SOUTH AUSTRALIA

DEPARTMENT OF MINES AND ENERGY

OPEN FILE ENVELOPE NO. 2007

PPL 4, MOOMBA BLOCK

EROMANGA AND COOPER BASINS

BIG LAKE 4

TEST REPORTS

Submitted by

Delhi International Oil Corporation

1989

ENVELOPE 2007

TENEMENT: PPL 4, Moomba Block; Eromanga and Cooper Basins

TENEMENT HOLDER: Delhi International Oil Corporation (operator), Santos Ltd and Vamgas Ltd

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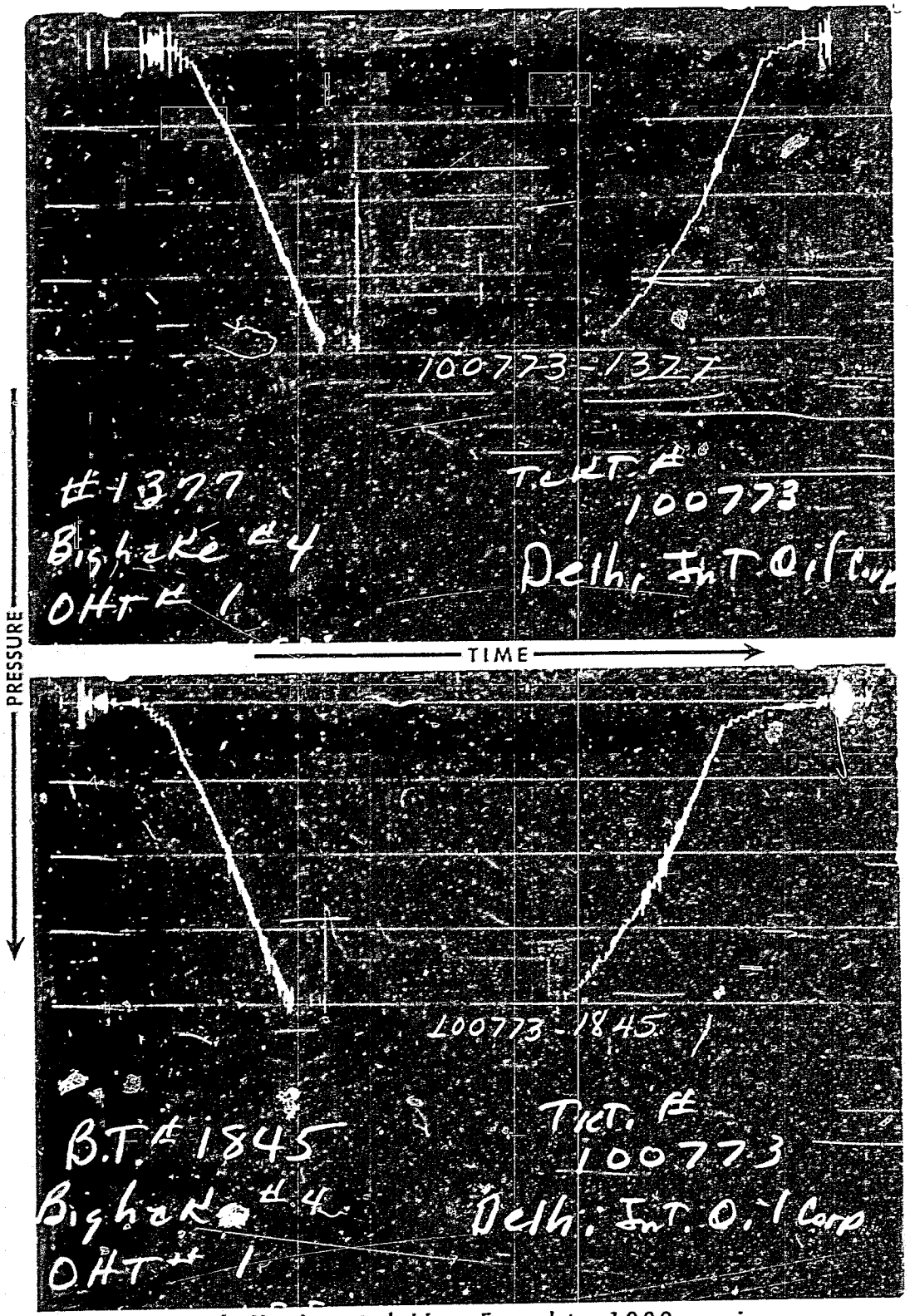

Each Horizontal Line Equal to 1000 p.s.i.

00004

FLUID SAMPLE DATA

Initial Pressure	P.S.I.G. at Surface
Recovery, Cu. Ft. Gas	
cc Oil	
cc Water	
cc Mud	
Total Liquid cc	
Gravity	° API @ °F.
Gas/Oil Ratio	cu. ft./bbl.

	RESISTIVITY	CHLORIDE CONTENT
Recovery Water	@ °F.	ppm
Recovery Mud	@ °F.	
Recovery Mud Filtrate	@ °F.	ppm
Mud Pit Sample	@ °F.	
Mud Pit Sample Filtrate	@ °F.	ppm
Mud Weight	9.7 vis 47	cp

Date	7-31-72
Ticket Number	100773
Kind of Job	OPEN HOLE
Halliburton District	MOOMBA
Tester	MR. HARRIS
Witness	MR. MC KAY / MR. WOOLDGRIGE
Drilling Contractor	DRILCON #2 dr s

EQUIPMENT & HOLE DATA

Formation Tested	Upper Gidgealpa		
Elevation	128' KB		Ft.
Net Productive Interval	151'		Ft.
All Depths Measured From	Kelly Bushing		
Total Depth	7685'		Ft.
Main Hole/Casing Size	8¾"		
Drill Collar Length	383'	I.D. 2 7/8"	
Drill Pipe Length	7116'	I.D. 4.276"	
Packer Depth(s)	7528'-7534'		Ft.
Depth Tester Valve	7512'		Ft.

Cushion — TYPE — AMOUNT — Depth Back Ft. Pres. Valve — Surface Choke 1/4-7/16" — Bottom Choke 5/8"

Recovered 95 Feet of muddy water

Recovered Feet of

Recovered Feet of

Recovered Feet of

Recovered Feet of

Mea. From Tester Valve

Remarks SEE PRODUCTION TEST DATA SHEET

TEMPERATURE	Gauge No. 1377 Depth: 7514 Ft.	Gauge No. 1845 Depth: 7681 Ft.	Gauge No. Depth: Ft.	TIME
	12 Hour Clock	12 Hour Clock	Hour Clock	Tool Opened A.M. 17:47 P.M.
Est °F.	Blanked Off No	Blanked Off Yes	Blanked Off	
7681' Actual 244 °F.	Pressures	Pressures	Pressures	Tool Closed A.M. 21:03 P.M.

		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		3806	3813	3943	3934				
First Period	Flow Initial	2215	2202	2702	2686			—	—
	Flow Final	3063	3101	3261	3286			16	16
	Closed In	3329	3348	3429	3411			30	29
Second Period	Flow Initial	2359	2314	2939	2886			—	—
	Flow Final	2865	2850	3166	3168			60	60
	Closed In	3365	3348	3389	3399			90	91
Third Period	Flow Initial							—	—
	Flow Final								
	Closed In								
Final Hydrostatic		3806	3789	3879	3875			—	—

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FORMATION TEST DATA

LITTLE'S

Legal Location Sec. - Twp. - Rng.

BIG LAKE — Lease Name — 4 — Well No. — 1 — Test No. — 7534'-7685' — Tested Interval

Field Area: COOPER BASIN — County — State: SOUTH AUSTRALIA

Lease Owner/Company Name: DELHI INTERNATIONAL OIL CORPORATION

DRILL FACTOR 21.00 Bottom choke____ Surf. temp____ °F Ticket No. 100773
Test gravity____ Oil gravity____ GOR____
Spec. gravity____ Chlorides____ ppm Res.____ @____ °F

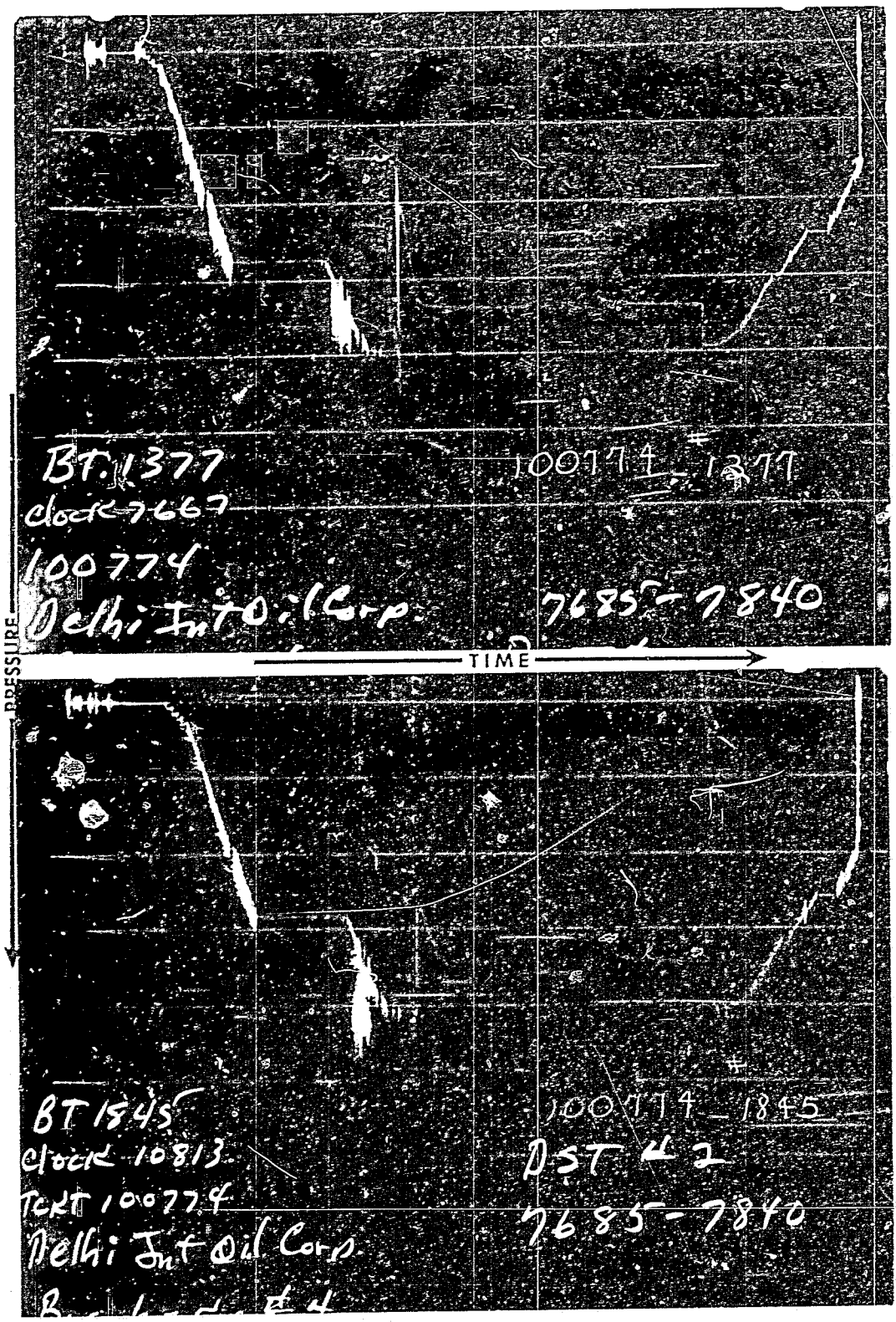
Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
14:07					Start B.T. 1845 and clock 10813
14:12					Start BT 1377 and clock 6743'
17:47	1/4				Hydrospring opened in 2 minutes, with a good blow. Gas to surface in 3 minutes.
17:50	"	1060			
17:53	"	1700			
17:56	"	2000			
17:59	"	2290			
18:03	"	2400	3,048	Trace	Closed tool
18:03					Reopened tool with a strong blow.
18:33	7/16"	1050			
18:38	"	1760			
18:43	"	2180			
18:48	"	2200			
18:53	"	2180			
18:58	"	2110			
19:03	"	2080			
19:08	"	2100			
19:13	"	2090			
19:18	"	2110			
19:23	"	2100			
19:28	"	2100			
19:33	"	2100	8,573	Trace	
19:33					Closed tool
21:03					Off bottom

Gauge No.	1377		Depth	7514'		Clock No.	6743		12 hour	Ticket No.	100773							
	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure					
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp Corr	Time Defl. .000"	PSIG Temp Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp Corr.			
0	.000	2202	.000		3101	.000	2314	.000		2850								
1	.008	2224*	.0070		3301	.0687	2915	.0069		3288								
2	.031	2344	.0140		3317	.1374	2910	.0138		3301								
3	.054	2617	.0210		3324	.2061	2823	.0208		3308								
4	.077	2913	.0280		2328	.2748	2859	.0277		3312								
5	.100	3040	.0350		3330	.3435	2859	.0347		3315								
6	.121	3101	.0420		3335	.4120	2850	.0416		3319								
7			.0490		3335			.0485		3321								
8			.0560		3337			.0555		3324								
9			.0630		3339			.0624		3326								
10			.0700		3342			.0693		3328								
11			.0980		3344			.2080		3339								
12			.1260		3346			.3467		3344								
13			.1540		3348			.4853		3346								
14			.1820		3348			.6240		3348								
15			.2030		3348			.6310		3348								
Gauge No.	1845		Depth	7681'		Clock No.	10813		12 hour									
0	.000	2686	.000		3286	.000	2886	.000		3168								
1	.007	2707*	.0068		3370	.0673	3148	.0068		3343								
2	.029	2852	.0136		3382	.1346	3198	.0135		3355								
3	.051	3084	.0204		3389	.2019	3182	.0203		3361								
4	.073	3180	.0273		3391	.2692	3166	.0271		3366								
5	.095	3259	.0341		3395	.3365	3177	.0338		3370								
6	.117	3286	.0410		3398	.4040	3168	.0406		3373								
7			.0478		3400			.0474		3375								
8			.0546		3402			.0542		3377								
9			.0614		3404			.0609		3380								
10			.0683		3407			.0676		3382								
11			.0955		3409			.2031		3389								
12			.1229		3411			.3384		3391								
13			.1502		3411			.4738		3395								
14			.1775		3411			.6092		3398								
15			.1980		3411			.6160		3399								
Reading Interval	3		**			10		***									Minutes	

REMARKS: * First interval equal to 1 minute ** First 10 intervals equal to 1 minute each; next 4 intervals equal to 4 minutes each; last interval equal to 3 minutes. *** First 10 intervals equal to 1 minute each; next 4 intervals equal to 20 minutes each; last interval equal to 1 minute.

100773 00007

	O. D.	I. D.	LENGTH	DEPTH
Reversing Sub	6"	3"	1.00'	
Water Cushion Valve				
Drill Pipe	5"	4.276"	7116'	
Drill Collars	6.00"	2 7/8"	383'	
Handling Sub & Choke Assembly	5.87"	5/8"	2.60'	
Dual CIP Valve	5"	.87"	4.00'	
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5.00'	7512'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"		4.05'	7514'
Hydraulic Jar	5"	.87"	3.30'	
VR Safety Joint	5"	1.00"	2.30'	
Pressure Equalizing Crossover				
Packer Assembly	7 3/4"	1.68"	6.15'	7528'
Distributor				
Packer Assembly	7 3/4"	1.68"	6.15'	7534'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint	5"	1.50"	4.10'	
Packer Assembly X-Over			1.00'	
Packer Assembly				
Anchor Pipe Safety Joint				
Side Wall Anchor				
Drill Collars	6"	2 7/8"	113.00'	
X Over			.85'	
Flush Joint Anchor	5"	2.37"	27.00'	
Blanked-Off B.T. Running Case	5"		4.00'	7681'



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

00009

FLUID SAMPLE DATA

Initial Pressure	P.S.I.G. at Surface
Recovery Cu. Ft. Gas	
cc Oil	
cc Water	
cc Mud	
Total Liquid cc	
Gravity	° API @ °F.
Gas Oil Ratio	cu. ft./bbl.

	RESISTIVITY	CHLORIDE CONTENT
Recovery Water	@ °F.	ppm
Recovery Mud	@ °F.	
Recovery Mud Filtrate	@ °F.	ppm
Mud Pit Sample	@ °F.	
Mud Pit Sample Filtrate	@ °F.	ppm
Mud Weight	10 vis 44	cp

Date 8-2-72 — Ticket Number 100774

Kind of Job OPEN HOLE — Halliburton District MOOMBA

Tester F. HARRIS — Witness P. WOOLDRIGE / C. MC KAY

Drilling Contractor DRILCON # 2 NM

EQUIPMENT & HOLE DATA

Formation Tested	Upper Gidgealea
Elevation	128' Ft.
Net Productive Interval	155' Ft.
All Depths Measured From	Kelly Bushing
Total Depth	7840' Ft.
Main Hole/Casing Size	8 1/2"
Drill Collar Length	402' I.D. 2 7/8"
Drill Pipe Length	7248' I.D. 4.276"
Packer Depth(s)	7679'-7685' Ft.
Depth Tester Valve	7665' Ft.

Cushion TYPE NONE AMOUNT Ft. — Depth Back Pres. Valve NONE — Surface Choke 1/4"-7/16" — Bottom Choke 5/8"

Recovered 105 Feet of slightly condensate cut muddy water

Recovered Feet of

Recovered Feet of

Recovered Feet of

Recovered Feet of

Meas. From Tester Valve

Remarks Tool opened @0631; had gas to the surface in 3 minutes. Closed CIP @ 0647; closed for 25 minutes - changed from ½" to 7/16" choke - choke manifold was leaking - repaired manifold - closed in for a 93 minute first closed in pressure. Tool reopened for a 60 minute second flow. Took a 90 minute second closed in pressure. Off bottom @ 10:52..

TEMPERATURE	Gauge No. 1377, Depth: 7667' Ft.	Gauge No. 1845, Depth: 7836' Ft.	Gauge No., Depth: Ft.	TIME
	12 Hour Clock	12 Hour Clock	Hour Clock	Tool Opened A.M. 06:31 P.M.
Est °F.	Blanked Off NO	Blanked Off YES	Blanked Off	
7836' @ Actual 246 °F.	Pressures	Pressures	Pressures	Tool Closed A.M. 10:52 P.M.

	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	3928	3952	4075	4082				
First Period Flow Initial	2081	1991	2706	2716			—	—
First Period Flow Final	3108	3111	3220	3230			16	17
First Period Closed In	3378	3385	3443	3441			95	93
Second Period Flow Initial	2516	2577	2807	2843			—	—
Second Period Flow Final	2812	2815	3070	3082			60	60
Second Period Closed In	3383	3372	3448	3434			90	90
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed In								
Final Hydrostatic	3928	3930	4075	4043			—	—

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Legal Location Sec. - Twp. - Rng.

Field Area COOPER BASIN

County

State SOUTH AUSTRALIA

Lease Owner/Company Name DELHI INTERNATIONAL OIL CORPORATION

BIG LAKE Lease Name — 4 Well No. — 2 Test No. — 7685'-7840' Tested Interval

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DELHI FACTOR - 21

00010

Bottom perfs _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 100774

Gas gravity _____ Oil gravity _____ GOR _____

Water gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

Date Time a m p m	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
0121					B.T. # 1845 - clock 10813 - started
0204					B.T. # 1377 - clock 6743 - started
					Run tool to 5100'
					Waited for daylight
0515					Run tool to the bottom.
0631	½"				Hydrospring opened
0634	"	650			Gas to the surface
0637	"	1400			
0640	"	1800			
0643	"	2100			
0646	"	2380	3,023		
0647	"				Closed CIP - REPAIRED CHOKE MANIFOLD.
0822	7/16"	850			Opened CIP
0827	"	1575			
0832	"	2125			
0837	"	2140			
0842	"	2100			
0847	"	2050			
0852	"	2050			
0857	"	2060			
0902	"	2040			
0907	"	2030			
0912	"	2075			
0917	"	2050			
0922	"	2040	8,331		Closed CIP
1052					Off bottom.

