

14220 - 2626

PRESSURE

TIME

HI-14220 - 3108

Each Horizontal Line Equal to 1000 p.s.i.

HI-14220 - 3175

FLUID SAMPLER DATA		Date	9-25-71	Ticket Number	HI - 14220
Sampler Pressure _____ P.S.I.G. at Surface	Kind of Job	HOOK WALL	Halliburton District	TANANGER	
Recovery: Cu. Ft. Gas _____	Tester	WISIAN	Witness	YOUNGBLOD	
cc. Oil _____	Drilling Contractor	ZAPATA "MAERSK EXPLORER"	NM S		
cc. Water _____	EQUIPMENT & HOLE DATA				
cc. Mud _____	Formation Tested	Danian			
Tot. Liquid cc. _____	Elevation	112.5' Sea Level - 337.5' Sea Floor			
Gravity _____ ° API @ _____ °F.	Net Productive Interval	20' Ft.			
Gas/Oil Ratio _____ cu. ft./bbl.	All Depths Measured From	Kelly Bushing			
	Total Depth	10,449' PBD Ft.			
	Main Hole/Casing Size	7" - 29# Liner			
	Drill Collar Length	712.97'	I.D.	2.00"	
	Drill Pipe Length	9625.62'	I.D.	2.99"	
	Packer Depth(s)	10,394' Ft.			
	Depth Tester Valve	NONE Ft.			

Cushion	TYPE	AMOUNT	FRESH WATER FULL	Depth Back Pres. Valve	NONE	Surface Choke	3/4"	Bottom Choke	NONE
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Recovered	22 bbls.	Feet of	None	Remarks	SEE PRODUCTION TEST DATA SHEET...
Recovered		Feet of			* NO TIME FOR ACIDIZING WAS GIVEN BY TESTER. TIME WAS CALCULATED...
Recovered		Feet of			UNABLE TO PERFORM CALCULATION SERVICE SINCE THE FIRST BUILDUP CURVE HAS INSUFFICIENT CLOSURE FOR EXTRAPOLATION.
Recovered		Feet of			
Recovered		Feet of			

Recovered 22 bbls. ~~None~~ salt water when reversing

Recovered _____ Feet of

Recovered _____ Feet of

Recovered _____ Feet of

Recovered _____ Feet of

Remarks SEE PRODUCTION TEST DATA SHEET...

* NO TIME FOR ACIDIZING WAS GIVEN BY TESTER. TIME WAS CALCULATED...

UNABLE TO PERFORM CALCULATION SERVICE SINCE THE FIRST BUILDUP CURVE HAS INSUFFICIENT CLOSURE FOR EXTRAPOLATION.

TEMPERATURE	Gauge No. 2626		Gauge No. 3108		Gauge No. 3175		TIME		
	Depth:	10426.21' Ft.	Depth:	10430.33' Ft.	Depth:	10435.27' Ft.	Reported	Computed	
Est. °F.	72	Hour Clock	72	Hour Clock	72	Hour Clock	Tool 9-24-71 A.M.		
	Blanked Off	YES	Blanked Off	YES	Blanked Off	YES	Opened 01:20 P.M.		
Actual 245 °F.	Pressures		Pressures		Pressures		Tool 9-25-71 A.M.		
	Field	Office	Field	Office	Field	Office	Closed 00:03 P.M.		
Initial Hydrostatic	CLOCK FAILURE.		7656		7677		Minutes	Minutes	
First Period Flow	Initial	NO READINGS ARE AVAILABLE.....		SEE		SEE		—	—
	Final			SPECIAL READING		SPECIAL READING		20	23
	Closed In			SHEET		SHEET		120	111
Second Period Flow	Initial			FOR		FOR		500	504
	Final			READINGS		READINGS		- *	206 (ACID)
	Closed In							180	180
Third Period Flow	Initial							342	344
	Final								
	Closed In								
Final Hydrostatic			7730		7740				

Lease Location Sec. - Top - Ring. **2/4**
 Lease Name **7X**
 Well No. **6**
 Test No. **10,394' - 14,449'**
 Field Area **TORFIELD**
 County **NORTH SEA**
 State **NORWAY**
 Lease Owner/Company Name **PHILLIPS PETROLEUM COMPANY**

