Bottom hole samples No	<u>9124/315</u>	
Surface samples No		

D - REMARKS

Visa Chief operator

FLOW RATES TAKEN AT 13:30

FLOPETROL

Client : STATOIL

Section : ANNEX 4.1

Base : NWB

Field : 34/10 ALPHA

Page : 53

Well : 34/10-16

Report No: 83/2301/35

BOTTOM HOLE SAMPLING

Date of sampling : 11.09.83 Service order : _____ Sampling No : _____
 Sample nature : OIL Sampling depth : 3389.03 M

A - RESERVOIR AND WELL CHARACTERISTICS

Producing zone : ETIVE Perforations : 3397-3407 Sampling interval : _____
 m RKB
 Depth origin : mRKB Tubing Dia. : 5" VAM Casing Dia : 9 5/8"
 Surface elevation : 160 mRKB Shoe : 4311.65 Shoe : _____

Bottom hole static conditions	Initial pressure : <u>540 BAR</u> at depth : <u>3405.64</u> date : <u>10.08.83</u>
	Latest pressure measured : <u>458.8BAR</u> at depth : <u>3405.64</u> date : <u>10.08.83</u>
	Temperature : <u>123.9°C</u> at depth : <u>3405.64</u> date : <u>10.08.83</u>

B - SAMPLING AND TRANSFER CHARACTERISTICS

Sampler Type and No. : SCHLUMBERGER PSM-C 2-81-797 Capacity : 600 cc

Time at which sample was taken : 13:17 Test duration : _____
 Running start : 11:46 Pulling end : 15:02

Well shut in since : _____ Time elapsed since closing well : _____
 Well flowing through choke : 8/64" Production duration through this choke : 40 MIN

Production cond. during sampling or before closing.	Bottom hole pressure: <u>449.0 BAR</u> Well head pressure: <u>223.7 BAR</u> Separator pressure: <u>195 PSIG</u>
	temp. : <u>125.5°C</u> temp. : <u>22°C</u> temp : <u>75°C</u>
	Flow rates: <u>537 M</u> SCFD W.L.R. : _____ Specific gravity Gas (air:1): <u>.672</u>
	<u>450.5</u> BOPD Prod.GOR.: <u>1193</u> Oil : <u>.846</u>

Opening pressure of the first valve (if necessary) : 2680 PSI

ESTIMATED BUBBLE POINT 5530 PSI AT SURFACE CONDITIONS AT 54°F
 Estimated bubble point under bottom hole conditions :
 Temp. : _____ Pressure : _____

Transfer conditions. By gravity By pumping Hg collected at transferring end : 600 cc
 Temp. : 50°F Pressure : 6000 PSI volume remaining in the shipping bottle : 28 cc

Final conditions of shipping bottle after decompression : Hg volume withdrawn for bottle decompression :
 Temp. : 50°F Pressure : 4040 PSI 25 cc

C - IDENTIFICATION OF THE SAMPLE

Shipping bottle No. : 9214/315 sent on : _____ by : _____ Shipping order No : _____
 Addressee : _____

Coupled with

Bottom hole samples No

LIQUID

19251/33

GAS

Surface samples No.