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PRODUCTION TEST DATA

LITTLE'S

Gauge No.	1377		Depth	7667'		Clock No.	6743		12 hour	Ticket No	100774					
	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure			
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp Corr	Time Defl. .000"	PSIG Temp Corr	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp Corr	
0	.000	1991	.000		3111	.000	2577	.000		2815						
1	.021	2095*	.0209		3324	.0695	2901	.0208		3283						
2	.035	2185	.0418		3342	.1390	2856	.0416		3306						
3	.049	2439	.0627		3351	.2085	2838	.0624		3320						
4	.063	2658	.0836		3361	.2780	2845	.0832		3329						
5	.077	2811	.1045		3363	.3475	2820	.1040		3336						
6	.091	2955	.1254		3370	.4170	2815	.1248		3340						
7	.105	3057	.1463		3372			.1456		3347						
8	.119	3111	.1672		3374			.1664		3349						
9			.1881		3376			.1872		3351						
10			.2090		3379			.2080		3354						
11			.2925		3381			.2912		3361						
12			.3760		3383			.3744		3365						
13			.4595		3385			.4576		3367						
14			.5430		3385			.5408		3370						
15			.6470		3385			.6240		3372						

Gauge No.	1845		Depth	7836'		Clock No.	10813		hour	12						
0	.000	2716	.000		3230	.000	2843	.000		3082						
1	.0206	2759*	.0204		3377	.0682	3093	.0203		3343						
2	.0344	2777	.0408		3395	.1364	3095	.0406		3366						
3	.0482	2891	.0612		3407	.2046	3082	.0609		3377						
4	.0620	2982	.0816		3411	.2728	3084	.0812		3386						
5	.0758	3080	.1020		3418	.3410	3098	.1015		3393						
6	.0896	3145	.1224		3423	.4090	3082	.1218		3400						
7	.1034	3195	.1428		3425			.1421		3405						
8	.1170	3230	.1632		3427			.1624		3409						
9			.1836		3430			.1827		3411						
10			.2040		3432			.2030		3414						
11			.2854		3436			.2842		3420						
12			.3668		3439			.3654		3427						
13			.4482		3439			.4466		3430						
14			.5296		3441			.5278		3432						
15			.6310		3441			.6090		3434						
Reading Interval	2		**			10		***								

REMARKS: * INTERVAL = 3 MINUTES. ** FIRST 10 READINGS = 3 MINUTES EACH - NEXT 4 READINGS = 12 MINUTES EACH AND THE LAST READING = 15 MINUTES. *** FIRST 10 READINGS = 3 MINUTES EACH AND THE LAST READING = 12 MINUTES.

Minutes

00011

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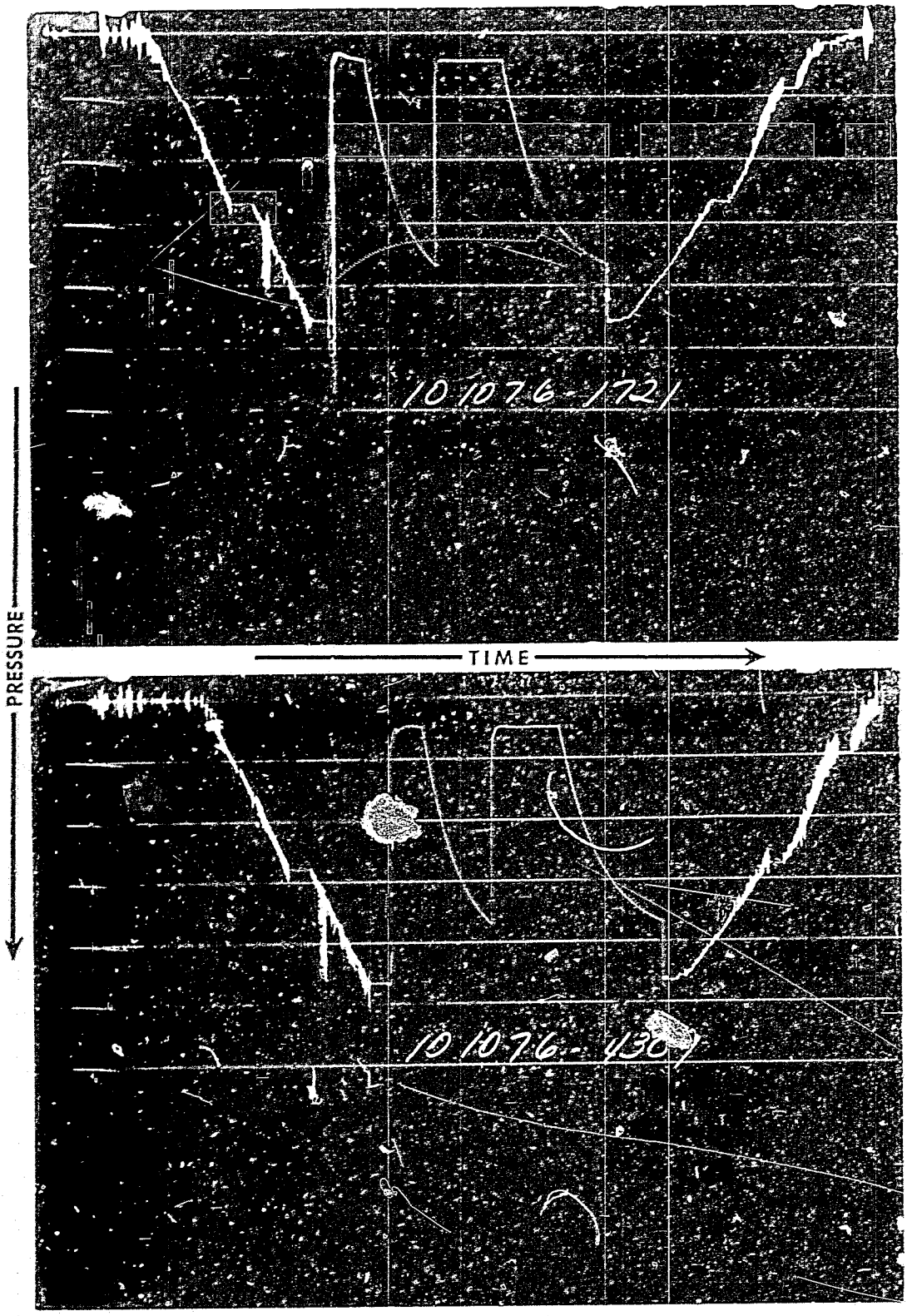
SPECIAL PRESSURE DATA

LITTLE'S

	O. D.	I. D.	LENGTH	DEPTH
Reversing Sub	6"	3"	1.00'	
Water Cushion Valve				
Drill Pipe X-OVER	5"	4.276"	7248'	
Drill Collars	6 1/2"	2 7/8"	402'	
Handling Sub & Choke Assembly	5.87"		2.60'	
Dual CIP Valve	5"	.87"	4.00'	
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5.00'	7665'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"		4.05'	7667'
Hydraulic Jar	5"	.87"	3.30'	
VR Safety Joint	5"	1.00"	2.30'	
Pressure Equalizing Crossover				
Packer Assembly	7 3/4"	1.68"	6.15'	7679'
Distributor				
Packer Assembly	7 3/4"	1.68"	6.15'	7685'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Packer Assembly				
Anchor Pipe Safety Joint	5"	1.50"	4.10'	
X-OVER	6"	1.05'		
Side Wall Anchor				
Drill Collars	6 1/2"	2 7/8"	113.00'	
X-OVER	6"		.85"	
Flush Joint Anchor	5"	2.37"	31.00'	
Blanked-Off B.T. Running Case	5"		4.00'	7836'



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

00014

FLUID SAMPLE DATA

Tester Pressure _____ P.S.I.G. at Surface
Recovery Cu Ft Gas _____
cc Oil _____
cc Water _____
cc Mud _____
Tot Liquid cc _____
Gravity _____ ° API @ _____ °F.
Gas Oil Ratio _____ cu. ft./bbl.

		RESISTIVITY		CHLORIDE CONTENT
Recovery Water	____ @	____ °F.		____ ppm
Recovery Mud	____ @	____ °F.		
Recovery Mud Filtrate	____ @	____ °F.		____ ppm
Mud Pit Sample	____ @	____ °F.		
Mud Pit Sample Filtrate	____ @	____ °F.		____ ppm
Mud Weight	9.7	vis 47		cp

Date 8-8-72 Ticket Number 101076
Kind of Job OPEN HOLE Halliburton District MOOMBA
Tester A. PALMER Witness C. MC KAY
Drilling Contractor DRILCON RIG # 2 sm S

EQUIPMENT & HOLE DATA

Formation Tested Patchawarra
Elevation 111.1' Gr. 128' KB Ft.
Net Productive Interval 48' Ft.
All Depths Measured From Kelly bushing
Total Depth 9200' Ft.
Main Hole/Casing Size 8 1/2"
Drill Collar Length 380' I.D. 2.87"
Drill Pipe Length 8586' I.D. 3.826"
Packer Depth(s) 8995-9003' Ft.
Depth Tester Valve 8979' Ft.

Cushion TYPE None AMOUNT ____ Ft. Depth Back Pres. Valve ____ Surface Choke 1/4 & 7/16" Bottom Choke 5/8"

Recovered 740 Feet of gas cut drilling mud
Recovered ____ Feet of
Recovered ____ Feet of
Recovered ____ Feet of
Recovered ____ Feet of

Meas. From Tester Valve

Remarks Tool opened for 30 minute first flow with moderate blow after 1 minute, flow increased with gas to the surface at 6:35 AM thru 1/4" choke. Closed tool for 60 minute first closed in pressure. Tool reopened for 61 minute second flow thru 7/16" choke, formation flowed for 61 minutes. Closed tool for 91 minute second closed in pressure. SEE PRODUCTION TEST DATA SHEET

TEMPERATURE		Gauge No. 1721 Depth: 8980 Ft.		Gauge No. 4309 Depth: 9197 Ft.		Gauge No. Depth: Ft.		TIME	
		12 Hour Clock		12 Hour Clock		Hour Clock		Tool Opened 6:27	A.M. P.M.
Est °F.		Blanked Off no		Blanked Off yes		Blanked Off			
Actual 276 °F.		Pressures		Pressures		Pressures		Tool Closed 8:57½	A.M. P.M.
		Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic		4552	4563	4639	4667				
First Period Flow	Initial	303	463Q	475	802Q			———	———
	Final	386	419	475	480			30	30
	Closed in	3677	3679	3686	3745			60	60
Second Period Flow	Initial	413	512	503	615			———	———
	Final	413	413	503	486			60	61
	Closed in	3677	3674	3686	3725			92	91
Third Period Flow	Initial							———	———
	Final								
	Closed in								
Final Hydrostatic		4552	4557	4639	4633			———	———

Q = Questionable

Legal Location Sec. - Twp. - Rng.
Lease Name BIG LAKE Well No. 4 Test No. 3 Tested Interval 9003 - 9200'
Field Area COOPER BASIN County
State SOUTH AUSTRALIA
Lease Owner/Company Name DELHI INTERNATIONAL OIL CORPORATION

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00015

Casing perfs _____ Bottom choke 5/8" Surf. temp _____ °F Ticket No. 101076
Gas gravity Delhi GI factor gravity 21 GOR _____
Spec gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

Date 8-8-72 Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
1:39 AM	1/4"				Engaged stylus on Bt 4309 and started in hole.
2:23	"				Engaged stylus on BT 1721.
3:25	"				Tool through floor.
6:26	"				Tool on bottom. Packer set.
6:27	"				Tool opened with moderate blow.
6:33	"				Blow increased to strong.
6:35	"	40	69.4		Gas to the surface.
6:38	"	65	101.1		
6:41	"	85	126.3		
6:44	"	90	132.6		
6:47	"	100	145.2		
6:50	"	115	164.1		
6:53	"	120	170.5		
6:55	"	130	183.0		
6:57	"				Rotated DCIP for closed in period.
6:59	"	135	189.5		
7:05	"	120	170.5		
7:11	"	100	145.2		
7:14	"	95	138.8		
7:21	"	85	126.3		
7:27	"	70	107.4		
7:30	"	60	94.7		
7:35	"	50	82.1		
7:57	7/16"				Rotated DCIP for second flow period.
8:02	7/16"	90	425.5		
8:07	7/16"	100	466.0		
8:17	7/16"	100	466.0		

Casing perfs _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 101076
Gas gravity _____ Oil gravity _____ GOR _____ Page 2
Spec gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
8:22 AM	7/16"	95	445.8		
8:27	7/16"	95	445.8		
8:32	7/16"	90	425.5		
8:37	7/16"	90	425.5		
8:47	7/16"	90	425.5		
8:52	7/16"	90	425.5		
8:57½	7/16"	90	425.5		Rotated tool for second CIP.
10:29					Lifted tool to unseat packer
					and come out of hole.

Gauge No.	1721		Depth	8980'		Clock No.	6615		12 hour	Ticket No.	101076				
	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr.	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp Corr	Time Defl. .000"	PSIG Temp Corr	Time Defl .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp Corr
0	.0000	463	.0000		419	.0000	512	.0000		413					
1	.0328	306	.0412		1101	.0730*	413	.0680**		1312					
2	.0656	328	.0824		1658	.1394	421	.1292		1907					
3	.0984	361	.1236		2107	.2058	419	.1904		2367					
4	.1312	380	.1648		2482	.2722	416	.2516		2723					
5	.1640	397	.2060		2805	.3386	416	.3128		2995					
6	.1970	419	.2472		3057	.4050	413	.3740		3208					
7			.2884		3266			.4352		3367					
8			.3296		3433			.4964		3496					
9			.3708		3570			.5576		3595					
10			.4120		3679			.6190		3674					
11															
12															
13															
14															
15															

Gauge No.	4309		Depth	9197'		Clock No.	10813	12 hour						
0	.0000	802	.0000		480	.000	615	.0000		486					
1	.0335	528	.0404		1145	.0738*	480	.0668**		1370					
2	.0670	506	.0808		1696	.1408	492	.1269		1958					
3	.1005	461	.1212		2159	.2079	494	.1870		2413					
4	.1340	455	.1616		2534	.2749	489	.2471		2763					
5	.1675	469	.2020		2852	.3419	489	.3072		3059					
6	.2010	480	.2424		3134	.4090	486	.3673		3269					
7			.2828		3336			.4274		3429					
8			.3232		3501			.4875		3549					
9			.3636		3639			.5476		3650					
10			.4040		3745			.6080		3725					
11															
12															
13															
14															
15															

Reading Interval	5	6	10	9	Minutes

REMARKS: *First interval is equal to 11 minutes. **10 minutes.

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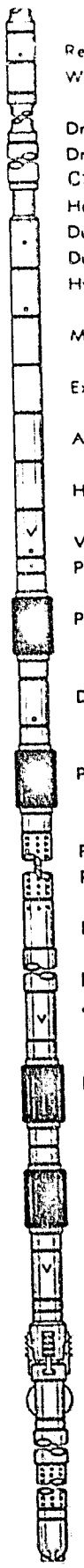
SPECIAL PRESSURE DATA

LITTLE'S

101076 00018



	O.D.	I.D.	LENGTH	DEPTH
Reversing Sub	7.10"	3"	.98'	
Water Cushion Valve				
Drill Pipe	4½"	3.826"	8586'	
Drill Collars	6.50"	2.87"	380'	
Cross over sub	6.75"	2.80"	1'	
Handling Sub & Choke Assembly	5.87"	5/8"	2.68'	
Dual CIP Valve	5.03"	.87"	4'	
Dual CIP Sampler				
Hydro-Spring Tester	5"	.75"	5.01'	8979'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5"	3.06"	4.05'	8980'
Hydraulic Jar	5.03"	1.75"	5'	
VR Safety Joint	5"	1"	2.23'	
Pressure Equalizing Crossover				
Packer Assembly	7 3/4"	1.68"	5.95'	8995'
Distributor	5"	1.68"	1.99'	
Packer Assembly				
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly	7 3/4"	1.68"	5.95'	9003'
Packer Assembly				
Anchor Pipe Safety Joint	5"	1.50"	4'	
Side Wall Anchor				
Cross over sub	6.50"	2.50"	1.05'	
Drill Collars	6.50"	2.87"	140.25'	
Cross over sub	6.60"	2.38"	.82'	
Flush Joint Anchor	5.00"	2.37"		
Blanked-Off B.T. Running Case	5"	2.44"	4.05'	9197'

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EQUIPMENT DATA

LITTLE'S 90216 SM 2/72

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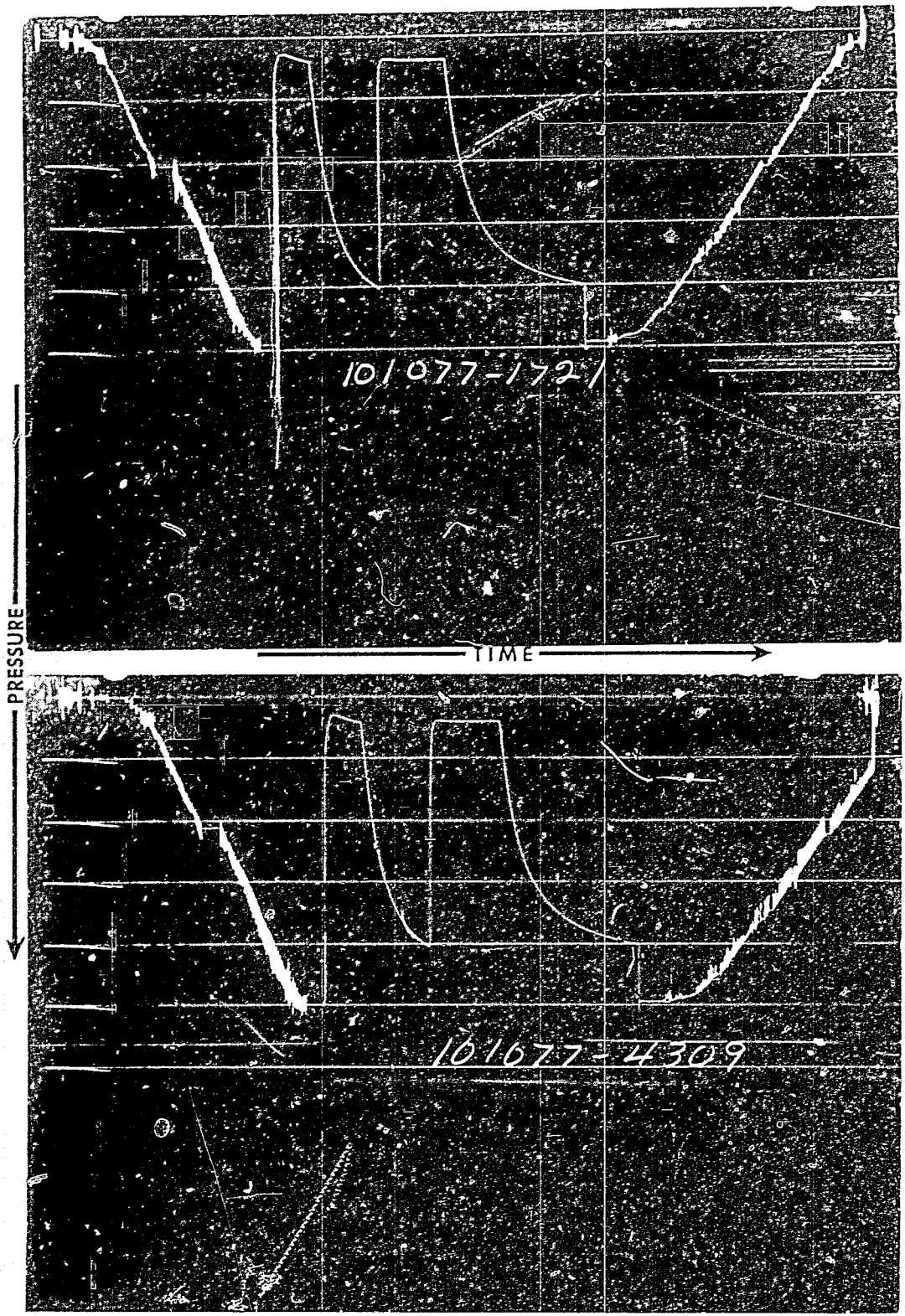

Each Horizontal Line Equal to 1000 p.s.i.