TEST STRING

2/4/7X

PERFORATIONS
10,420' - 10,440'

TEST NO. 6

NO.	I.D.	O.D.	DESCRIPTION	LENGTH	DEPTH
1			Baker Test Head		
1	2.68"	10.24"	LT-20 Swivel Assembly	4.02'	-30.91
1	2.58"	6.25"	Sub-3½" IF Box X 4" IF Pin	0.83'	-26.89'
1	2.87"	7.38"	Emsco Valve	3.50'	-26.06'
1	2.75"	6.25"	Sub-4" IF Box X 3½" EUE Pin	0.83'	-22.56'
	2.99"	3.50"	3½" EUE 8rd Tubing	9625.62'	-21.69'
1	3.62"	4.50"	3½" EUE Tubing Collar	0.48'	9603.93'
1	2.00"	6.12"	Sub-4½" IF Box X 3½" EUE Pin	0.98'	9604.41'
1	2.75"	6.37"	Sub-4½" IF Double Pin	1.75'	9605.39'
1	3.00"	6.25"	Sub-4½" IF Box X 4½" IF Pin	1.00'	9607.14'
1	2.13"	6.25"	Sub-4½" IF Box X 2 7/8" IF Pin	2.62'	9608.14'
3	2.00"	4.38"	Slip Joints (Open)	59.85'	9610.76'
24	2.00"	4.12"	Drill Collars	712.97'	9670.61'
1	2.10"	4.10"	Sub- 2 7/8" IF BOX X 2 7/8" EUE Pin	0.71'	10383.58'
1	2.44"	4.62"	RTTS Circulating Valve	2.84'	10384.29'
1	2.44"	5.00"	RTTS Safety Joint	3.31'	10387.13'
1	2.18"	5.75"	7" RTTS Packer Body	4.31'	10394.00'
1	2.12"	3.75"	Sub- 2 7/8" EUE Pin X 3½" EUE Pin	0.43'	10394.43'
1	2.99"	3.50"	Perf. Joint 3½" EUE Tubing	30.82'	10425.25'
1	2.15"	4.30"	Sub - 3½" EUE Box X 3 1/8" 8n Pin	0.96'	10426.21'
1	3.50"	3.75"	BT Recorder No. 2626 - 72 Hour	4.12'	10430.33'
1	3.50"	3.75"	BT Recorder No. 3108 - 72 Hour	4.12'	10434.45'
1	1.62"	3.75"	Sub - 3 1/8" 8n Box X 2 3/8" IF Pin	0.92'	10435.37'
1	2.50"	3.75"	B.T. Recorder No. 3175 - 72 Hour	4.12'	10439.49'

Casing perms. _____ Bottom choke _____ Surf. temp _____ °F Ticket No. HI - 14220
 Gas gravity _____ Oil gravity _____ GOR _____
 Spec. gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

Date	Time	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
9-24-71	00:43					Started displacing tubing with fresh water.
	01:06					Completed displacing tubing - 3130 PSI differential PSI
	01:20					Opened on the surface with a very weak flow - 0 PSI on a 2" line - approximately 19 bpd of flow rate.
	01:40					Closed in at the surface - 0 PSI
	02:20		210#			
	02:50		315#			
	03:20		425#			
	03:40		505#			Opened on the surface on 3/4" choke-
	03:50					0 PSI Well dead - recovered approximately 1 1/2 barrels of water cushion.
	04:00					Well started flowing very weakly - approximately 1.76 bpd - 0 PSI
	11:59					Closed in at the surface - opened circulating valve and reversed test. No visible sample recovered.
	13:50					Started acidizing well
	14:28					Acid on bottom breakdown 5700 PSI rate- 2 bbls per minute - increasing to 7 bbls per minute.
	15:18					Completed acid job instant shut down PSI - 4100.
	15:23					Closed in PSI of 3950.
	18:18					Closed in PSI of 3650, Opened well at the surface. Flow rate was approx-

B.T. # 2626
DEPTH 10426.21'

B.T. # 3108
DEPTH 10430.33'