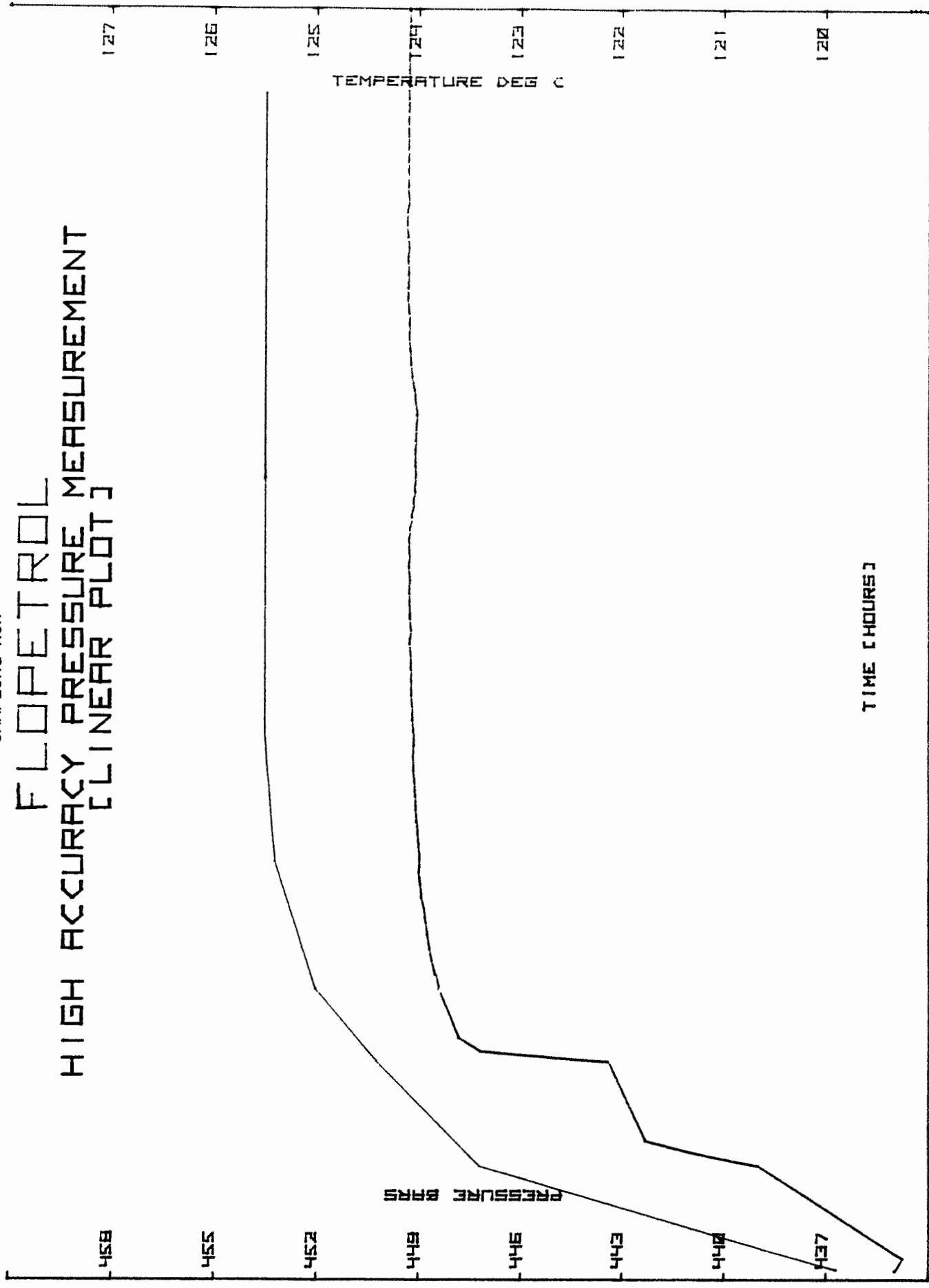
D - REMARKS

FLOW RATES TAKEN AT 13:30

Visa Chief operator

SAMPLING RUN

FLOPETROL HIGH ACCURACY PRESSURE MEASUREMENT [LINEAR PLOT]