00020

FLUID SAMPLE DATA

Surface Pressure	# S.I.G. at Surface
Cu Ft Gas	
cc Oil	
cc Water	
cc Mud	
Tot Liquid cc	
Gravity	° API @ °F.
Gas Oil Ratio	cu. ft./bbl.

	RESISTIVITY	CHLORIDE CONTENT
Recovery Water	@ °F.	ppm
Recovery Mud	@ °F.	
Recovery Mud Filtrate	@ °F.	ppm
Mud Pit Sample	@ °F.	
Mud Pit Sample Filtrate	@ °F.	ppm
Mud Weight 9.8	vis 40	cp

Date	8-14-72
Ticket Number	101077
Kind of Job	OPEN HOLE
Halliburton District	MOOMBA
Tester	MR. SCOTT
Witness	MR. GALE
Drilling Contractor	DRILLING CONTRACTORS RIG # 2 DR S

EQUIPMENT & HOLE DATA

Formation Tested	Tirrawarra
Elevation	128' KB 111.1' Ground Ft.
Net Productive Interval	119' Ft.
All Depths Measured From	Kelly Bushing
Total Depth	9905' Ft.
Main Hole/Casing Size	8½"
Drill Collar Length	430' I.D. 2.87"
Drill Pipe Length	9299' I.D. 3.826"
Packer Depth(s)	9757'-9765' Ft.
Depth Tester Valve	9740' Ft.

Cushion TYPE: None AMOUNT: Ft. Depth Back Pres. Valve — Surface Choke 1/4-7/16" Bottom Choke 5/8"

Recovered 700 Feet of slightly gas cut mud

Recovered Feet of

Recovered Feet of

Recovered Feet of

Recovered Feet of Q-QUESTIONABLE

Meas. From Tester Valve

Remarks SEE PRODUCTION TEST DATA SHEET

TEMPERATURE	Gauge No. 1721		Gauge No. 4309		Gauge No.		TIME	
	Depth: 9742 Ft.		Depth: 9901 Ft.		Depth: Ft.			
	12 Hour Clock		12 Hour Clock		Hour Clock		Tool Opened A.M. 13:40 P.M.	
Est. °F.	Blanked Off No		Blanked Off Yes		Blanked Off			
Actual 295 °F.	Pressures		Pressures		Pressures		Tool Closed A.M. 18:11 P.M.	
	Field	Office	Field	Office	Field	Office	Reported Minutes	Computed Minutes
Initial Hydrostatic	4907	4923	5003	5003				
First Period Flow Initial	248	8730	307	10640			—	—
First Period Flow Final	413	408	419	422			31	32
First Period Closed In	4060	4041	4078	4050			60	59
Second Period Flow Initial	358	7130	391	7120			—	—
Second Period Flow Final	386	388	419	402			60	60
Second Period Closed In	4005	4003	3994	4011			120	120
Third Period Flow Initial							—	—
Third Period Flow Final								
Third Period Closed In								
Final Hydrostatic	4907	4915	4947	4950			—	—

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FORMATION TEST DATA

LITTLE'S

Legal Location Sec. - Twp. - Rng.

Lease Name: BIG LAKE — Well No.: 4 — Test No.: 4

Field Area: COOPER BASIN

County: AUSTRALIA — State: SOUTH AUSTRALIA

Tested Interval: 9765'-9905'

Lease Owner/Company Name: DELHI INTERNATIONAL OIL CORPORATION

8

Casing perfs _____ Bottom choke _____ Surf. temp _____ °F Ticket No. 101077

Gas gravity _____ Oil gravity _____ GOR _____

Water gravity _____ Chlorides _____ ppm Res. _____ @ _____ °F

Date Time a.m. p.m.	Choke Size	Surface Pressure psi	Gas Rate MCF	Liquid Rate BPD	Remarks
09:45					Stylus engaged bottom BT 4309'
					Clock #7588
10:32					Stylus engaged top BT 1721
					Clock # 7582
10:40					Start tools in hole
13:22					Tag bottom and make up head
13:40	1/4"				Hydrospring open with a weak blow
	1/4"				developing into a fair blow
13:49	1/4"	20	44		Gas to surface
13:55	1/4"	40	69		After this reading I exchanged the
					3000 lbs gauge with 600 lbs gauge on
					the control head.
14:00	1/4"	80	120		
14:03	1/4"	100	146		
14:06	1/4"	110	158		
14:09	1/4"	125	177		
14:11					Closed tool for inital closed in period.
15:11	7/16"				Opened tool for second flow
15:16	7/16"	90	426		
15:21	7/16"	105	436		
15:26	7/16"	110	507		
15:31	7/16"	110	507		The surface pressure stabilized at 110
					PSI for the remainder of flow period.
16:11					Closed tool for final closed in
18:11					Came off bottom, dismantled head and
					started out of hole.

PRINTED IN U.S.A. PRODUCTION TEST DATA LITTLE'S

Gauge No.	1721		Depth	9742'		Clock No. 7582			12 hour Ticket No. 101077					
	First Flow Period		First Closed In Pressure			Second Flow Period		Second Closed In Pressure			Third Flow Period		Third Closed In Pressure		
	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. .000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp. Corr	Time Defl. .000"	PSIG Temp. Corr.	Time Defl. 000"	Log $\frac{t+\theta}{\theta}$	PSIG Temp Corr	Time Defl. 000"	PSIG Temp Corr	Time Defl 000"	Log $\frac{t+\theta}{\theta}$	Temp Corr
0	.000	873 Q	.000		408	.000	713 Q	.000		388					
1	.0459	284*	.0342		1293**	.0667	380	.0815		1951					
2	.0787	295	.0753		2107	.1334	388	.1630		2740					
3	.1115	331	.1164		2677	.2001	388	.2445		3186					
4	.1443	353	.1575		3096	.2668	388	.3260		3452					
5	.1771	383	.1986		3394	.3335	388	.4075		3622					
6	.2100	408	.2397		3597	.4000	388	.4890		3740					
7			.2808		3759			.5705		3830					
8			.3219		3877			.6520		3901					
9			.3630		3967			.7335		3956					
10			.4040		4041			.8150		4003					
11															
12															
13															
14															
15															

Gauge No.	4309		Depth	9901'		Clock No.	7588		12 hour					
0	.000	10640	.000		422	.000	712 Q	.000		402				
1	.0473	304*	.0342		1368**	.069	391	.0826		2017				
2	.0811	316	.0753		2156	.138	402	.1652		2791				
3	.1149	346	.1164		2729	.207	402	.2478		3213				
4	.1487	374	.1575		3120	.276	402	.3304		3468				
5	.1825	399	.1986		3412	.345	402	.4130		3636				
6	.2160	422	.2397		3625	.414	402	.4956		3756				
7			.2808		3773			.5782		3843				
8			.3219		3894			.6608		3910				
9			.3630		3980			.7434		3966				
10			.4040		4050			.8260		4011				
11														
12														
13														
14														
15														

Reading Interval 5 | 6 | 10 | 12 | Minutes

REMARKS: * First interval equal to 7 minutes **-5 minutes.
Q-QUESTIONABLE

22000

101077

00023

	O.D.	I.D.	LENGTH	DEPTH
Reversing Sub	7.10"	3.00"	.98'	
Water Cushion Valve				
Drill Pipe	4½"	3.826"	9299'	
Drill Collars	6.50"	2.87"	430'	
X.O. SUB	6.75"	2.80"	1.00'	
Handling Sub & Choke Assembly	5.87"	5/8"	2.68'	
Dual CIP Valve	5.03"	.87"	4.00'	
Dual CIP Sampler				
Hydro-Spring Tester	5.00"	.75"	5.01'	9740'
Multiple CIP Sampler				
Extension Joint				
AP Running Case	5.00"	3.06"	4.05'	9742'
Hydroulic Jar	5.03"	1.75"	5.00'	
VR Safety Joint	5.00"	1.00"	2.23'	
Pressure Equalizing Crossover				
Packer Assembly	7.75"	1.68"	5.95'	9757'
Distributor	5.00"	1.68"	1.99'	
Packer Assembly	7.75"	1.68"	5.95'	9765'
Flush Joint Anchor				
Pressure Equalizing Tube				
Blanked-Off B.T. Running Case				
Drill Collars				
Anchor Pipe Safety Joint				
Packer Assembly				
Packer Assembly				
Anchor Pipe Safety Joint	5.00"	1.50"	4.00'	
Side Wall Anchor X.O. Sub	6.50"	2.50"	1.05'	
Drill Collars	6.50"	2.87"	85.20'	
X.O. SUB	6.60"	2.38"	.82'	
Flush Joint Anchor	5.00"	2.37"	43.00'	
Blanked-Off B.T. Running Case	5.00"	2.44"	4.05'	9901'

BIG LAKE

D.S.T. EVALUATION (GAS)

Date July 31, 1972 Well No 4 D.S.T. No 1

Interval Tested 7534' - 7685'. Recorder Depth: Top 7514 ft.
Bottom 7682 ft.

Recorder Used: ~~Top~~/Bottom

COMMENTS:

Valid D.S.T. Unstabilised second flow period. Calculations have been done and are as follows:

DATA:

Elevation (EL)		128 ft.
Surface Pressure (P)	(1)	2400 psia
	(2)	2100 psia
Choke Sizes	(1)	1/4 in.
	(2)	7/16 in.
Gas Gravity (G)		0.756
Compressibility Factor (z)		0.8932
Slopes (m)	Initial	251,000 psi^2/cycle
	Final	210,000 psi^2/cycle
Well bore Radius (rw)		0.354 ft.
Gas Compressibility (C)		0.000293 psi^{-1}
Surface Temperature (Ts)		520 ^oR
Choke Factor (Fp)	(1)	1.143
	(2)	3.672

Final Flow Pressure (Pf)	Initial	3279..	psig
	Final	3164..	psig
Extrapolated Static Pressure (Ps)			
	Initial	3414..	psig
	Final	3403..	psig
Flow Time (t)		0.0118	days
Total Flow Time (to)		0.0528	days
Gas Viscosity (μ)		0.0204	cps
Temperature (T)		..704.	^{o}R
Porosity (ϕ)		...13.	%

PRODUCT	EQUATION	INITIAL	FINAL	UNIT
Flow Rate	$Q_g = \frac{Fp \times P}{\sqrt{G \times Ts}} \times 24$	...3308	..9299	MCFD
Transmissability	$\frac{Kh}{\mu} = \frac{1637 \times Q_g z T}{m}$	..13566	45581	md-ft/ cps.
Theoretical Flow Capacity	$Kh = \frac{Kh}{\mu} \times \mu$	277	...930	md-ft
Average Effective Permeability	$K = \frac{Kh}{h}$			
Based on gross sand of: 74 ft.		...3.74	..12.57	md
Based on net sand of: 45 ft.		...6.16	..20.67	md
Indicated Flow Capacity $(Kh_2) = \frac{3200\ Q_g \mu z T\ Log(0.472^b/rw)}{Ps^2 - Pf^2}$		...272..	...588	md-ft
Damage Ratio	$\frac{\text{Theoretical Flow Cap}}{\text{Indicated Flow Cap}}$	1.0**	1.5	-

** Not real value

PRODUCT	EQUATION	INITIAL	FINAL	UNIT
Indicated Absolute Open Flow Rate				
	Max. $OF_1 = \frac{Q_g \ Ps^2}{Ps^2 - Pf^2}$	42669	69029	MCFD
	Min. $OF_2 = \frac{Q_g \ Ps}{\sqrt{Ps^2 - Pf^2}}$	11875	25316	MCFD
Theoretical Absolute Open Flow Potential Rate				
	Max. $OF_3 = OF_1 \times DR$	42669	103544	MCFD
	Min. $OF_4 = OF_2 \times DR$	11875	37974	MCFD
Approx. Radius of Investigation	$b = \sqrt{\frac{Kt}{39.2 \ \phi\mu C}}$ or $\sqrt{\frac{Kto}{39.2 \ \phi\mu C}}$			
Based on gross sand:	74 ft.	38	147	ft.
Based on net sand:	45 ft.	49	190	ft.
Potentiometric Surface	Pot = (EL-GD)+(2.319Ps)	363	338	ft.
Barrier Distance	$-Ei\frac{(-3793 \ ra^2 \ \phi\mu C)}{KT} = 2.303 \ Log \ \frac{T+\Theta a}{\Theta a}$	N/A	N/A	ft.

Where -ra = distance to anomaly in feet
T = flow time in hours
Θa = shut-in-time at intercept point of two slopes describing anomaly, hours.

00027

DELHI INTERNATIONAL OIL CORPORATION

WELL BIG LAKE №4

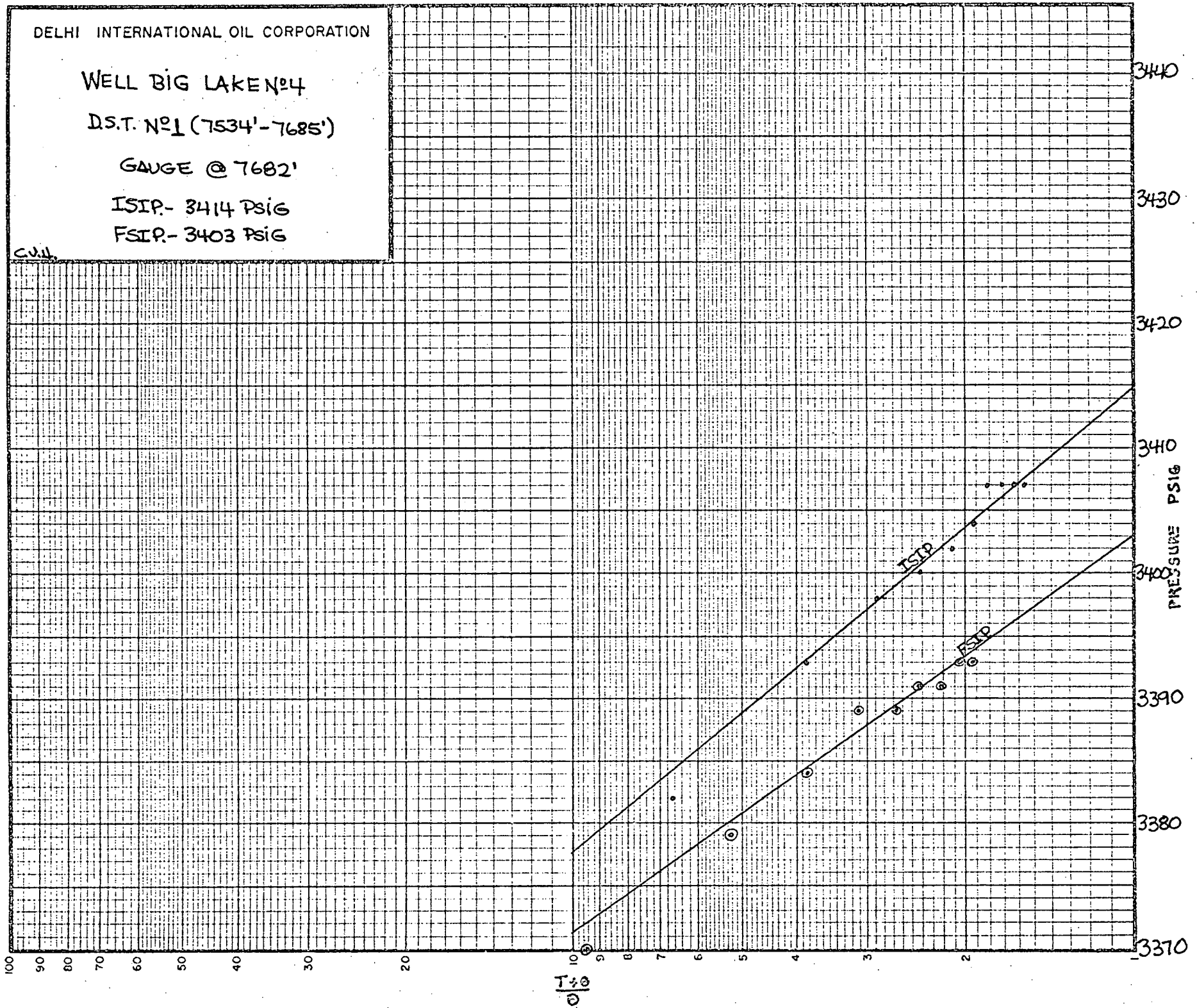
D.S.T. №1 (7534'-7685')

GAUGE @ 7682'

ISIP.- 3414 PSIG

FSIP.- 3403 PSIG

C.V.H.



BIG LAKE

D.S.T. EVALUATION (GAS)

Date August 2, 1972 Well No ...4..... D.S.T. No ...2.....

Interval Tested 7685 - 7840 Recorder Depth: Top ..7667. ft.
Bottom ..7837.. ft.

Recorder Used: ~~Top~~/Bottom

COMMENTS:

Valid D.S.T. Unstabilised second flow period. Calculations have been done and are as follows:

DATA:

Elevation (EL)		..128.	ft.
Surface Pressure (P)	(1)	.2380.	psia
	(2)	.2040.	psia
Choke Sizes	(1)	.1/4..	in.
	(2)	.7/16.	in.
Gas Gravity (G)		0.756.	
Compressibility Factor (z)		0.8959	
Slopes (m)	Initial	524.000.	psi^2/cycle
	Final	443.600.	psi^2/cycle
Well bore Radius (rw)		0.354.	ft.
Gas Compressibility (C)		0.000290.	psi^{-1}
Surface Temperature (Ts)		..560.	^oR
Choke Factor (Fp)	(1)	1.143.	
	(2)	3.672.	