B.T. # 3175
DEPTH 10435.27'

	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
				23 MINUTE FIRST FLOW			23 MINUTE FIRST FLOW		
P-0				.000		4734	.000		4744
1	CLOCK FAILURE...			.0041		4734	.0057		4744
2	NO READINGS ARE			.0082		4739	.0114		4744
3	AVAILABLE.....			.0123		4743	.0171		4744
4				.0164		4743	.0228		4744
5				.019		4743*	.026		4749*
				5 MINUTE INTERVALS			5 MINUTE INTERVALS		
				* INTERVAL = 3 MINUTES			* INTERVAL = 3 MINUTES		
				111 MINUTE CLOSED IN			111 MINUTE CLOSED IN		
0				.000		4743	.000		4749
1				.0054		4768	.0057		4762
2				.0107		4797	.0114		4789
3				.0161		4842	.0170		4816
4				.0214		4863	.0227		4852
5				.0268		4909	.0284		4883
6				.0322		4917	.0341		4910
7				.0375		4954	.0397		4937
8				.0429		4967	.0454		4964
9				.0482		4983	.0511		4987
10				.0536		5008	.0568		5009
11				.0590		5037	.0624		5031
12				.0643		5041	.0681		5049
13				.0697		5062	.0738		5067
14				.0750		5083	.0795		5090
15				.0804		5100	.0851		5108
16				.0858		5116	.0908		5126
17				.0911		5133	.0965		5143
18				.0965		5145	.1022		5161
19				.1018		5170	.1078		5175
20				.1072		5183	.1135		5193
21				.1126		5199	.1192		5211
22				.119		5212**	.126		5224**
				5 MINUTE INTERVALS			5 MINUTE INTERVALS		
				** INTERVAL = 6 MINS.			** INTERVAL = 6 MINS.		
				504 MINUTE FLOW			504 MINUTE FLOW		
0				.000		4722	.000		4735
1				.0685		4726	.0683		4735
2				.1370		4726	.1366		4735
3				.2055		4726	.2049		4740
4				.2740		4726	.2732		4740
5				.3425		4726	.3415		4740
6				.4110		4730	.4098		4740

REMARKS:

SPECIAL PRESSURE DATA

B.T. # 2626
DEPTH 10426.21'

B.T. # 3108
DEPTH 10430.33'

B.T. # 3175
DEPTH 10435.27' PAGE # 2

	Time Defl. .000"	Log $\frac{t + \theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t + \theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t + \theta}{\theta}$	PSIG Temp. Corr.
7				.4795		4730	.4781		4740
8				.5480		4730	.5464		4740
9				.575		4730***	.574		4740***
				60 MINUTE INTERVALS			60 MINUTE INTERVALS		
				*** INTERVAL = 24 Mins.			*** INTERVAL = 24 Mins.		
				ACIDIZING - .206 MINS.			ACIDIZING - .206 MINS.		
0				.000		4730	.000		4740
1				.0050		7224	.0057		7287
2				.0100		7278	.0113		7323
3				.0149		7369	.0170		7256
4				.0199		8033	.0227		7413
5				.0249		8029	.0284		7641
6				.0299		7950	.0341		7655
7				.0348		7664	.0398		7919
8				.0398		7656	.0454		8058
9				.0448		7656	.0511		7910
10				.0498		7651	.0568		8063
11				.0547		7651	.0625		7677
12				.0597		7651	.0682		7673
13				.0647		7647	.0738		7668
14				.0697		7647	.0795		7664
15				.0746		7647	.0852		7664
16				.0796		7647	.0909		7664
17				.0846		7651	.0966		7664
18				.0896		7651	.1022		7664
19				.0945		7651	.1079		7659
20				.0995		7651	.1136		7664
21				.1045		7651	.1193		7664
22				.1095		7651	.1250		7664
23				.1144		7685	.1306		7664
24				.1194		7689	.1363		7713
25				.1244		7689	.1420		7704
26				.1294		7660	.1477		7686
27				.1343		7660	.1533		7646
28				.1393		8360	.1590		7691
29				.1443		8360	.1647		8090
30				.1493		8364	.1704		8637
31				.1542		-	.1761		8314
32				.1592		9861	.1817		8852
33				.1642		9861	.1874		10049
34				.1692		9861	.1931		10174
35				.1741		8921	.1988		8874
36				.1791		9381	.2045		9156