458

455

452

PERFORM RUN

448

446

443

440

437

13 HSR

13 H 25

13 H 50

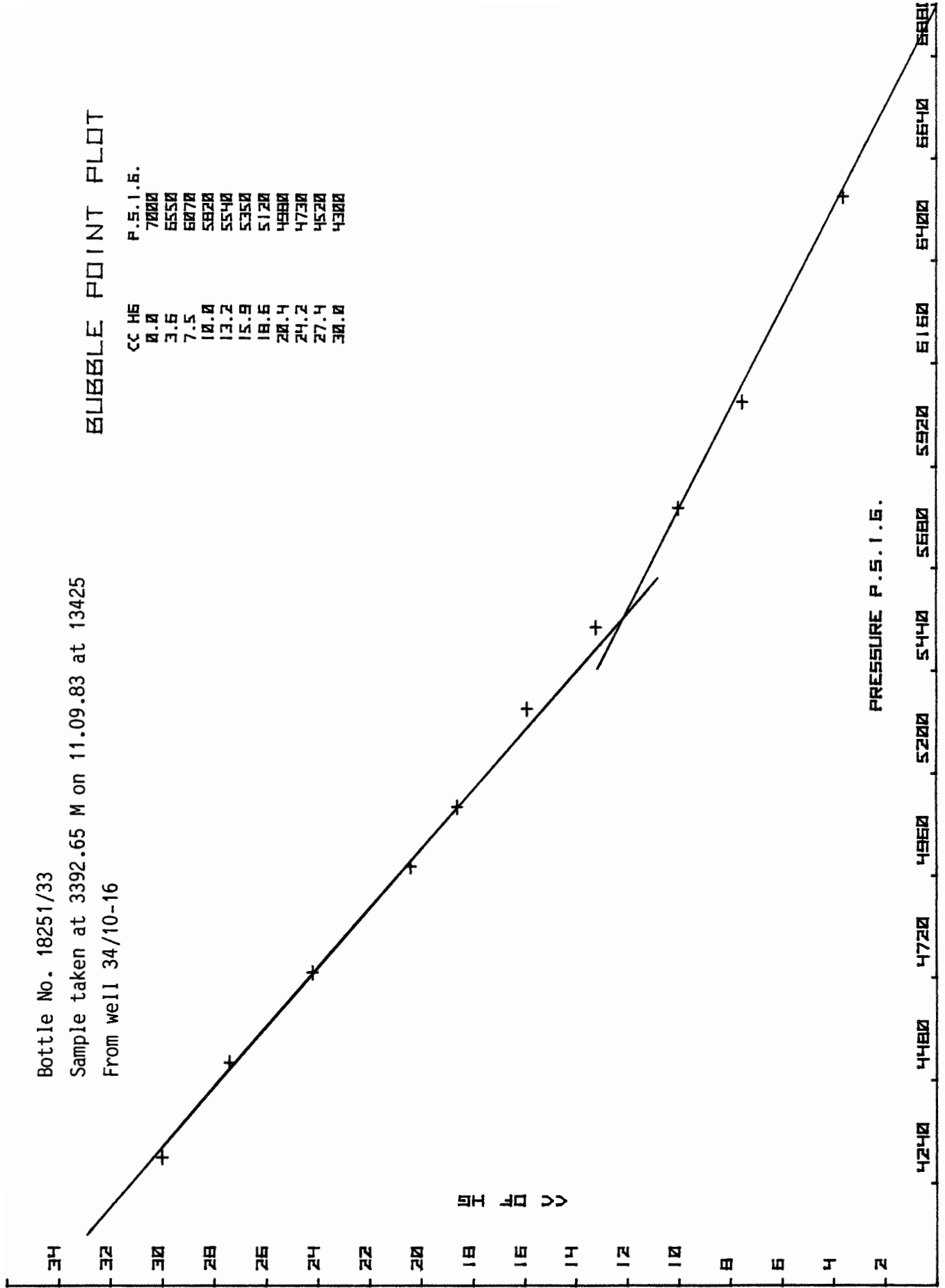
Bottle No. 18251/33

Sample taken at 3392.65 M on 11.09.83 at 13425

From well 34/10-16

BUBBLE POINT PLOT

CC HB	P.5.1.6.
0.0	7000
3.6	6550
7.5	6070
10.0	5820
13.2	5540
15.9	5350
18.6	5120
20.4	4880
24.2	4730
27.4	4520
30.0	4300