Final Flow Pressure (Pf)	Initial	3227..	psig
	Final	3078..	psig
Extrapolated Static Pressure (Ps)			
	Initial	3444..	psig
	Final	3445..	psig
Flow Time (t)		0.0118	days
Total Flow Time (to)		0.0535	days
Gas Viscosity (μ)		0.0204	cps
Temperature (T)		706	^{o}R
Porosity (Ø)		13	%

PRODUCT	EQUATION	INITIAL	FINAL	UNIT
Flow Rate	$Q_g = \frac{Fp \times P}{\sqrt{G \times Ts}} \times 24$	.3280..	.9034.	MCFD
Transmissability	$\frac{Kh}{\mu} = \frac{1637 \times Q_g z T}{m}$	.6481..	21086.	md-ft/ cps.
Theoretical Flow Capacity	$Kh = \frac{Kh}{\mu} \times \mu$	..132..	..430.	md-ft
Average Effective Permeability	$K = \frac{Kh}{h}$			
Based on gross sand of: 95 ft.		...1.39	..4.53	md
Based on net sand of: 70 ft.		...1.89	..6.14	md
Indicated Flow Capacity $(Kh_2) = \frac{3200\ Q_g \mu z T\ Log(0.472^b/rw)}{Ps^2 - Pf^2}$		...147.	..335.	md-ft
Damage Ratio	$\frac{\text{Theoretical Flow Cap}}{\text{Indicated Flow Cap}}$	0.9**	1.2	-

** Not real value

PRODUCT	EQUATION	INITIAL	FINAL	UNIT
Indicated Absolute Open Flow Rate				
Max.	$OF_1 = \frac{Q_g \ Ps^2}{Ps^2 - Pf^2}$	26886	44860	MCFD
Min.	$OF_2 = \frac{Q_g \ Ps}{\sqrt{Ps^2 - Pf^2}}$	9414	20209	MCFD
Theoretical Absolute Open Flow Potential Rate				
Max.	$OF_3 = OF_1 \times DR$	26886	53832	MCFD
Min.	$OF_4 = OF_2 \times DR$	9414	24251	MCFD
Approx. Radius of Investigation	$b = \sqrt{\frac{Kt}{39.2 \ \phi \mu C}}$ or $\sqrt{\frac{Kto}{39.2 \ \phi \mu C}}$			
Based on gross sand:	95 ft.	24	90	ft.
Based on net sand:	70 ft.	28	104	ft.
Potentiometric Surface	Pot = (EL-GD)+(2.319Ps)	278	280	ft.
Barrier Distance	$-Ei\frac{(-3793 \ ra^2 \ \phi \mu C)}{KT} = 2.303 \ Log \ \frac{T+\Theta a}{\Theta a}$	N/A	N/A	ft.

Where -ra = distance to anomaly in feet
T = flow time in hours
Θa = shut-in-time at intercept point of two slopes describing anomaly, hours.

00031

DELHI INTERNATIONAL OIL CORPORATION

WELL BIG LAKE Nº4

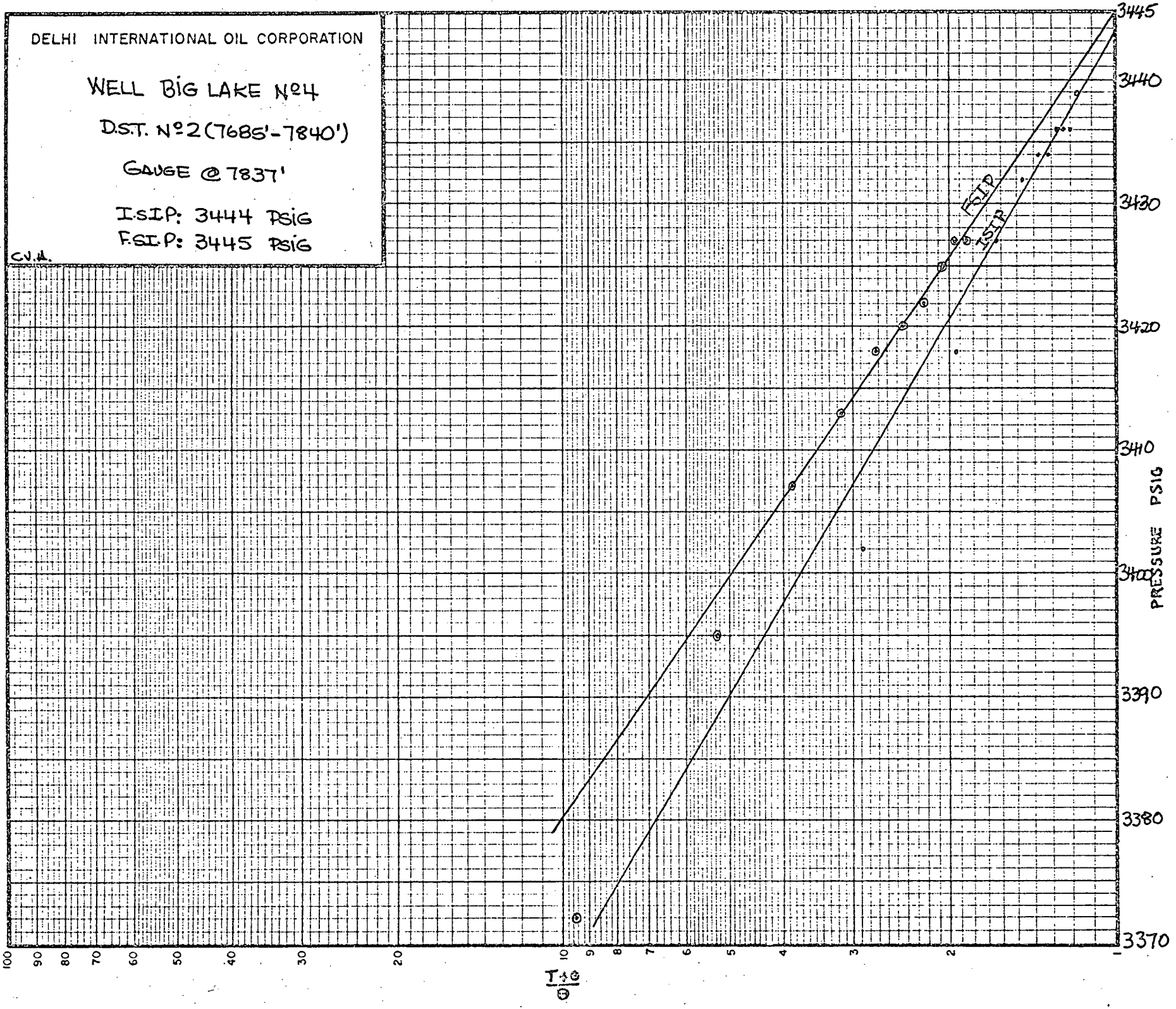
D.S.T. Nº2 (7685'-7840')

GAUGE @ 7837'

I.S.I.P: 3444 PSIG

F.S.I.P: 3445 PSIG

C.V.A.



BIG LAKE

D.S.T. EVALUATION (GAS)

Date August 8, 1972. Well No ...4..... D.S.T. No ...3.....

Interval Tested 9003 - 9200.. Recorder Depth: Top ..8980. ft.
Bottom ..9197.. ft.

Recorder Used: ~~Top~~/Bottom

COMMENTS:

Charts indicated very tight formation. Gas Faro 466 MCFD in last flow period stabilized. Recovered 740 feet of gas cut drilling mud. Calculations have not been done due to insufficient closure in the pressures build-up.

DATA:

Elevation (EL)		..128.	ft.
Surface Pressure (P)	(1)	.....	psia
	(2)	.....	psia
Choke Sizes	(1)	.1/4...	in.
	(2)	.7/16..	in.
Gas Gravity (G)		.....	
Compressibility Factor (z)		.....	
Slopes (m)	Initial	.....	psi^2/cycle
	Final	.....	psi^2/cycle
Well bore Radius (rw)		.0.354	ft.
Gas Compressibility (C)		.....	psi^{-1}
Surface Temperature (Ts)		.....	^oR
Choke Factor (Fp)	(1)	.1.143	
	(2)	.3.672	
Final Flow Pressure	(1)	466	psig
	(2)	475	psig
Temperature (T)		736	^oR

00033

DELHI INTERNATIONAL OIL CORPORATION

WELL BIG LAKE Nº4

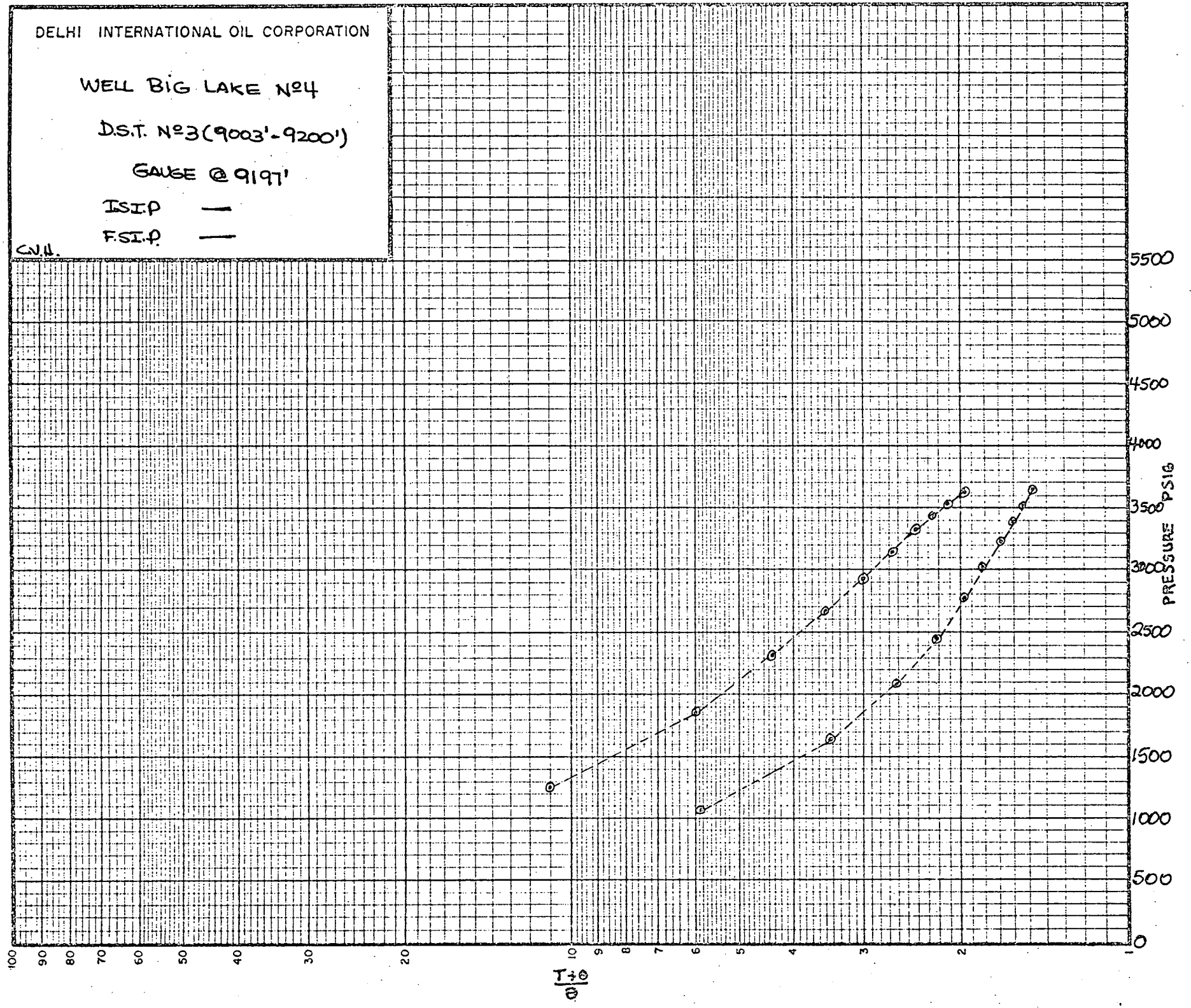
D.S.T. Nº3 (9003'-9200')

GAUGE @ 9197'

ISI.P —

FSI.P —

C.N.L.



BIG LAKE

D.S.T. EVALUATION (GAS)

Date August 14, 1972 Well No 4 D.S.T. No 4

Interval Tested 9765 - 9905 Recorder Depth: Top 9742 ft.
Bottom 9902 ft.

Recorder Used: ~~Top~~/Bottom

COMMENTS:

Charts indicated very tight formation. Calculations have been done. Recovered 700 feet of slightly gas cut mud.

DATA:

Elevation (EL)		128	ft.
Surface Pressure (P)	(1)	140	psia
	(2)	125	psia
Choke Sizes	(1)	1/4	in.
	(2)	7/16	in.
Gas Gravity (G)		0.756	
Compressibility Factor (z)		0.997	
Slopes (m)	Initial	22,000,000.	psi^2/cycle
	Final	17,622,000.	psi^2/cycle
Well bore Radius (rw)		0.354.	ft.
Gas Compressibility (C)		0.000213.	psi^{-1}
Surface Temperature (Ts)		580.	^oR
Choke Factor (Fp)	(1)	1.143.	
	(2)	3.672.	

Final Flow Pressure (Pf)	Initial	..425. psig
	Final	..397. psig
Extrapolated Static Pressure (Ps)		
	Initial	.4740. psig
	Final	.4650. psig
Flow Time (t)		0.0215. days
Total Flow Time (to)		0.0632. days
Gas Viscosity (μ)		0.0204. cps
Temperature (T)		..755. ^{o}R
Porosity ($\emptyset$)		...12. %

PRODUCT	EQUATION	INITIAL	FINAL	UNIT
Flow Rate	$Q_g = \frac{Fp \times P}{\sqrt{G \times Ts}} \times 24$	...183..	..525..	MCFD
Transmissability	$\frac{Kh}{\mu} = \frac{1637 \times Q_g zT}{m}$	....11..	...37..	md-ft/ cps.
Theoretical Flow Capacity	$Kh = \frac{Kh}{\mu} \times \mu$	...0.22	..0.75	md-ft
Average Effective Permeability	$K = \frac{Kh}{h}$			
Based on gross sand of: 65 ft.		0.0034	0.0115	md
Based on net sand of: 39 ft.		0.0056	0.0192	md
Indicated Flow Capacity $(Kh_2) = \frac{3200\ Q_g \mu\ zT\ Log(0.472^b/rw)}{Ps^2 - Pf^2}$		0.20...	1.2...	md-ft
Damage Ratio	$\frac{\text{Theoretical Flow Cap}}{\text{Indicated Flow Cap}}$	1.1	0.6	-

PRODUCT	EQUATION	INITIAL	FINAL	UNIT
Indicated Absolute Open Flow Rate				
	Max. $OF_1 = \frac{Qg \ Ps^2}{Ps^2 - Pf^2}$	184.	529.	MCFD
	Min. $OF_2 = \frac{Qg \ Ps}{\sqrt{Ps^2 - Pf^2}}$	184.	527.	MCFD
Theoretical Absolute Open Flow Potential Rate				
	Max. $OF_3 = OF_1 \times DR$	202.	529.	MCFD
	Min. $OF_4 = OF_2 \times DR$	202.	527.	MCFD
Approx. Radius of Investigation	$b = \sqrt{\frac{Kt}{39.2 \ \phi \mu C}}$ or $\sqrt{\frac{Kto}{39.2 \ \phi \mu C}}$			
Based on gross sand:	65 ft.	1.9.	5.9.	ft.
Based on net sand:	39 ft.	2.4.	7.7.	ft.
Potentiometric Surface	Pot = (EL-GD)+(2.319Ps)	1218.	1009.	ft.
Barrier Distance	$-Ei\frac{(-3793 \ ra^2 \ \phi \mu C)}{KT} = 2.303 \ Log \ \frac{T+\Theta a}{\Theta a}$	N/A	N/A	ft.

Where: ra = distance to anomaly in feet
T = flow time in hours
Θa = shut-in-time at intercept point of two slopes describing anomaly, hours.

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DELHI INTERNATIONAL OIL CORPORATION

WELL BIG LAKE Nº4

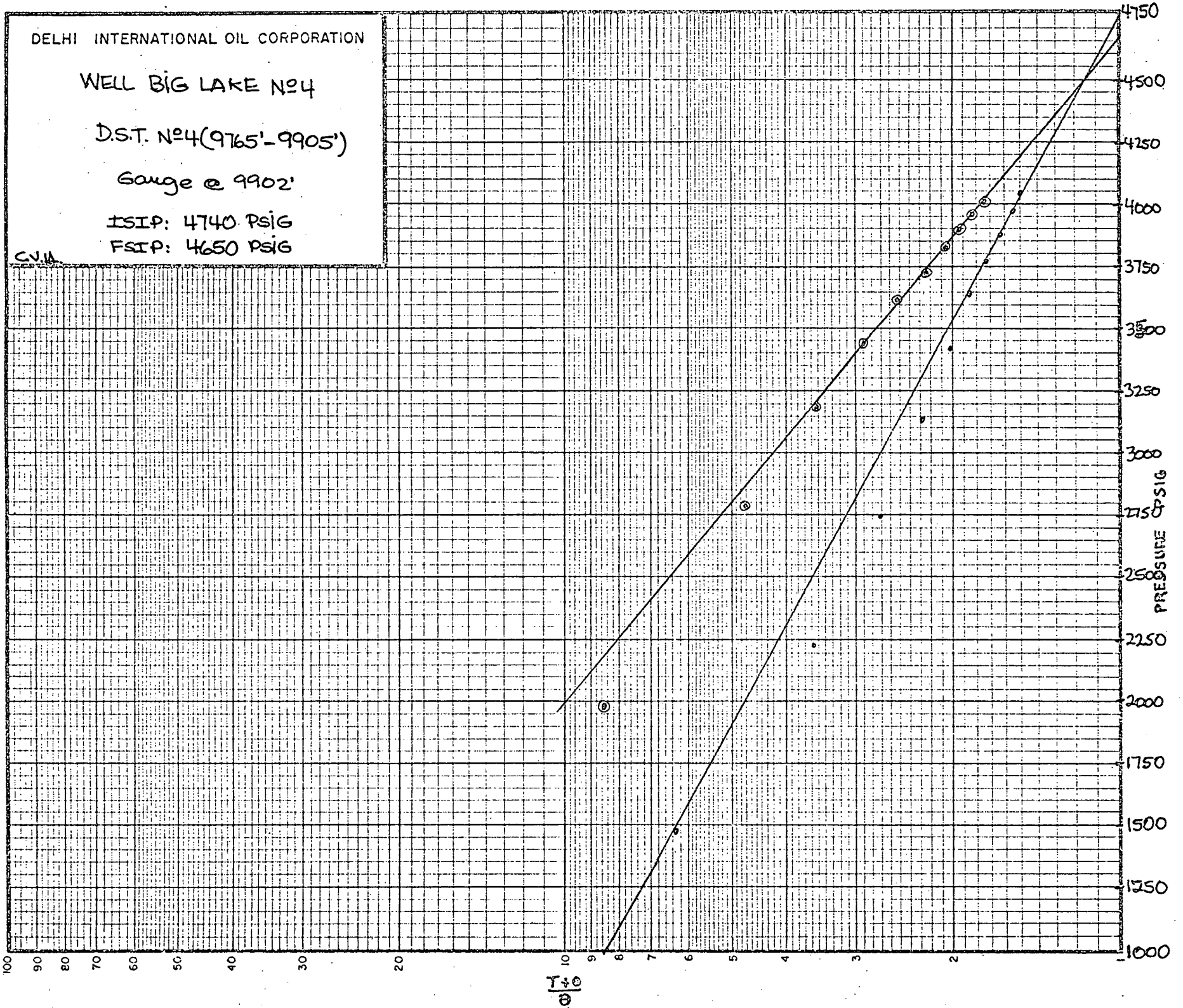
D.S.T. Nº4(9765'-9905')

Gauge @ 9902'

ISIP: 4740 PSIG

FSIP: 4650 PSIG

C.V.H.



DELHI INTERNATIONAL OIL CORPORATION

00038

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SECURITY

WELL TEST SUMMARY PAGE 1

Well: Big Lake #4 Location: Lat 28° 15' 29" S Long 140° 14' 18" E Test Date: Jan 27-30, 1973

Field: Big Lake Pool: Toolachee Tested By: Agnew

Casing Size: 7" OD Weight: 26#/ft Grade: Mxd. Producing Interval: 7586-7914

Tubing Size: 3½" OD Weight: 9.3#/ft Grade: J55 Producing Through: Tubing

Well Blown 48 hours Description of Blow: None

Gas Gravity: 0.761 Source: Calc. Mean Annual Surface Temp ____ °F

Liquid Gravity: ____ Source: ____ B.H. Temp: 282 °F Source: Max. Thermom

INITIAL SHUT-IN PERIOD Date Shut-In: Jan 25 Time: 1400 Tot. Shut-In 48 hrs.