REMARKS:

SPECIAL PRESSURE DATA

B.T. # 2626
DEPTH 10420.21'

B.T. # 3108
DEPTH 10430.33'

B.T. # 3175
DEPTH 10435.27' PAGE # 3

	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.
37				.1841		9393	.2101		9384
38				.1891		8992	.2158		8987
39				.1941		9094	.2215		9080
40				.1990		9078	.2272		9063
41				.205		9053***	.234		9031***
				5 MINUTE INTERVALS.			5 MINUTE INTERVALS		
				*** INTERVAL = 6 MINS.			*** INTERVAL = 6 MINS.		
				180 MINUTE FLOW			180 MINUTE FLOW		
0				.000		8785	.000		8771
1				.0058		8669	.0057		8704
2				.0116		8665	.0114		8664
3				.0173		8665	.0171		8641
4				.0231		8645	.0228		8619
5				.0289		8628	.0285		8605
6				.0347		8620	.0342		8596
7				.0404		8607	.0399		8583
8				.0462		8595	.0456		8574
9				.0520		8587	.0512		8565
10				.0578		8579	.0569		8556
11				.0636		8566	.0626		8543
12				.0693		8558	.0683		8534
13				.0751		8545	.0740		8525
14				.0809		8537	.0797		8516
15				.0867		8529	.0854		8507
16				.0924		8521	.0911		8498
17				.0982		8512	.0968		8489
18				.1040		8504	.1025		8484
19				.1098		8496	.1082		8471
20				.1156		8488	.1139		8466
21				.1213		8479	.1196		8457
22				.1271		8471	.1253		8453
23				.1329		8463	.1310		8444
24				.1387		8455	.1367		8435
25				.1444		8446	.1424		8430
26				.1502		8442	.1481		8422
27				.1560		8434	.1537		8413
28				.1618		8426	.1594		8404
29				.1676		8417	.1651		8404
30				.1733		8413	.1708		8395
31				.1791		8401	.1765		8390
32				.1849		8393	.1822		8381
33				.1907		8393	.1879		8377
34				.1964		8388	.1936		8368

REMARKS:

SPECIAL PRESSURE DATA

NOMENCLATURE

b	= Approximate Radius of Investigation	Feet
b₁	= Approximate Radius of Investigation (Net Pay Zone h ₁)	Feet
D.R.	= Damage Ratio	—
EI	= Elevation	Feet
GD	= B.T. Gauge Depth (From Surface Reference)	Feet
h	= Interval Tested	Feet
h₁	= Net Pay Thickness	Feet
K	= Permeability	md
K₁	= Permeability (From Net Pay Zone h ₁)	md
m	= Slope Extrapolated Pressure Plot (Psi ² /cycle Gas)	psi/cycle
OF₁	= Maximum Indicated Flow Rate	MCF/D
OF₂	= Minimum Indicated Flow Rate	MCF/D
OF₃	= Theoretical Open Flow Potential with/Damage Removed Max.	MCF/D
OF₄	= Theoretical Open Flow Potential with/Damage Removed Min.	MCF/D
P_s	= Extrapolated Static Pressure	Psig.
P_f	= Final Flow Pressure	Psig.
P_{ot}	= Potentiometric Surface (Fresh Water*)	Feet
Q	= Average Adjusted Production Rate During Test	bbls/day
Q₁	= Theoretical Production w/Damage Removed	bbls/day
Q_g	= Measured Gas Production Rate	MCF/D
R	= Corrected Recovery	bbls
r_w	= Radius of Well Bore	Feet
t	= Flow Time	Minutes
t_o	= Total Flow Time	Minutes
T	= Temperature Rankine	°R
Z	= Compressibility Factor	—
μ	= Viscosity Gas or Liquid	CP
Log	= Common Log	

* Potentiometric Surface Reference to Rotary Table When Elevation Not Given, Fresh Water Corrected to 100° F.