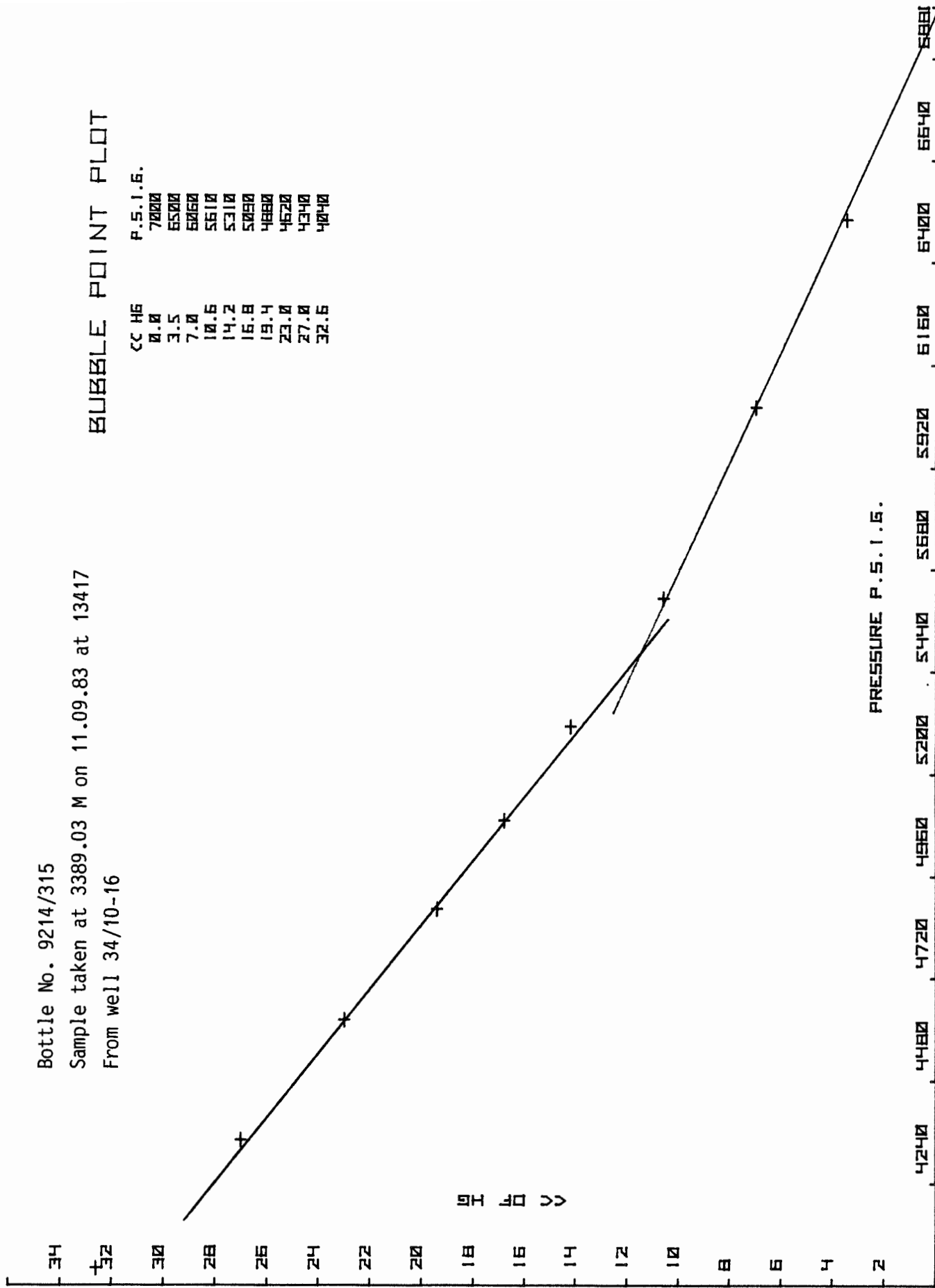
Bottle No. 9214/315

Sample taken at 3389.03 M on 11.09.83 at 13417

From well 34/10-16

BUBBLE POINT PLOT

CC H6	P. 5.1.6.
0.0	7000
3.5	6500
7.0	6060
10.6	5610
14.2	5310
16.8	5090
19.4	4880
23.0	4620
27.0	4340
32.6	4040



SAMPLING RUN

```
*****  
*  
* LISTING OF ALL DATA *  
*  
* ON TAPE *  
*  
*****  
TEMPERATURE IN DEG C  
PRESSURE IN BAR A  
TIME IN min:sec
```