Time of Observation			Observed Pressures				Wellhead Temp.-°F	Remarks
Date	Time	Shut-In Time Hrs.	Tubing psig	Tubing psia	Casing psig	Casing psia		
Jan 27 1973	1400	48.0	2829	2844				

FLOW PERIODS Approximate Duration of Flow Periods 2 hours

Run No. 1 Duration of Run 2 hrs. Orifice Size 1.75 Meter Run 3.068" ID

High Pressure Separator - Operating Pressure ____ psig Temp. ____ °F

Low Pressure Separator - Operating Pressure ____ psig Temp. ____ °F

Flowed well on 16/64" choke

Date	Time	Flow Time Hours	Wellhead Readings Tubing psig	Wellhead Readings Casing psig	Wellhead Readings Temp. °F	Meter or Prover Data Pf psia	Meter or Prover Data Hw Ins	Meter or Prover Data Temp. °F	Condensate Prod.-Bbls	Water Prod-Bbls
Jan 27	1430	0.5	2619		110	490	104	60		
	1500	1.0	2608		110	490	108	68		
	1530	1.5	2601		109	490	107	73		
	1600	2.0	2608		113	490	108	83	Nil	1.500

INTERMEDIATE SHUT-IN PERIOD (For use with Isochronal Type Tests)

Date	Time	Shut-In Time Hrs.	Tubing Pressure psig	Tubing Pressure psia	Casing Pressure psig	Casing Pressure psia	Wellhead Temp. °F
Jan 27	1630	0.5	2836	2851	NOT GIVEN		113
	1700	1.0	2841	2856	"	"	112
	1730	1.5	2845	2860	"	"	111
	1800	2.0	2842	2857	"	"	109

Run No. 2 Duration of Run 2 Hrs. Orifice Size 1.75 Meter Run or Prover Size 3.068

High Pressure Separator - Operating Pressure ____ psig Temp. ____ °F

Low Pressure Separator - Operating Pressure ____ psig Temp. ____ °F

Flowed well on 20/64" choke

Date	Time	Flow Time Hours	Wellhead Readings Tubing psig	Wellhead Readings Casing psig	Wellhead Readings Temp. °F	Meter or Prover Date Pf psia	Meter or Prover Date Hw Ins	Meter or Prover Date Temp. °F	Condensate Prod.-Bbls	Water Prod-Bbls
Jan 27	1830	0.5	2463		106	585	144	84		
	1900	1.0	2479		108	585	143	82		
	1930	1.5	2491		110	585	143	82		
	2000	2.0	2500		110	585	144	84	1.308	1.500

DELHI INTERNATIONAL OIL CORPORATION

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WELL TEST SUMMARY PAGE 2

For Use with Isochronal Tests

Date	Time	Shut-In Time Hrs.	Tubing Pressure		Casing Pressure		Wellhead Temp. °F
			psig	psia	psig	psia	
Jan 27	2030	0.5	2839	2854	NOT	GIVEN	104
	2100	1.0	2848	2863	"	"	99
	2130	1.5	2848	2863	"	"	98
	2200	2.0	2848	2863	"	"	94

Run No. 3 Duration of Run 2 hrs. Orifice Size 2.25" Meter Run: 3.068"
High Pressure Separator - Operating Pressure _____ psig Temp. _____ °F
Low Pressure Separator - Operating Pressure _____ psig Temp. _____ °F
Flowed Well on 24/64" choke

Date	Time	Flow Time Hours	Wellhead Readings			Meter or Prover Data			Condensate Prod-Bbls	Water Prod-Bbls
			Tubing psig	Casing psig	Temp. °F	Pf psia	Hw Ins	Temp. °F		
Jan 27	2230	0.5	2326		106	495	60	72		
	2300	1.0	2352		107	495	60	74		
	2330	1.5	2366		112	495	61	76		
	2400	2.0	2376		115	495	62	78	1.667	1.591

For Use with Isochronal Type Tests

Date	Time	Shut-In Time Hrs.	Tubing Pressure		Casing Pressure		Wellhead Temp. °F
			psig	psia	psig	psia	
Jan 28	0030	0.5	2844	2859			107
	0100	1.0	2850	2865			100
	0130	1.5	2848	2863			96
	0200	2.0	2848	2863			92

Run No. 4 Duration of Run 2 hrs. Orifice Size 2.250 Meter Run or Prover Size: 3.068
High Pressure Separator - Operating Pressure _____ psig Temp. _____ °F
Low Pressure Separator - Operating Pressure _____ psig Temp. _____ °F
Flowed well on 28/64" choke setting

Date	Time	Flow Time Hours	Wellhead Readings			Meter or Prover Data			Condensate Prod-Bbls	Water Prod-Bbls
			Tubing psig	Casing psig	Temp. °F	Pf psia	Hw Ins	Temp. °F		
Jan 28	0230	0.5	2026		110	495	124	78		
	0300	1.0	2071		116	495	126	81		
	0330	1.5	2078		120	495	129	84		
	0400	2.0	2088		124	495	130	86	1.350	2.383

For Use with Isochronal Type Tests

Date	Time	Shut-In Time Hrs.	Tubing Pressure		Casing Pressure		Wellhead Temp. °F
			psig	psia	psig	psia	
Jan 28	0430	0.5	2847	2862			114
	0500	1.0	2852	2867			106
	0530	1.5	2853	2868			100
	0600	2.0	2852	2867			100

Remarks : _____

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DELHI INTERNATIONAL OIL CORPORATION

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WELL TEST SUMMARY PAGE 3

FINAL STABILIZATION FLOW PERIOD

Run No. 5 Duration of Run 24.25 Hrs. Orifice Size 2.25 Meter Run 3.068" ID
Flowed well on 24/64" choke

Date	Time	Flow Time Hours	Wellhead Readings		Meter or Prover Data				Condensate Prod-Bbls/D	Water Prod - Bbls /D
			Tubing psig	Casing psig	Temp. °F	Pf psia	Hw Ins	Temp. °F		
Jan 28	0630	0.5	2366		117	495	68	72		
	0700	1.0	2381		121	495	69	78		
	0730	1.5	2386		122	495	70	84		
	0800	2.0	2395		123	495	71	90		
	0900	3.0	2406		127	495	72	100		
	1000	4.0	2416		127	495	72	103	16.4	22.0
	1100	5.0	2418		128	495	72	100		
	1200	6.0	2422		130	495	71	104		
	1300	7.0	2425		136	495	71	112		
	1400	8.0	2425		133	495	72	112		
	1500	9.0	2427		141	495	72	106	11.5	23.7
	1600	10.0	2426		144	495	72	107		
	1700	11.0	2426		143	495	72	107		
	1800	12.0	2427		153	495	72	107		
	1900	13.0	2426		149	495	72	107		
	2000	14.0	2428		146	495	72	104		
	2100	15.0	2428		148	495	72	103		
	2200	16.0	2425		150	495	72	102	10.1	23.0
	2300	17.0	2426		151	495	72	102		
	2400	18.0	2426		149	495	72	101		
Jan 29	0100	19.0	2427		145	495	72	100		
	0200	20.0	2427		144	495	72	99	11.2	22.4
	0300	21.0	2427		146	495	72	100		
	0400	22.0	2428		148	495	72	99		
	0500	23.0	2428		148	495	72	99		
	0600	24.0	2427		NOT GIVEN				11.4	21.5
	0615	24.25	SHUT-IN FOR PRESSURE BUILD-UP OBSERVATIONS.							

DELHI INTERNATIONAL OIL CORPORATION

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WELL TEST SUMMARY PAGE 4

FINAL BUILD-UP PERIOD

For use with Isochronal Type Tests

Date	Time	Shut-In Time Hrs.	Tubing Pressure		Casing Pressure		Wellhead Temp. °F
			psig	psia	psig	psia	
Jan 29	0630	0.25	2852	2867			143
	0645	0.50	2858	2873			133
	0700	0.75	2860	2875			130
		NO FURTHER SURFACE OBSERVATIONS MADE.					

PD 28

WELL TEST SUMMARY PAGE 5

CALCULATION SHEET

CASE 1: FLOW THROUGH METER RUN

Run No.	HW(in wtr)	Pf (psia)	Size Orifice Plate (inches)	F_t °F	b	$\frac{Hw}{Pf}$
1	108	490	1.750	83	.0524	.220
2	144	585	1.750	84	.0524	.246
3	62	495	2.250	78	.0706	.125
4	130	495	2.250	86	.0706	.263
5	72	495	2.250	99	.0706	.145

CASE 2: FLOW THROUGH METER RUN 3.068" I.D.

Run No.	F_b	F_g	F_{tf}	F_{pv}	F_{pb}	F_{tb}
1	663.42	1.1463	0.9786	1.0331	1.0068	1.0000
2	663.42	"	0.9777	1.0398	"	"
3	1223.2	"	0.9831	1.0347	"	"
4	1223.2	"	0.9759	1.0328	"	"
5	1223.2	"	0.9645	1.0298	"	"

FLOW THROUGH METER RUN (Continued)

Run No.	F_r	Y	C'	$\overline{H_w P_f}$	Q MCF/Hour	Q MCFD
1	1.0002	.9973	771.956	230.043	177.583	4262
2	1.0002	.9972	776.135	290.241	225.266	5406
3	1.0004	.9983	1433.590	175.186	251.145	6027
4	1.0003	.9963	1417.689	253.673	359.630	8631
5	1.0004	.9980	1399.463	188.786	264.198	6341

BACK PRESSURE TEST - SUMMARY SHEET

00043

Lat 28° 15' 29" S
Well: Big Lake #4 Location: Long 140° 14' 18"E Field: Big Lake
Pool: Toolachee Tested by: Agnew Calculated by: DG
Casing Size: 6.276" I.D. Tubing Size: 2.992 I.D. Produced Through: Tubing
Perforations: 7586 - 7914 Length of Flow String: 7527'
Properties of Well Effluent. Spec. Gravity _____ Pc _____ Tc _____
H_2S N/A p.p.m.

A. FLOW TEST DATA

Run No.	Tubing psia	Casing psia	Calculated Sandface Press. psia	Gas Flow Rate MMCFD	Condensate Prod- Bbl/d	Total Flow Rate MMCFD	Water Prod. Bbl/d
1	2623		Measured	4.262	Nil	4.262	18.0
2	2515		"	5.406	15.7	5.420	18.0
3	2391		"	6.027	20.0	6.045	19.1
4	2103		"	8.631	16.2	8.646	28.6
5	2442		"	6.341	11.4	6.351	21.5

B. BOMB MEASURED PRESSURES Datum from KB 7700'

Flow Rate No.	Date	Time	Depth	Corr. Press. @ Run Depth - psia	Corr. Press. @ Datum - psia	Remarks
1	Jan 27	1600	7500	3210.48	3223.06	
2	"	2000	"	3085.72	3098.30	
3	"	2400	"	2960.67	2973.25	
4	Jan 28	0400	"	2692.36	2704.94	
5	Jan 29	0615	"	2954.90	2967.48	

C. SHUT-IN DATA

Shut-In No.	Pressure - psia		Shut-In Time-Hrs.	Shut-In No.	Pressure - psia		Shut-In Time-hrs
	Wellhead	Sandface			Wellhead	Sandface	
Initial	2844	3460.91	48				
1	2857	3465.42	2				
2	2863	3461.41	2				
3	2863	3455.91	2				
4	2867	3448.90	2				

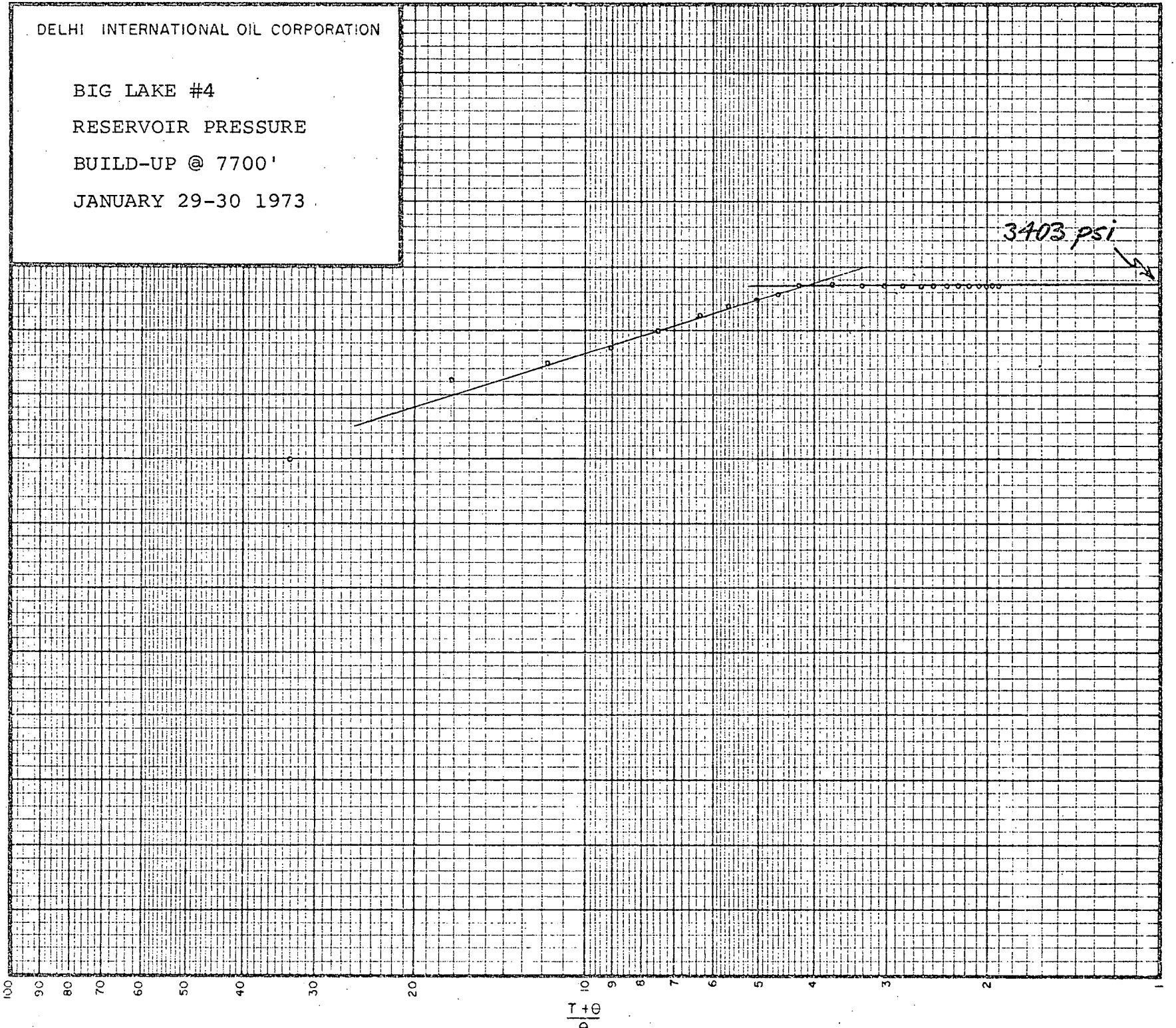
D. PLOTTING DATA

P_f	$P_f^2 \times 10^3$	P_s	$P_s^2 \times 10^3$	$P_f^2 - P_s^2 \times 10^3$	Q Total-MMCFD
3460.91	11.978	3223.06	10.388	1590	4.262
3465.42	12.009	3098.30	9.599	2410	5.420
3461.41	11.981	2973.25	8.840	3141	6.045
3455.91	11.943	2704.94	7.317	4626	8.646
3448.90	11.895	2967.48	8.806	3089	6.351

A.O.F. 16.7 MMCFD, n 0.72654

Total Volume of Gas Produced During Test 8.30 MMCF/CONDENSATE 17.6 Bbls.

Remarks: TWO STAGE SEPARATION UTILIZED, BUT LOW PRESSURE FLOW RATES WERE BELOW METERING SENSITIVITY.


DELHI INTERNATIONAL OIL CORPORATION
BIG LAKE #4
RESERVOIR PRESSURE
BUILD-UP @ 7700'
JANUARY 29-30 1973
3403 psi
3420
3410
3400
3390
3380
3370
3360
3350
PRESSURE PSIG
100
90
80
70
60
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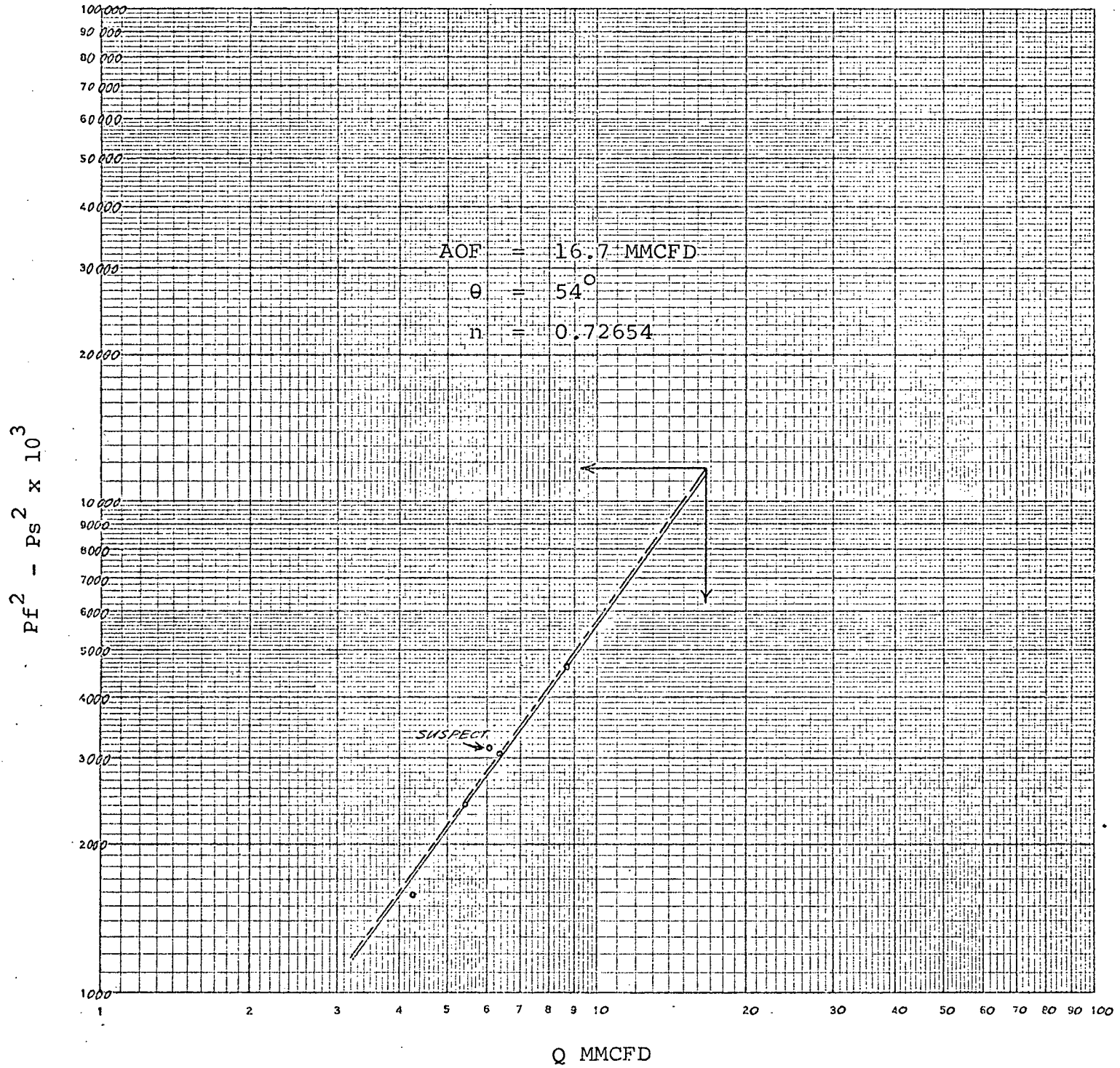
BIG LAKE #4

OPEN FLOW POTENTIAL TEST

JANUARY 27-30 1973



amdel
The Australian Mineral Development Laboratories
Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

00046

Please address all correspondence to the Director
In reply quote: AN3/51/0 - 3301/73

PART REPORT 1

NATA CERTIFICATE

27 February 1973

Mr H.J. Hannah
Production Manager
Delhi International Oil Corporation
GPO Box 2364
ADELAIDE SA 5001

REPORT AN 3301/73

YOUR REFERENCE:	Purchase Order A 19337
LOCATION:	Big Lake 4
IDENTIFICATION:	As listed
DATE RECEIVED:	7/2/73

Enquiries quoting AN 3301/73 to Officer in Charge please

Officer in Charge, Analytical Section: A.B. Timms

for F.R. Hartley
Director

pkm

AMDEL

AN 3301/73

Well tested:	Big Lake No. 4 Ex 27
Date tested:	29/1/73 0330 hrs
Type of test:	-
Type of sample:	High pressure gas
Source of sample:	-
Field sampling conditions:	Press. 480 psi Temp. 99°F
Reference:	Purchase Order A19337

RESULTS OF ANALYSIS

Oxygen plus argon	<0.02 % mol vol
Nitrogen	0.20
Hydrogen	-
Helium	-
Carbon dioxide	16.5
Methane	76.6
Ethane	4.89
Propane	1.21
i Butane	0.122
n Butane	0.200
i Pentane	0.055
n Pentane	0.052
Hexanes	0.048
Heptanes	0.060
Octanes and higher hydrocarbons	0.063
Calculated Gas Density (relative air = 1)	0.761 ✓

REMARKS:

AN 3301/73

Well tested:	Big Lake No. 4 Ex 34
Date tested:	19/1/73 0245 hrs
Type of test:	-
Type of sample:	High pressure gas
Source of sample:	-
Field sampling conditions:	Press. 480 psi Temp. 100 °F
Reference:	Purchase Order A19337

RESULTS OF ANALYSIS

Oxygen plus argon	<0.02 % mol vol
Nitrogen	0.22
Hydrogen	-
Helium	-
Carbon dioxide	15.9
Methane	77.1
Ethane	4.88
Propane	1.18
i Butane	0.145
n Butane	0.230
i Pentane	0.075
n Pentane	0.064
Hexanes	0.055
Heptanes	0.063
Octanes and higher hydrocarbons	0.088
Calculated Gas Density (relative air = 1)	0.758

REMARKS:

AN 3301/73

Well tested:	Big Lake No. 4 PD 53
Date tested:	29/1/73 0330 hrs'
Type of test:	-
Type of sample:	Low pressure separator gas
Source of sample:	-
Field sampling conditions:	Press. 6 psig Temp. 92°F
Reference:	Purchase Order A 19337

RESULTS OF ANALYSIS

Oxygen plus argon	<0.02 % mol vol
Nitrogen	0.05
Hydrogen	-
Helium	-
Carbon dioxide	32.3
Methane	41.3
Ethane	11.1
Propane	6.85
i Butane	1.33
n Butane	2.54
i Pentane	0.980
n Pentane	0.925
Hexanes	0.830
Heptanes	0.935
Octanes and higher hydrocarbons	0.860
Calculated Gas Density (relative air = 1)	1.156

REMARKS:

Well tested:	Big Lake No. 4 PD 64
Date tested:	29/1/72 0300 hrs
Type of test:	-
Type of sample:	Low Pressure separator gas
Source of sample:	-
Field sampling conditions:	Press. 6 psig Temp. 92°F
Reference:	Purchase Order A 19337

RESULTS OF ANALYSIS

Oxygen plus argon	<0.02 % mol vol
Nitrogen	0.05
Hydrogen	-
Helium	-
Carbon dioxide	32.3
Methane	40.8
Ethane	11.1
Propane	6.80
i Butane	1.38
n Butane	2.58
i Pentane	1.01
n Pentane	0.97
Hexanes	0.90
Heptanes	1.04
Octanes and higher hydrocarbons	1.07
Calculated Gas Density (relative air = 1)	1.169

REMARKS:

Well tested:	Big Lake No. 4 Ex 31
Date tested:	29/1/73 0245 hrs
Type of test:	-
Type of sample:	Low pressure condensate
Source of sample:	-
Field sampling conditions:	Press. 6 psig Temp. 93°F
Reference:	Purchase Order A19337

RESULTS OF ANALYSIS

The sample was released to air pressure and temperature by displacement with saturated brine solution to yield gas and liquid. The relative volume of each was measured, both fractions were then analysed chromatographically and the results combined mathematically to give an analysis of the sample as submitted.

The sample yielded oil and gas in the ratio of 410 millilitres oil and 0.05 litres of gas at 27 °C and 765.2 mm pressure.

Flash Gas Analysis

Hydrogen	1.20	
Nitrogen	14.2	% mol vol
Carbon dioxide	8.90	
Methane	44.6	
Ethane	13.0	
Propane	8.50	
i Butane	1.76	
n Butane	3.10	
i Pentane	1.23	
n Pentane	1.07	
Hexanes	1.00	
Heptanes	0.87	
Octanes and higher hydrocarbons	0.57	

Calculated Composition of Sample as Received

Hydrogen	<0.002	
Nitrogen	0.002	% by Weight
Carbon dioxide	0.002	
Methane	0.005	
Ethane	0.002	
Propane	0.066	
Butanes	0.54	
Pentanes	1.03	
Hexanes	1.78	
Benzene	0.96	
Heptanes	4.64	
Toluene	6.72	
Octanes	10.4	
Xylenes plus ethyl benzene	11.42	
Nonanes	8.53	
C_9 aromatics	7.05	
Decanes plus C_{10} aromatics	10.16	
Undecanes plus aromatics	6.83	
Dodecanes plus aromatics	6.45	
Tridecanes plus aromatics	6.41	
Tetradecanes plus aromatics	4.85	
Pentadecanes plus aromatics	2.87	
Hexadecanes plus aromatics	2.55	
Heptadecanes and higher hydrocarbons	6.93	

Specific Gravity of C_{17} + (from A.S.T.M. Distillation)

= To follow when oil received.

REMARKS:

Well tested:	Big Lake No 4 PD 74
Date tested:	29/1/73 0230 hrs
Type of test:	-
Type of sample:	Low pressure condensate
Source of sample:	-
Field sampling conditions:	Press. 6 psig Temp. 94°F
Reference:	Purchase Order A19337

RESULTS OF ANALYSIS

The sample was released to air pressure and temperature by displacement with saturated brine solution to yield gas and liquid. The relative volume of each was measured, both fractions were then analysed chromatographically and the results combined mathematically to give an analysis of the sample as submitted.

The sample yielded oil and gas in the ratio of 411 millilitres oil and 0.05 litres of gas at 27 °C and 765.2 mm pressure.

Flash Gas Analysis

Nitrogen	4.00	% mol vol
Carbon dioxide	33.5	
Methane	35.2	
Ethane	11.2	
Propane	6.80	
i Butane	1.58	
n Butane	2.80	
i Pentane	1.06	
n Pentane	0.95	
Hexanes	0.88	
Heptanes	1.00	
Octanes and higher hydrocarbons	1.03	

AN 3301/73

Calculated Composition of Sample as Received

Nitrogen	0.001	% by Weight
Carbon dioxide	0.01	
Methane	0.003	
Ethane	0.002	
Propane	0.20	
Butanes	0.69	
Pentanes	1.12	
Hexanes	1.95	
Benzene	1.05	
Heptanes	4.79	
Toluene	7.00	
Octanes	10.43	
Xylenes plus ethyl benzene	11.72	
Nonanes	8.66	
C_9 aromatics	6.84	
Decanes plus C_{10} aromatics	10.22	
Undecanes plus aromatics	6.90	
Dodecanes plus aromatics	6.06	
Tridecanes plus aromatics	6.03	
Tetradecanes plus aromatics	4.49	
Pentadecanes plus aromatics	2.97	
Hexadecanes plus aromatics	2.04	
Heptadecanes and higher hydrocarbons	6.83	

Specific Gravity of C_{17} + (from A.S.T.M. Distillation)

= To follow when oil received.

REMARKS:

1973 APR 30 AM 10:25

00055

amdel
The Australian Mineral Development Laboratories

Flemington Street, Frewville, South Australia 5063
Phone 79 1662, telex AA82520

Please address all correspondence to the Director
In reply quote: AN3/51/0 - 3301/73

REPORT COMPLETE

NATA CERTIFICATE

27 April 1973

The Production Manager
Delhi International Oil Corporation
GPO Box 2364
ADELAIDE SA 5001

REPORT AN 3301/73

YOUR REFERENCE:	Purchase Order A19337
LOCATION:	Big Lake 4
MATERIAL:	Condensate and water
IDENTIFICATION:	As listed
DATE RECEIVED:	7/2/73

Enquiries quoting AN 3301/73 to Officer in Charge please

Officer in Charge, Analytical Section: A.B. Timms

for F.R. Hartley
Director

pkm

RECEIVED
1973

Well tested:	Big Lake 4
Date tested:	29/1/73
Type of test:	-
Type of sample:	Condensate
Source of sample:	Stock tank
Field sampling conditions	-
Reference:	Purchase Order No. A19337

RESULTS OF ANALYSIS

Kinematic Viscosity	1.049	centistokes/second at 37.8°C (100°F)
Specific Gravity at 15.6°C (60°F)	0.818	
A.P.I. Gravity at 15.6°C (60°F)	41.5	

A.S.T.M. Distillation

Initial Boiling Point	74	°C
10% recovery	111	
20	127	
30	136	
40	146	
50	163	
60	180	
70	204	
80	236	
90	280	
94.0	300	

Weight distillate	75.9	grams
Weight residue	5.10	grams
Loss	1.35	grams
Recovery	98.3	%
Residue after distillation Specific Gravity at 15.6°C (60°F)	0.83	
Pour Point	< -5	°C
Flash Point	8	°C
Aniline Point	30	°C
Sulphur (X.R.F.)	0.012	% by weight

00057

WATER ANALYSIS REPORT

SAMPLE NO. JOB NO. 3301/73

CHEMICAL COMPOSITION

		Milligrams per litre mg/l	Milliequivalents per litre me/l
Cations			
Calcium	(Ca)	20	1.0
Magnesium	(Mg)	12	1.0
Sodium	(Na)	2400	104.4
Potassium	(K)	29	0.7
Iron	(Fe)	4	0.1
Anions			
Carbonate	(CO_3)		
Bicarbonate	(HCO_3)	225	3.7
Sulphate	(SO_4)	240	5.2
Chloride	(Cl)	3420	96.4
Fluoride	(F)		
Nitrate	(NO_3)		
Phosphate	(PO_4)		

TOTALS and BALANCE

Cations me/l	Anion me/l
107.2	105.3

diff Δ 1.9 sum Σ 212.5 % ($\frac{\Delta \times 100}{\Sigma}$) 0.9

DERIVED AND OTHER DATA

Conductivity (E.C.) μS/cm at 25°C 10,700

	Milligrams per litre mg/l
Total Dissolved Solids:	
a. Based on E.C.	
b. Calculated (HCO_3=CO_3)	6236
c. Residue on evaporation at 180°C	
Total Hardness as $CaCO_3$	105
Carbonate Hardness as $CaCO_3$	105
Non-carbonate Hardness as $CaCO_3$	<5
Total Alkalinity as $CaCO_3$	180
Free Carbon Dioxide (CO_2)	
Suspended Solids	
Silica (SiO_2)	
Boron (B)	

	Units
Reaction—pH	6.5
Turbidity (Jackson)	
Colour (Hazen)	
~~Sodium Absorption Ratio~~ SODIUM/TOTAL CATION RATIO	97.4

Name ..... Hundred ..... Supply BIG LAKE 4 STOCK TANK

..... Section ..... Depth Hole .....

Address ..... Hole No. ..... Date Collected 29.1.73

..... Water Cut ..... Sample Collected by .....

..... Water Level ..... Date Received .....

REMARKS:

for Director

Env. 2007

00058

PRESSURE BUILD UP SURVEY

BIG LAKE #4

Date: September 26-29, 1977

Depth Tested: 7747' KB

Lubricator Pressure:

In Amerada = 1337 psig (9219 KPA)
Deadweight = 1358 psig (9363 KPA)

Out Amerada = 2158 psig (14877 KPA)
Deadweight = 2143 psig (14775 KPA)

SHUT IN TIME HRS.	PSIG	KPA	REMARKS
-3.1	2105.9	14520	Flow
ø	2105.9	14520	S.W.I. 2100 Hrs 26/9/77
1	2496.6	17214	
2	2504.8	17270	
3	2507.5	17289	
4	2513.0	17327	
5	2513.0	17327	
6	2515.7	17346	
7	2518.5	17365	
8	2521.2	17384	
9	2521.2	17384	
10	2523.9	17402	
20	2532.1	17459	
40	2543.1	17535	
60	2551.3	17591	
64.5	2554.0	17610	POH 1330 Hrs 29/9/77

STATIC PRESSURE GRADIENT

WELL BIG LAKE 4

TEST DATE 29th SEPTEMBER 1977

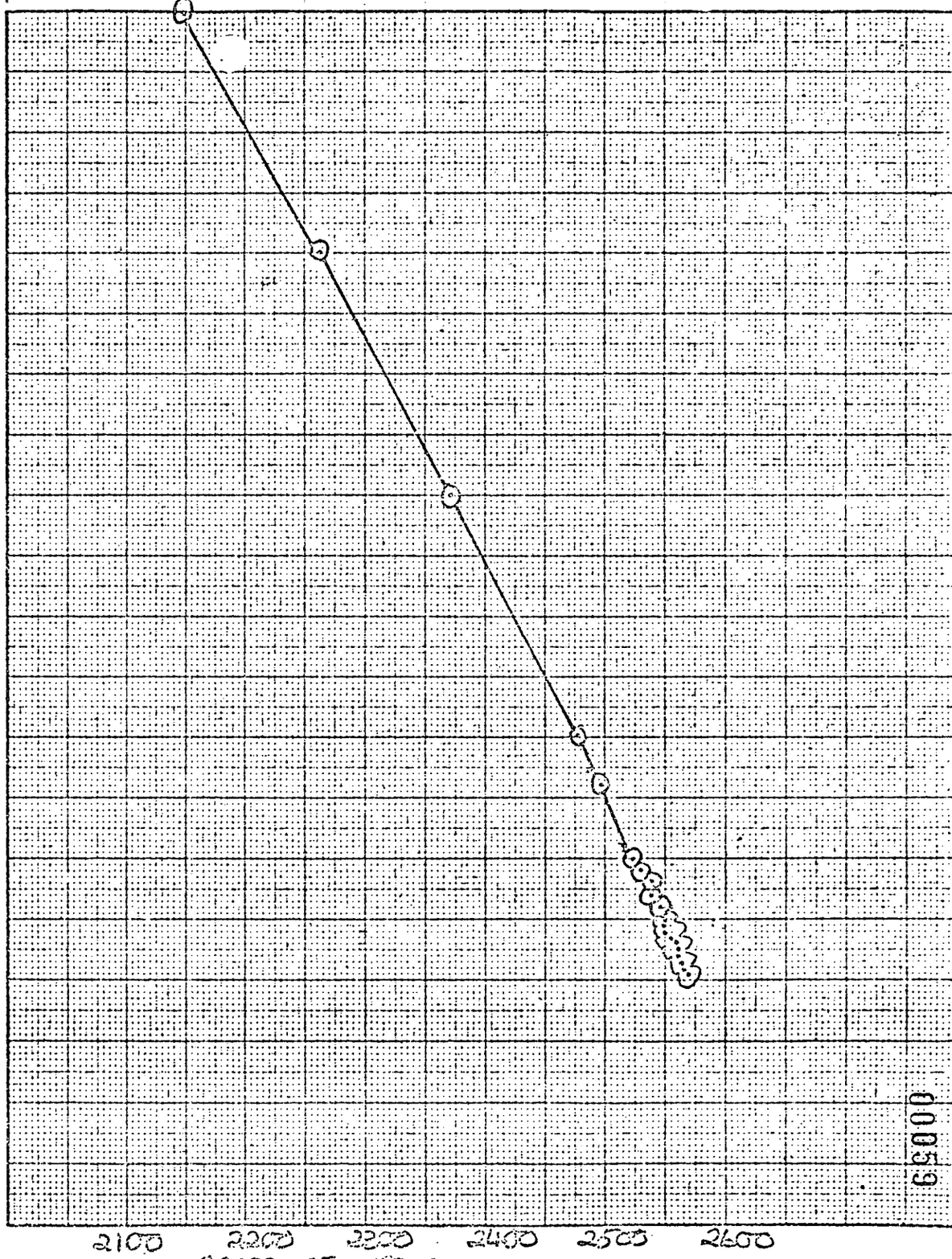
DEPTH (FEET)	PRESSURE (PSIG)	GRADIENT PSI IFT
LUBRICATOR	2146·8	—
2000	2261.5	0·0574
4000	2370·9	0·0547
6000	2477·5	0·0533
6387	2496·6	0·0494
6974	2523·9	0.0465
7074	2529·4	0·0550
7174	2537·6	0·0820
7274	2537·6	0·0000
7374	2545·8	0·0820
7474	2548·5	0·0000
7524	2548·5	0·0000
7574	2551·3	0·0560
7624	2554·0	0·0540
7674	2556·8	0·0560
7724	2559·5	0·0540
7774	2559·5	0·0000
7824	2562.2	0·0540
7874	2565·0	0·0560
7924	2570·4	0·1080

DEAD WEIGHT

PRESSURE = 2143 PSIG

= 14779 kPa

DEPTH (METRES)	PRESSURE kPa	GRADIENT kPa/M
LUBRICATOR	14806	—
609·6	15597	1·2976
1219·2	16351	1·2369
1828·8	17086	1·2057
1946·8	17218	1·1186
2125·7	17406	1·0509
2156·2	17444	1·2459
2186·6	17501	1·8750
2217·1	17501	0·0000
2247·6	17578	2·6246
2278·1	17578	0·0000
2293·3	17578	0·0000
2308·6	17595	4·6405
2323·8	17614	1·2500
2339·0	17633	1·2500
2354·3	17652	1·2418
2369·5	17652	0·0000
2384·8	17670	1·1765
2400·0	17690	1·3158
2415·2	17727	2·4342