PLATE NO. 5

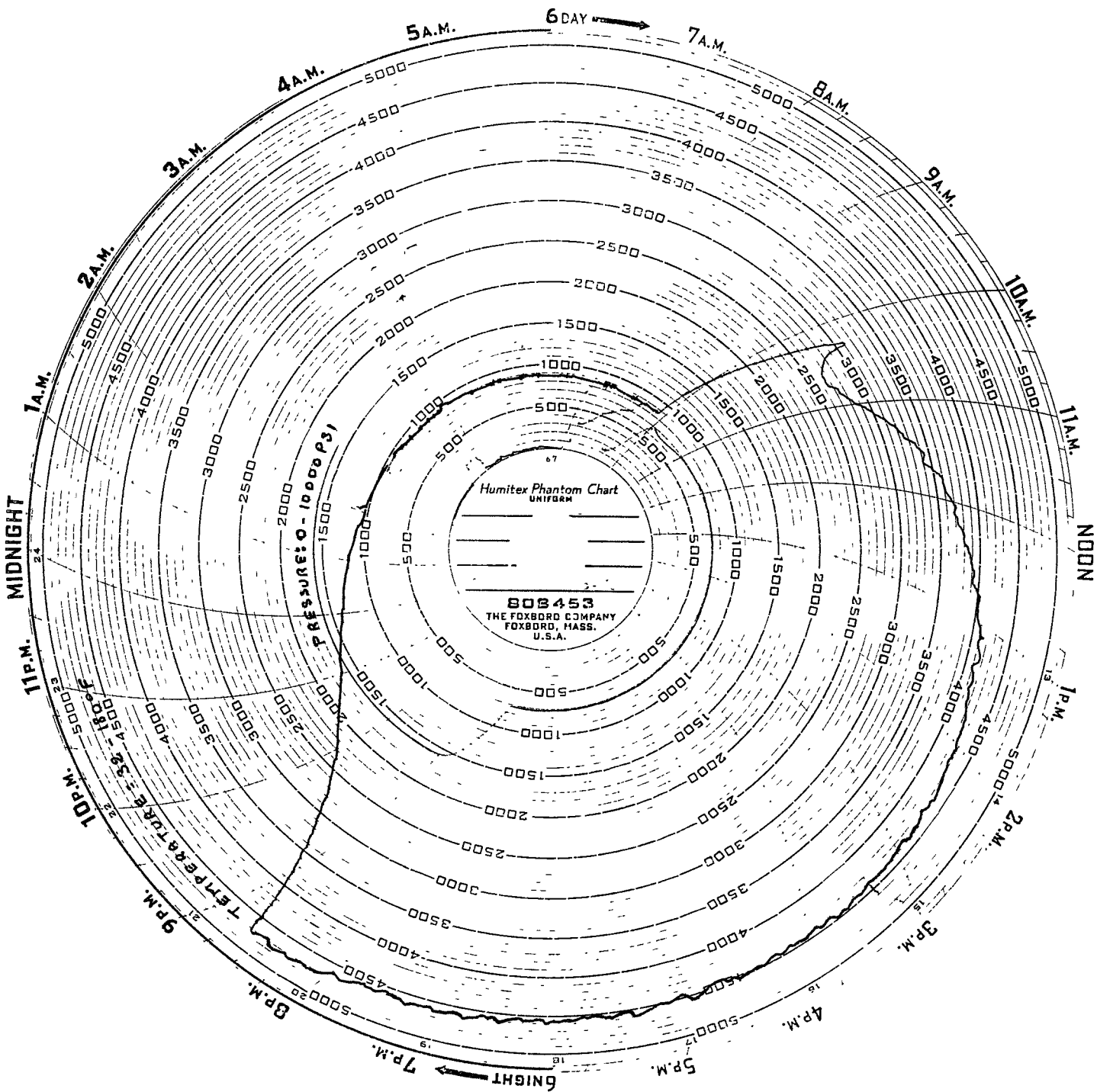
Blumberger 11.3000 388.859 11.3031 410.273 11.3100 400.569 11.3131 402.759 11.3200 399.285
 11.3230 395.619 11.3300 392.125 11.3308Temp 13.7 11.3331 388.469 11.3400 385.054
 JRFACE 11.3500 376.191 11.3530 374.555 11.3600 150.914 11.3631 140.500
 HECK 11.3700 136.053 11.3800 136.780 11.3810Temp 13.5 11.3830 157.112
 11.3900 121.230 11.3931 7.423 11.4000 7.464 11.4100 162.532
 11.4130 210.173 11.4231 236.047 11.4300 234.118 11.4313Temp 12.9
 11.4400 234.058 13.0022Temp 119.9 13.0051 434.772
 FART 13.0430 438.975 13.0500 440.623 13.0530 442.300 13.0833Temp 124.4
 :CORDING 13.0834 443.407 13.0931 447.818 13.11231Temp 125.0 13.1124 448.402
 VTA 13.1155 446.476 13.1200 448.524 13.1231 448.613 13.1300 448.683 13.1331 448.751