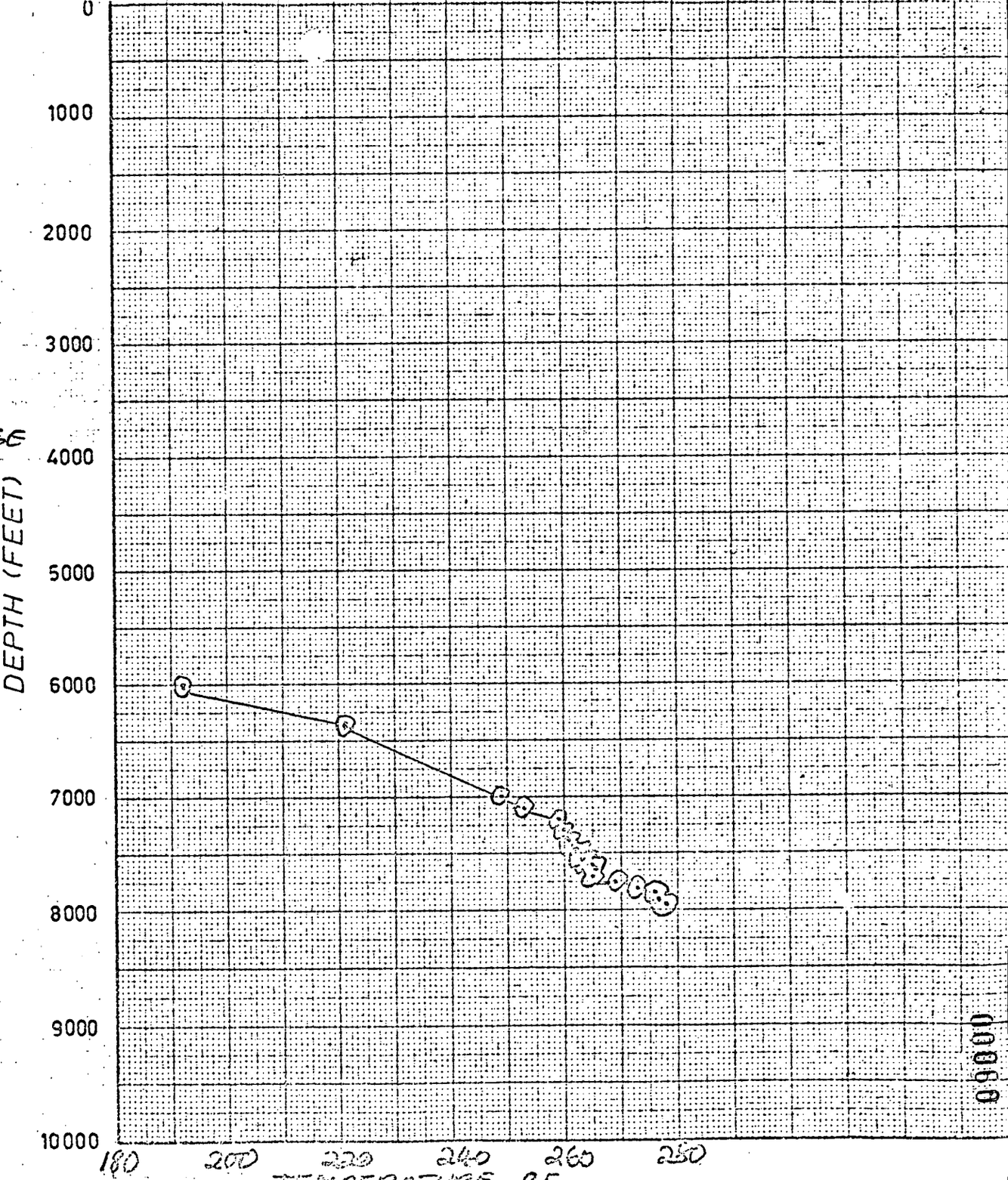
STATIC TEMPERATURE GRADIENT

WELL BIG LAKE 4

TEST DATE 29th SEPTEMBER 1977

DEPTH (FEET)	TEMP °F	GRADIENT /FT
LUBRICATOR	BELOW	RANGE
2000	BELOW	RANGE
4000	BELOW	RANGE
6000	187.0	
6387	221.4	
6974	249.3	
7074	253.3	
7174	258.6	
7274	259.6	
7374	260.9	
7474	262.2	
7524	263.4	
7574	264.5	
7624	265.4	
7674	265.4	
7724	268.5	
7724	272.9	
7824	275.6	
7874	276.4	
7924	277.8	

DEPTH (METRES)	TEMP °C	GRADIENT /M
LUBRICATOR	BELOW	RANGE
609.6	BELOW	RANGE
1219.2	BELOW	RANGE
1828.8	86.1	
1946.8	105.2	
2125.7	120.7	
2156.2	123.0	
2186.6	125.9	
2217.1	126.5	
2247.6	127.2	
2278.1	127.9	
2293.3	128.6	
2308.6	129.2	
2323.8	129.7	
2339.0	129.7	
2354.3	131.4	
2369.5	133.8	
2384.8	135.3	
2400.0	135.8	
2415.2	136.6	



WELL : Big Lake # 4 — Pf = 3600 Kpa

ORIFICE SIZE : 34.925 mm 1.375 " — T = 21 °C

LINE SIZE : 87.325 mm 3.438 " — Diff = 0.2 Kpa

Cumulative Production to end of August = 1251.962 $m^3 \times 10^6$

Number of hours online in August = 691 hours

Production in August = 0.567 $m^3 \times 10^6$

∴ Average flow rate in August $= (0.567 / 691) \times 24 = 0.020$ $m^3 \times 10^6/d$

Number of days online in August before Shut In 0700 hrs 30/8/86 = 28.792 = 691 hrs. Well remained shut in from 0700 30/8/86 to after midnight 31/8/86

∴ Production upto 0700hrs 30/8/86 = August cumulative production,

⇒ Total cumulative Production

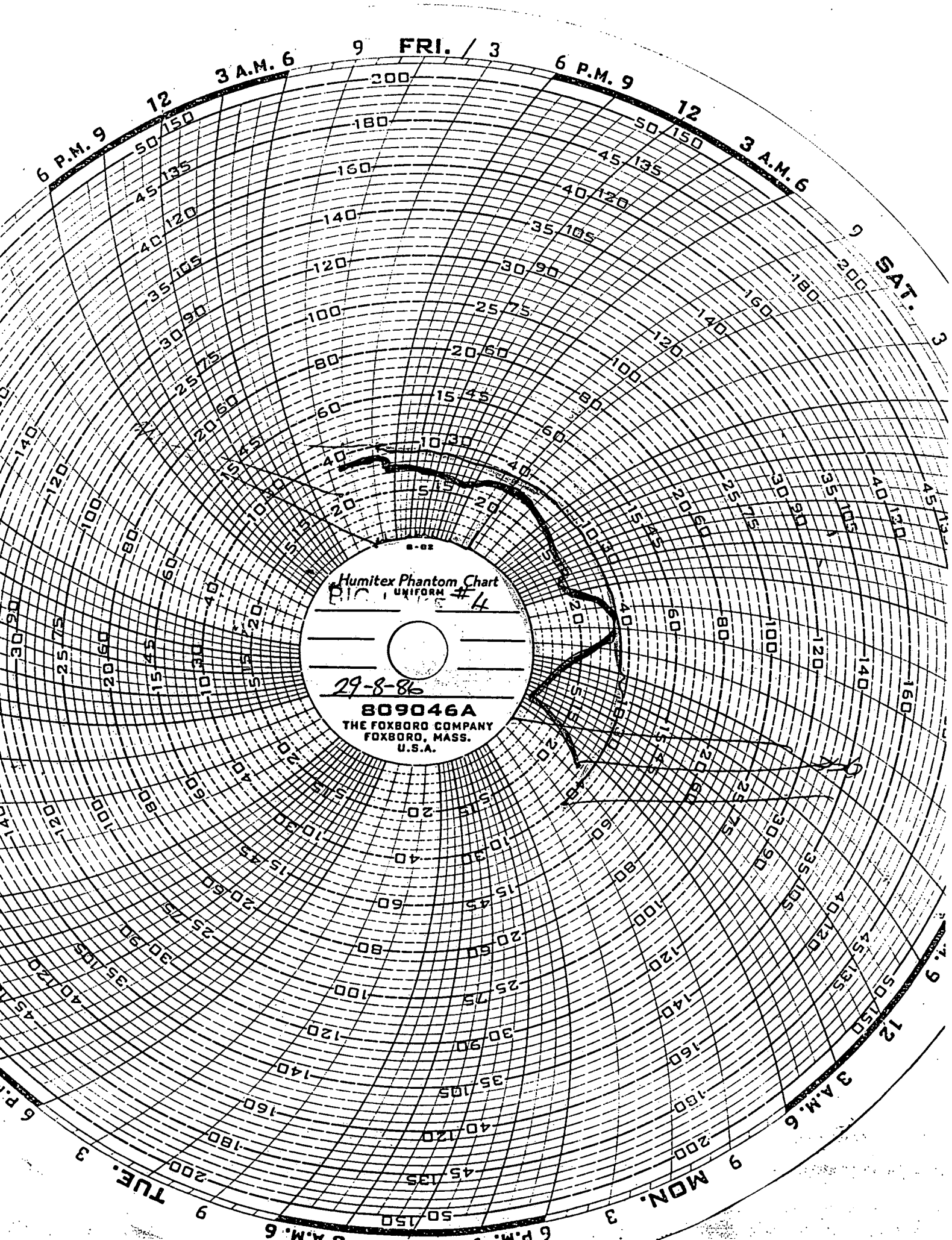
= 1251.962 $m^3 \times 10^6$

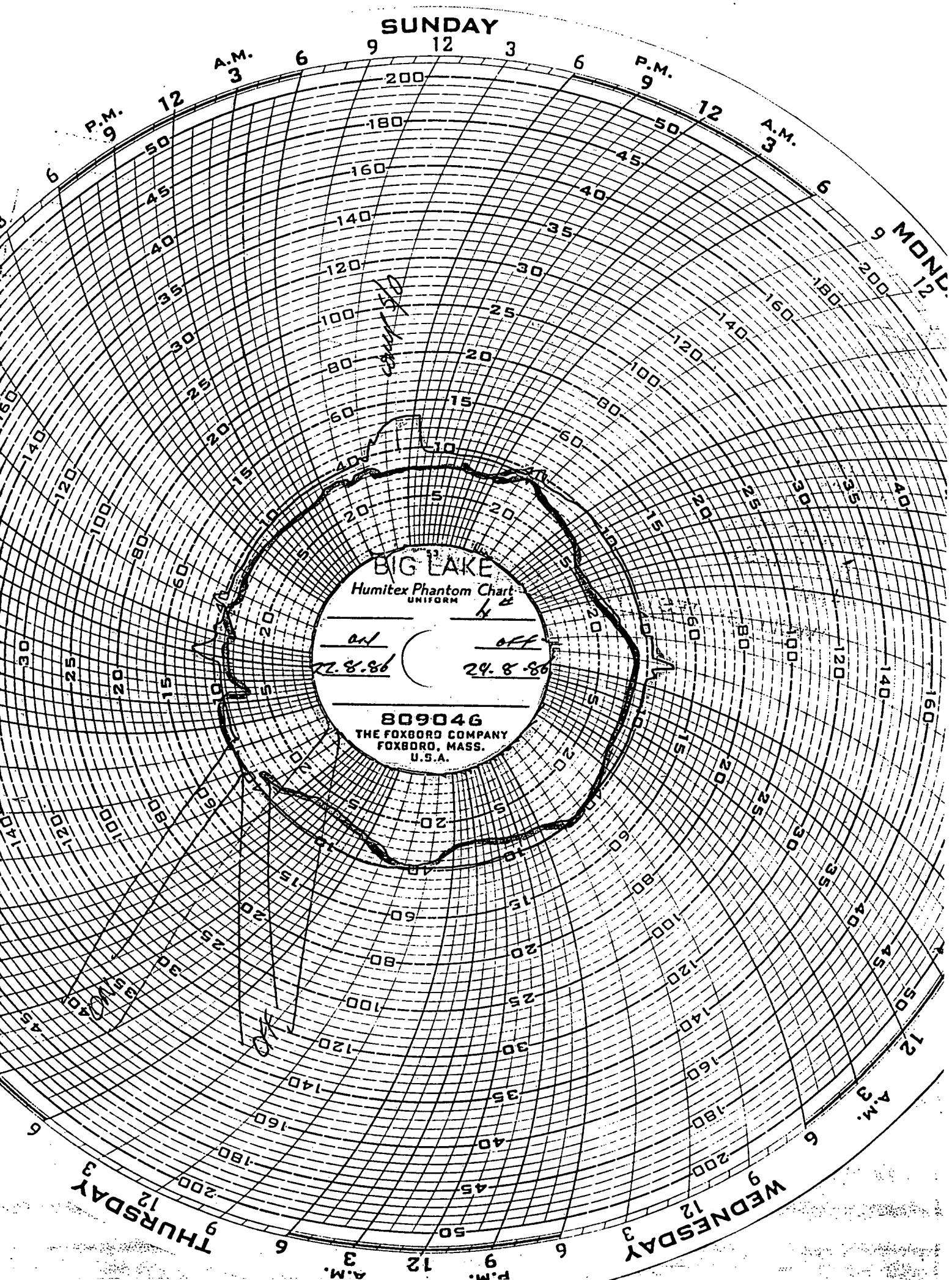
= 44437.139 mmSCF

Flow Rate just prior to Shut In = 0.007 $m^3 \times 10^6/d$

* = 0.231 mmSCF/d

* N.B. Accuracy of flow rate is questionable due to difficulty in obtaining confident differential pressure reading from attached charts.


FRI.
SAT.
SUN.
MON.
TUE.
3 A.M.
6 P.M.
12
9
3
6
Humitex Phantom Chart
UNIFORM
#4
29-8-86
809046A
THE FOXBORO COMPANY
FOXBORO, MASS.
U.S.A.


SUNDAY
MONDAY
TUESDAY
WEDNESDAY
THURSDAY
A.M.
P.M.
BIG LAKE
Humitex Phantom Chart
UNIFORM
on
22.8.86
off
24.8.86
809046
THE FOXBORO COMPANY
FOXBORO, MASS.
U.S.A.

ADDRESS

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 01 FIELD BIG LAKE		WELL 04	
EFF DEPTH		WELL STAT		TOOL RUNG	7486'
CASING 7"	-	CASING PRESS		ON BOTTOM	1630 30/9
LINER	-	TUBING PRESS		OFF BOTTOM	0830 4/9
DATE	860630	ELEMENT RANGE	0 - 3110	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	0730 30/9
MAX TEMP		PICK-UP		ON-PROD	
PERF	7386'-7514'	CAL SER NO.	28515	MPP	7750'
TUBING 2-7/8"	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP		

SURVEY DATA

CO. SANTOS RUN 01 FIELD BIG LAKE WELL 04

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
16:30	1516.7	0.0	0.0	7:22	1545.1	28.3	14.9
17:20	1515.3	-1.4	.8	7:25	1542.5	25.8	14.9
18:56	1526.6	9.9	2.4	7:31	1539.7	22.9	15.0
19:56	1533.7	17.0	3.4	7:40	1541.1	24.4	15.2
20:34	1533.4	16.6	4.1	7:47	1545.0	28.2	15.3
21:11	1523.1	6.3	4.7	8:02	1549.5	32.8	15.5
22:58	1525.0	8.3	6.5	8:53	1551.4	34.7	16.4
23:37	1523.1	6.4	7.1	10:19	1548.1	31.4	17.8
1:28	1531.3	14.6	9.0	11:14	1539.2	22.4	18.7
3:41	1530.1	13.3	11.2	12:59	1534.9	18.2	20.5
4:44	1527.0	10.3	12.2	15:41	1538.3	21.6	23.2
5:07	1534.3	17.5	12.6	21:10	1539.0	22.3	28.7
5:25	1541.0	24.2	12.9	6:04	1541.3	24.6	37.6
5:43	1535.5	18.8	13.2	18:16	1541.3	24.6	49.8
6:29	1536.7	19.9	14.0	8:09	1542.5	25.8	63.7
7:11	1536.3	19.5	14.7	0:33	1543.2	26.4	80.1
SWI 7:17	1536.2	19.5	14.8	15:52	1544.9	28.2	95.4
7:19	1539.0	22.3	14.8	8:30	1543.7	27.0	112.0
7:20	1543.0	26.3	14.8	0:00	0.0	0.0	0.0

LUB IN DWT = 537 PSI / OUT = 1205 PSI
LUB IN AMERADA = 525 PSI / OUT = 1222 PSI

[illegible]
[illegible]
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO.	SANTOS	RUN 02 FIELD	BIG LAKE	WELL	04
EFF DEPTH		WELL STAT		TOOL HUNG	7494'
CASING 7"	-	CASING PRESS		ON BOTTOM	1630 30/8
LINER	-	TUBING PRESS		OFF BOTTOM	0830 4/9
DATE	860830	ELEMENT RANGE	0 - 3100	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	0700 30/8
MAX TEMP		PICK-UP		ON-PROD	
PERF	7586'-7914'	CAL SER NO.	56429	MPP	7750'
TUBING 2-7/8"	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP		

SURVEY DATA

CO. SANTOS RUN 02 FIELD BIG LAKE WELL 04

	TIME	P-T	DP-DT	DTIME		TIME	P-T	DP-DT	DTIME
	16:30	1528.0	0.0	0.0		7:15	1559.6	31.6	14.7
	17:22	1526.9	-1.2	.9		7:18	1558.1	30.0	14.8
	18:45	1536.3	8.3	2.2		7:22	1556.5	28.4	14.9
	19:55	1546.3	18.3	3.4		7:27	1555.2	27.2	14.9
	20:29	1547.1	19.1	4.0		7:37	1559.6	31.6	15.1
	21:10	1537.2	9.2	4.7		7:51	1562.9	34.9	15.4
	23:35	1537.5	9.5	7.1		8:11	1565.8	37.8	15.7
	23:56	1542.6	14.6	7.4		8:54	1567.4	39.4	16.4
	0:43	1542.3	14.3	8.2		10:28	1562.3	34.3	18.0
	2:29	1543.7	15.6	10.0		12:02	1552.8	24.8	19.5
	4:31	1540.7	12.7	12.0		15:08	1555.7	27.7	22.6
	4:39	1540.2	12.2	12.1		21:17	1555.3	27.3	28.8
	4:53	1548.0	20.0	12.4		3:17	1556.9	28.9	34.8
	5:14	1554.8	26.8	12.7		11:47	1558.8	30.8	43.3
	5:34	1552.6	24.6	13.1		20:19	1559.3	31.3	51.8
	6:17	1551.8	23.8	13.8		5:38	1559.1	31.1	61.1
SWI	7:09	1551.3	23.3	14.6		19:19	1560.3	32.3	74.8
	7:11	1553.6	25.6	14.7		9:37	1561.2	33.1	89.1
	7:12	1556.2	28.2	14.7		22:26	1560.5	32.4	101.9
	7:13	1558.4	30.4	14.7		8:30	1560.4	32.4	112.0

LUB IN DWT = 537 PSI / OUT = 1205 PSI
LUB IN AMERADA = 532 PSI / OUT = 1221 PSI

SANTOS LTD.

00066

ISO - CHRONAL AND BUILD-UP SURVEY

Well: BIG LAKE # 4 Date: 30/8/86

Lubricator Data: ① 525 1222
② 532 1221

Pressure with D.W.T. 537 PSI OUT = 1205 psi

Time Pressured 1400 HRS Time Depressured 10:45

Time Run in Hole 1600 HRS Time off Bottom 0830

	Bomb No. 1 Data	Bomb No. 2 Data
Element No. and Range	28515 × 3000 PSI	56429 × 3000 PSI
Recorder No.	13027 × 15 TAS	14628 × 15 TAS
Clock and Lead Screw Data	F - 15307	F - 15293
Engage Stylus	Date: 30/8/86 Time: 13:48	Date: 30/8/86 Time: 13:48
Disengage	Date: 4/9/86 Time: 10:56	Date: 4/9/86 Time: 10:56

Remarks: RAN TEMP. ELEMENT ELE# 29216 149 / 351 °F.