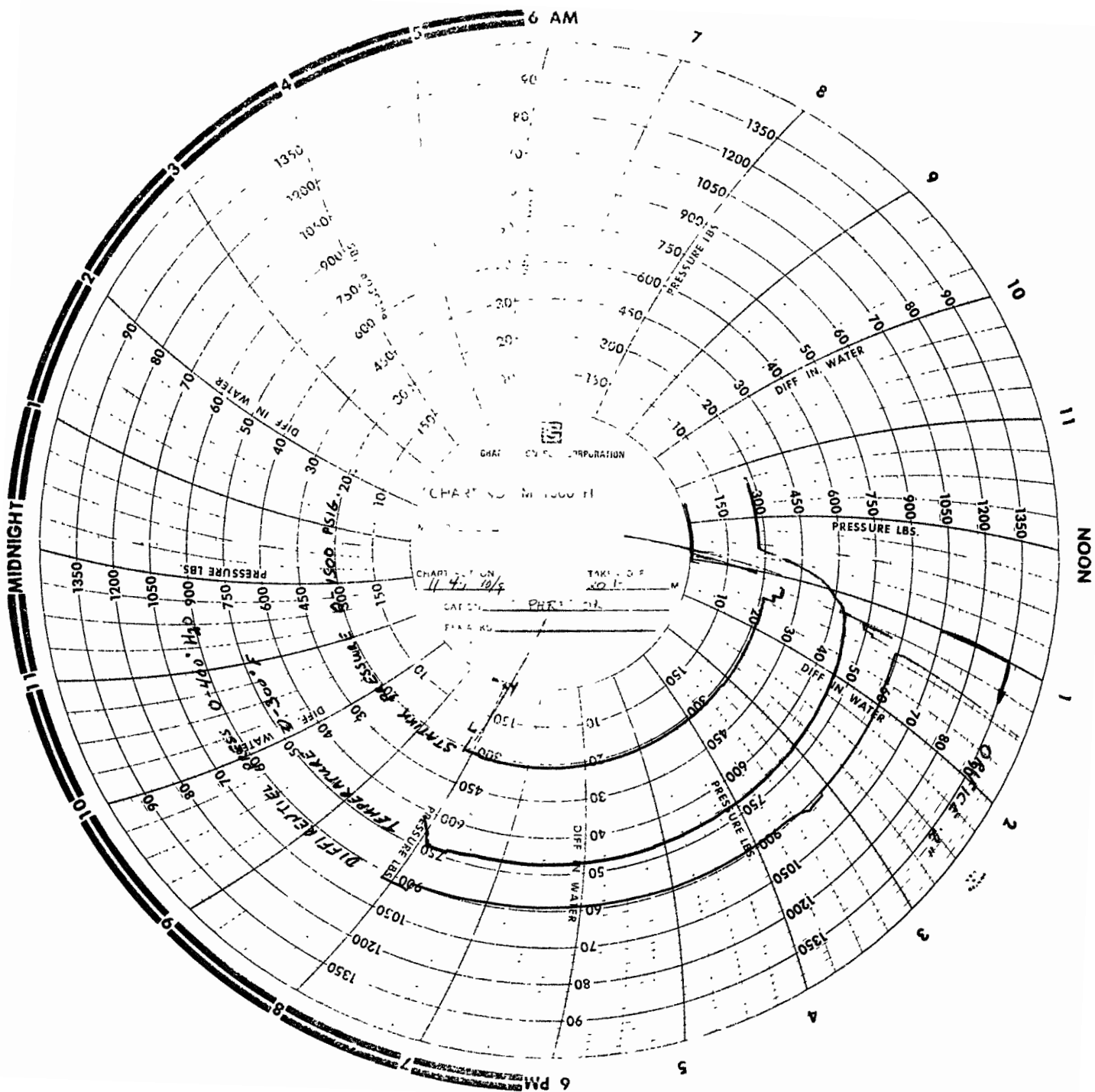
PLATE NO. 6

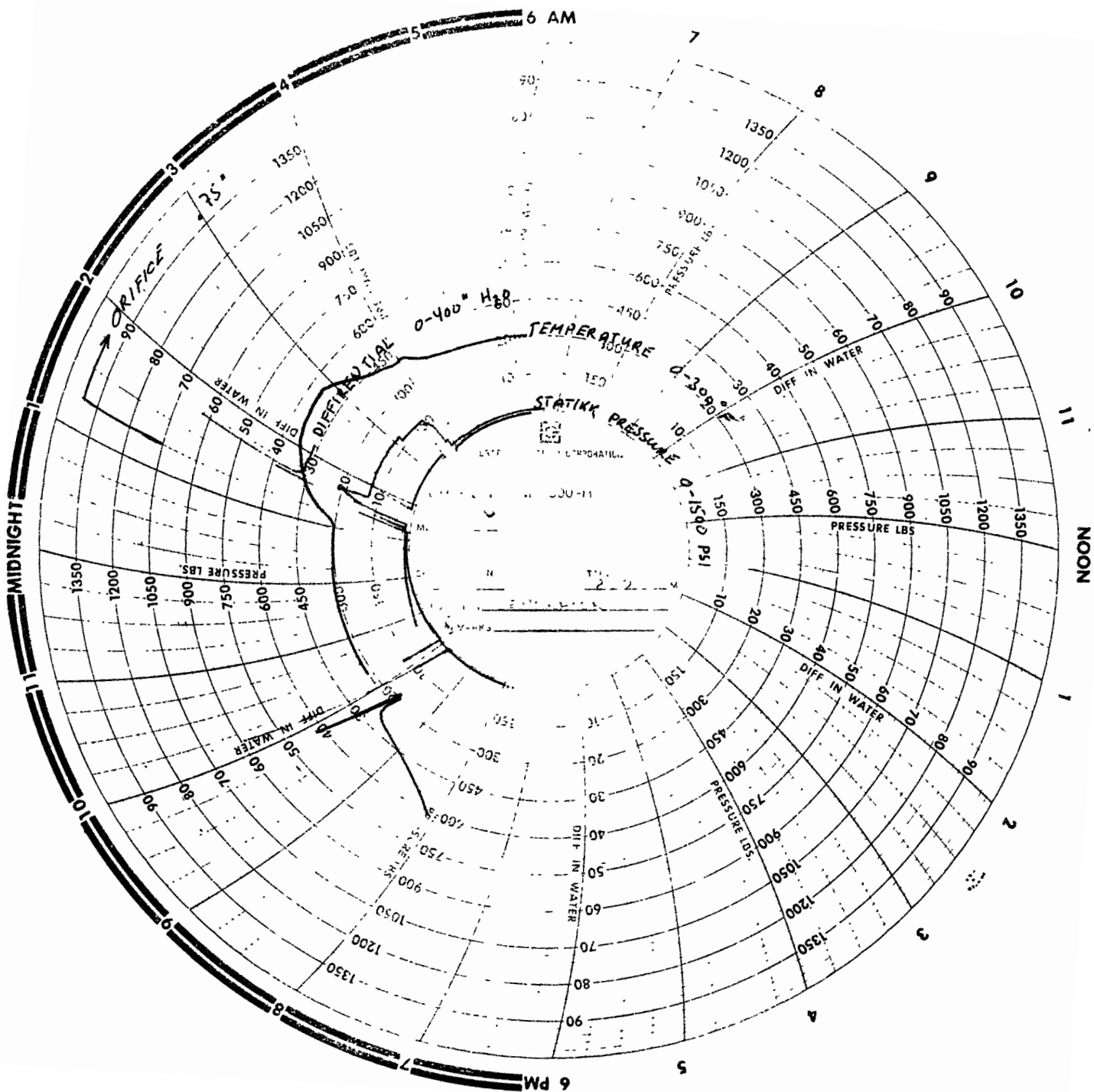
FILL 13.1400 446.793 13.1430 448.036 13.1500 448.915 13.1531 446.948 13.1600 446.962
 13.1625Temp 125.4 13.1631 446.970 13.1700 449.000 13.1730 449.036 13.1800 449.065
 13.1831 449.091 13.1900 449.100 13.1931 449.131 13.2000 449.155 13.2030 449.177
 13.2100 449.155 13.2131 449.170 13.2200 449.194 13.2231 449.202 13.2300 449.207
 13.2330 449.222 13.2400 449.240 13.2431 449.244 13.2500 449.267 13.2530 449.284
 13.2531 449.244 13.2600 449.263 13.2631 449.275 13.2700 449.284 13.2730 449.271
 13.2751 449.263 13.2800 449.277 13.2900 449.290 13.2930 449.271 13.3000 449.105
 13.3000 449.211 13.3031 449.169 13.3131Temp 125.5 13.3132 449.105
 13.3200 449.113 13.3230 449.102 13.3331 449.060 13.3400 449.005
 13.3431 449.106 13.3500 449.144 13.3530 449.102 13.3631 449.273

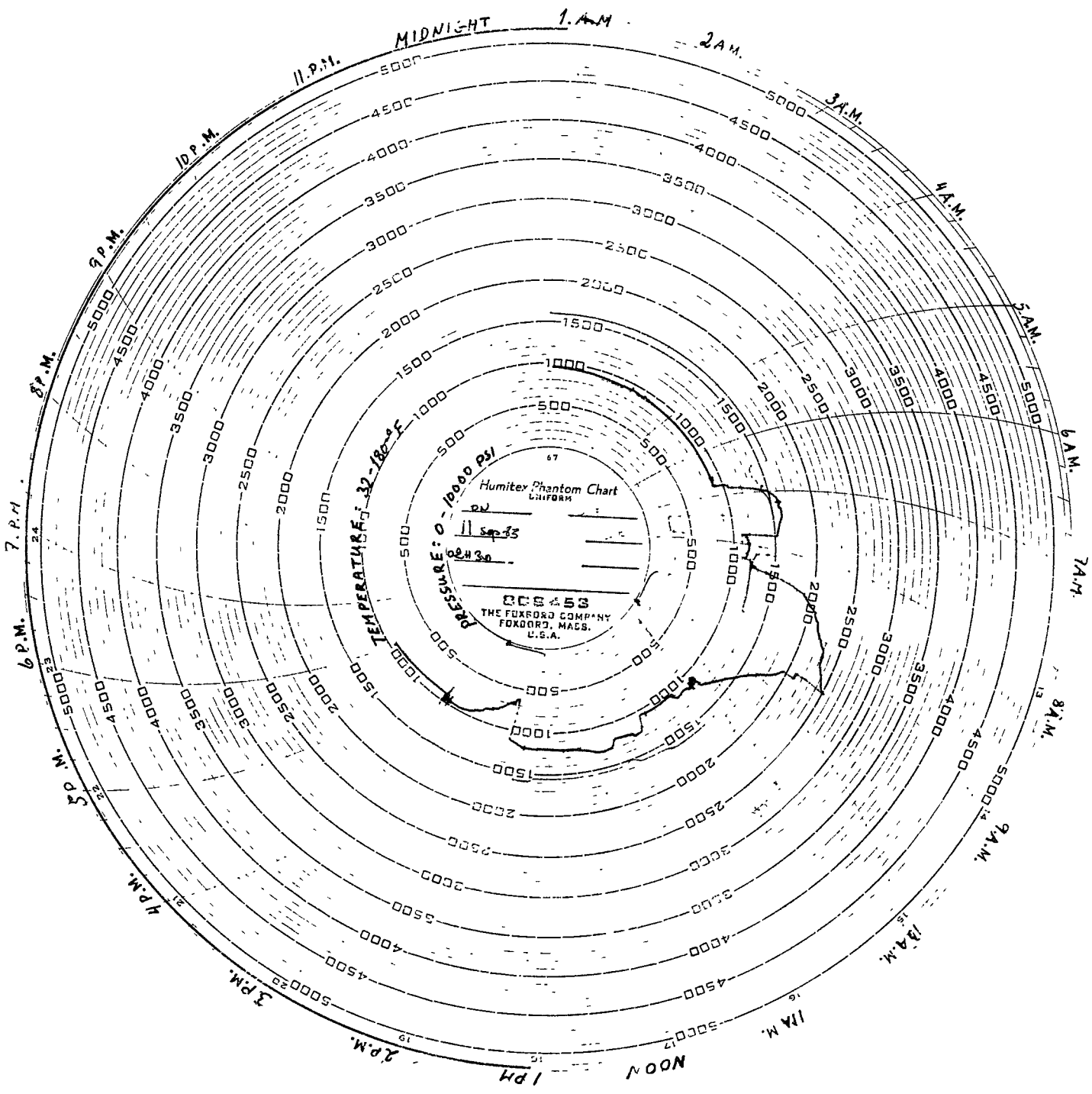
PLATE NO. 7

13.3600Temp 125.5 13.3700 449.300 13.3731 449.310 13.3800 449.344
 13.3900 449.337 13.3931 449.355 13.4000 449.351 13.4031 449.324 13.4100 449.349
 13.4130 449.307 13.4130Temp 125.5 13.4200 449.357 13.4231 449.329 13.4300 449.357
 13.4331 449.342 13.4400 449.335 13.4430 449.337 13.4500 449.344 13.4531 449.344
 13.4600 449.329 13.4631 449.336 13.4700 449.323 13.4730 449.328 13.4800 449.328
 13.4831 449.324 13.4831 449.321 13.4900 449.313 13.4931 449.309 13.5000 449.300
 13.5031 449.297 13.5031 449.277 13.5100 449.296 13.5131Temp 125.5 13.5132 449.271
 13.5200 449.169 13.5230 449.169 13.5300 449.126 13.5331 449.103 13.5400 449.105
 13.5431 449.113 13.5500 449.111 13.5530 449.102 13.5631 449.105
 13.5631 449.106 13.5700 449.144 13.5731 449.144 13.5800 449.144









11 P.M. MIDNIGHT 1 A.M.

2 A.M.

3 A.M.

4 A.M.

5 A.M.

6 A.M.

7 A.M.

8 A.M.

9 A.M.

10 A.M.

11 A.M.

NOON

1 P.M.

2 P.M.

3 P.M.

4 P.M.

5 P.M.

6 P.M.

7 P.M.

8 P.M.

9 P.M.

10 P.M.

11 P.M.

TEMPERATURE 32-180°F
PRESSURE 0-1000 PSI
11 Sep 33
O.H. 30
Humiter Phantom Chart
LITHOAM
67
THE FOXBORO COMPANY
FOXBORO, MASS.
U.S.A.