Max. S.I.B.H. Temperature = 282.4°F

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead P.S.I.G.	Casing P.S.I.G.	Wellhead Temp.	Remarks
30/8/86	1400		WITH	WELL	FLOWING	PRESSURE LUBRICATOR
	1500		534	10	79	
	1600		537	10	77	RUN IN HOLE
	1630		535	10	77	HANGING AT 7500 KB.
	2030		538	10	71	
31/8/86	0030		538	10	68	
	0430		541	10	66	
	0700	WELL SHUT IN				
		IMPORTANT				
		AT THE WELL WAS SHUT IN BY A SANTOS				
		FIELD OPERATOR BEFOR I HAD ARRIVED O/N				
		LOCATION THERFOR THE INITIAL SURFACE				
		DATA OF THE BUILD UP HAS NOT BEEN TAKEN.				
4/9	0830	P.O.O.H.				

BUILD UP DATA

00067

WELL: ....BIG..LAKE..#..4.....

OPERATOR: ..DAVID..KAY.....

SANTOS

SANTOS LTD
WELL TEST DATA
METRIC SUMMARY SHEET

DATE: ...31./..8./..86.....

PAGE No: ..ONE.....

DATE / TIME	WELLHEAD						FLUID PRODUCTION				GAS PRODUCTION			
	CASING PSI	CASING KPA	TUBING PSI	TUBING KPA	TEMP °F	TEMP °C	FLOWRATE OIL-COND BBL'S/D	FLOWRATE OIL-COND M^3/D	FLOWRATE H20 BBL'S/D	FLOWRATE H20 M^3/D	MMSCF/D	Mm3/D	G.O.R. Cu/FT BBL	G.O.R. M^3/M^3
0830	9	62	635	4378										
0845	9	62	649	4474										
0900	9	62	654	4509										
0915	9	62	663	4571										
0930	9	62	670	4619										
0945	9	62	676	4661										
1000	9	62	681	4695										
1015	9	62	685	4723										
1030	9	62	686	4729										
1045	9	62	685	4723										
1100	9	62	683	4709										
1115	9	62	683	4709										

CONVERSION FACTORS:

- •BBL'S x 0·15899 = M^3
- •MMSCF x 28·174 = $10^3 M^3$
- •Cu/FT PER BBL x 0·1773 = M^3/M^3
- •PSI x 6·895 = KPA
- •°C x 9 ÷ 5 + 32 = °F

00068

WELL: ....BIG LAKE # 4.....

OPERATOR: ...DAVID KAY.....

SANTOS LTD
WELL TEST DATA
METRIC SUMMARY SHEET

DATE: ...31/8/86.....

PAGE No: TWO.....

DATE / TIME	WELLHEAD						FLUID PRODUCTION				GAS PRODUCTION			
	CASING PSI	CASING KPA	TUBING PSI	TUBING KPA	TEMP °F	TEMP °C	FLOWRATE OIL-COND BBL'S/D	FLOWRATE OIL-COND M3/D	FLOWRATE H20 BBL'S/D	FLOWRATE H20 M3/D	MMSCF/D	Mm3/D	G.O.R. Cu/FT BBL	G.O.R. M3/M3
1130	9	62	683	4709										
1145	9	62	683	4709										
1200	9	62	682	4702										
1215	9	62	682	4702										
1230	9	62	682	4702										
1630	9	62	706	4867										
2030	8	55	724	4991										
0030	8	55	743	5122										
0430		N/A												
0830	8	55	794	5474										
1230	8	55	821	5660										
1630	8	55	841	5798										

CONVERSION FACTORS:

- •BBL'S x 0·15899 = M^3
- •MMSCF x 28·174 = $10^3 M^3$
- •Cu/FT PER BBL x 0·1773 = M^3/M^3
- •PSI x 6·895 = KPA
- •°C x 9 ÷ 5 + 32 = °F

00069

WELL: ...BIG LAKE #4.....

OPERATOR: ..DAVID KAY.....

SANTOS LTD
WELL TEST DATA
METRIC SUMMARY SHEET

DATE: ....4/9/86.....

PAGE No: ..THREE.....

DATE / TIME	WELLHEAD						FLUID PRODUCTION				GAS PRODUCTION			
	CASING PSI	CASING KPA	TUBING PSI	TUBING KPA	TEMP °F	TEMP °C	FLOWRATE OIL-COND BBL'S/D	FLOWRATE OIL-COND M^3/D	FLOWRATE H20 BBL'S/D	FLOWRATE H20 M^3/D	MMSCF/D	Mm^3/D	G.O.R. Cu/FT BBL	G.O.R. M^3/M^3
2030	6	41	863	5950										
		2ND/9/86.												
0030	6	41	885	6102										
0430	6	41	907	6253										
0830	6	41	930	6419										
1230	6	41	954	6577										
1630	6	41	978	6743										
2030	6	41	1001	6901										
		3RD/9/86												
0030	7	48	1022	7046										
0430	7	48	1044	7198										
0830	5	34	1059	7301										

CONVERSION FACTORS:

- BBL'S x 0·15899 = M^3
- MMSCF x 28·174 = $10^3 M^3$
- Cu/FT PER BBL x 0·1773 = M^3/M^3
- PSI x 6·895 = KPA
- °C x 9 ÷ 5 + 32 = °F

00070

WELL: ..... BIG LAKE #4 .....

OPERATOR: .. DAVID KAY .....

SANTOS

SANTOS LTD
WELL TEST DATA
METRIC SUMMARY SHEET

DATE: ..... 4TH/9/86 .....

PAGE No: .. FOUR .....

DATE / TIME	WELLHEAD						FLUID PRODUCTION				GAS PRODUCTION			
	CASING PSI	CASING KPA	TUBING PSI	TUBING KPA	TEMP °F	TEMP °C	FLOWRATE OIL-COND BBL'S/D	FLOWRATE OIL-COND M3/D	FLOWRATE H20 BBL'S/D	FLOWRATE H20 M3/D	MMSCF/D	Mm3/D	G.O.R. Cu/FT BBL	G.O.R. M3/M3
1230	4	27	1097	7563										
1630	4	27	1120	7722										
2030	4	27	1144	7887										
0030	4	27	1161	8005			4TH/9/86.							
0430	4	27	1180	8136										
0830	4	27	1205	8308										
0830			PULL AMERADAS END TEST.											

CONVERSION FACTORS: •BBL'S x 0·15899 = M^3 •MMSCF x 28·174 = $10^3 M^3$ •Cu/FT PER BBL x 0·1773 = M^3/M^3 •PSI x 6·895 = KPA •°C x 9 ÷ 5 + 32 = °F

WIRELINE REPORT

00071

WELL: BIG LAKE # 4

DATE: 6-9-86

PROGRAM: REMOVE OBSTRUCTION FROM TUBING.

PURPOSE OF WORK: TO CLEAR TUBING

REPORT OF WORK PERFORMED:

11:00 TO 12:00 RIGED UP 3 SECTIONS LUB TO FISH WIRE.
13:00 TO 13:45 RIH 2.170 LIB TO 7524' W/L, POOH (NO IMPRESSION)
13'45 TO 14:30 RIH 2.170 LIB, 7524 W/L POOH.
IMPRESSION AROUND EDGE OF LIB: MAY BE SCALE
14:30 TO 15:00 CHANGE TO 1 1/2" TOOL STRING RIH 1.75 BLIND BOX TO 7574 W/L 7588 KB POOH
15:00 TO 1530 RIGED DOWN

Kent Doue
OPERATOR'S SIGNATURE

WORK PERFORMED BY: K. DOUE OF EXPERTEST

WELL DATA:

Tubing Size: 3 1/2" FWHP: 6,700 KPA SIWHP: 6700 KPA

Sub Surface S.V./Landing Nipple @ ..... S.S.D. @: 7477'

"X" Nipple @ — "N"/"~~X~~" Nipple @ 7524' other .....

Min I.D. 2.205 " @ 7524' Packer @ 7511'

Perforated Interval: .....

Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba

G009

00072

WIRELINE REPORT

WELL: BIG LAKE # 4.

DATE: 30/8/86.

PROGRAM: B.H.P SURVEY.

PURPOSE OF WORK: TAG PBTD.

REPORT OF WORK PERFORMED: 0830 CONTINUE RIGGING UP W/L UNIT

0930 RIH WITH 1.9" WB AND
HANG UP AT 7509 WB POOH
POSSIBLEY SOME WIRE IN HOLE
POOH RUN AMERADAS FOR BHP
SURVEY.
1400. PRESSURE LWB FOR BHP SURVEY.

D.C.May
OPERATOR'S SIGNATURE

WORK PERFORMED BY: DAVID MAY OF EXPERTEST.

WELL DATA:

Tubing Size: 3½ EUE. FWHP: 540 PSI SIWHP: —

Sub Surface S.V./Landing Nipple @ ..... S.S.D. @: .....

"X" Nipple @ ..... "N"/"~~XN~~" Nipple @ 7526. other .....

Min I.D. 2.205 " @ 7526. Packer @ 7512.

Perforated Interval: 7586 - 7914.

Forward to: **Petroleum Engineering — Adelaide**
Production Department — Moomba

EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE

** BIG LAKE #4 **

STATIC PRESSURE GRADIENT

TEST DATE: 4.9.86

	TOP PRESSURE ELEMENT 28515/3000			BOTTOM PRESSURE ELEMENT 56429/3000		
DEPTH (FT.)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)
LUB	0.7890	1219.5	----	0.7900	1221.5	----
1000	0.8125	1256.0	0.0366	0.8130	1257.2	0.0357
2000	0.8355	1291.8	0.0358	0.8350	1291.4	0.0342
3000	0.8578	1326.6	0.0347	0.8580	1327.1	0.0357
4000	0.8792	1359.9	0.0333	0.8800	1361.3	0.0342
5000	0.9002	1392.6	0.0327	0.9010	1394.0	0.0326
6000	0.9200	1423.4	0.0308	0.9235	1428.9	0.0350
7000	0.9420	1457.7	0.0343	0.9450	1462.4	0.0334
7500	0.9970	1543.5	0.1715	1.0010	1549.4	0.1741
LUB	0.7950	1228.8	----	0.7940	1227.7	----

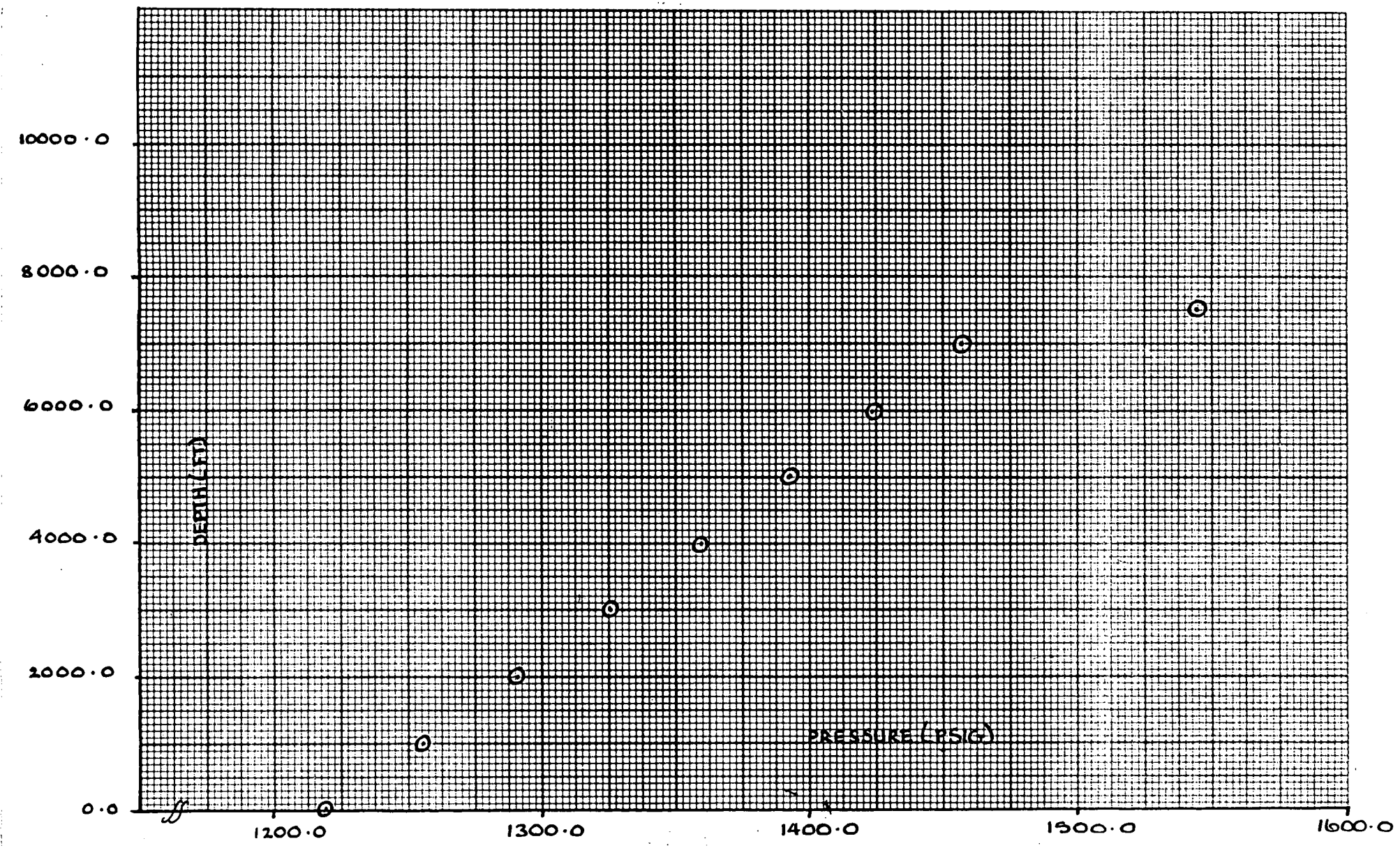
GENERAL REMARKS:
AN TEMP ELEMENT 29216

DWT IN: 1227
DWT OUT: 1229
MAX BHT: N/A 279.3°F

ELEMENT 28515/3000 CALIBRATED 24.8.86.
ELEMENT 56429/3000 CALIBRATED 24.8.86.

BIG LAKE # 4 - STATIC PRESSURE GRADIENT - 4/9/86

ELEMENT # 28515/3000 (TOP)



Fm 5030

WELL NAME: BIG LAKE # 4 STATIC GRADIENT SURVEY DATE: 4/9/86

BOMB No. 1 DATA
ELEMENT No. 28515 ELEMENT RANGE: x 3000
RECORDER No. 13027 x 15 KS CLOCK DATA: 2395 x 3 HR.
ENGAGE STYLUS: 11:09 DISENGAGE: 13:40

BOMB No. 2 DATA
ELEMENT No. 56429 ELEMENT RANGE: x 3000
RECORDER No. 14628 CLOCK DATA: 2431 x 3 HR
ENGAGE STYLUS: 11.09 DISENGAGE: 13.40

LUBRICATOR DATA
PRESSURE WITH D.W.T.: 1227 PSIG
TIME PRESSURED: 11:21
TIME DEPRESSURED: 13:33

DATE	TIME	DEPTH'	DEFLECTION	PRESSURE TEMP.	GRADIENT psi/ft	DEPTH'	DEFLECTION	PRESSURE TEMP.	GRADIENT psi/ft	REMARKS
	1121	LUB	.789	1219.5		LUB	.790	1221.5		PRESSURE LUBRICATOR
	1136	RIH				RIH.				RUN IN HOLE
	1139	1000	.812	1256.0		1000	.813	1257.2		5 MINS
	1148	2000	.835	1291.8		2000	.835	1291.4		"
	1157	3000	.857	1326.6		3000	.858	1327.1		"
	1206	4000	.879	1359.9		4000	.880	1361.3		"
	1215	5000	.9002	1392.6		5000	.901	1394.0		"
	1225	6000	.920	1423.4		6000	.923	1428.9		"
	1234	7000	.942	1457.7		7000	.945	1462.4		"
	1241	7485	.997	1543.5		7485	1.001	1549.4		15 MINS
	1256	OFF BOTT.				OFF BOTT.				OFF BOTTOM.
	1318	IN LUB	.795	1228.8		IN LUB.	.794	1227.7		"
	1333	BLEED				BLEED.				BLEED LUBRICATOR
										RAN TEMP ELEMENT
										ELE # 29216 x 149/351°

General Comments:

G010

00075

SANTOS EXPLORATION DATA BASE

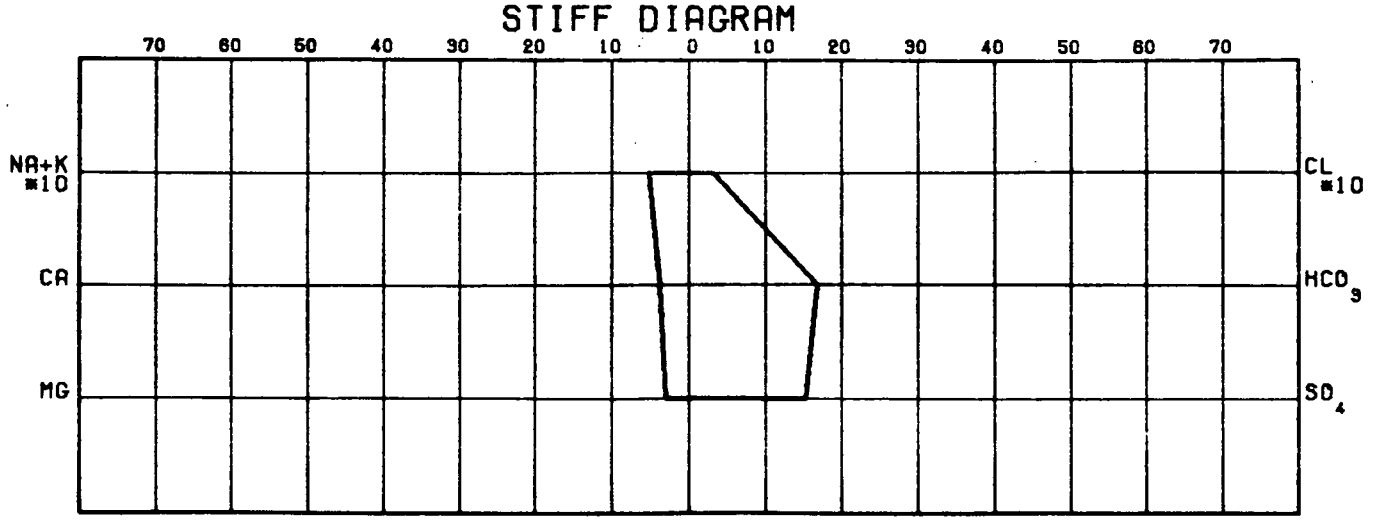
WATER ANALYSIS

WELL: BIG LAKE 4 LAB: AMDEL
TEST: DST 1 DATE: / /19
SAMPLE: .
DEPTH: 7534. - 7689. FT (KB) - FT (SUBSEA)
FORMATION: TOOLACHEE TOOLACHEE COAL
COMMENT: REC: 95' MW: RW(RIG)=1.1 @ 74 DEG F: 8.6 MMCFD: NACL EQUIV=3602 PPM: TOOLACHEE

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	1140.0	49.6	CHLORIDE	1150.0	32.4
POTASSIUM	100.0	2.6	BICARBONATE	1025.0	16.8
CALCIUM	77.0	3.8	CARBONATE		
MAGNESIUM	36.0	3.0	SULPHATE	735.0	15.3
IRON	200.0	7.2	NITRATE	0.0	0.0
			HYDROXIDE		
TOTAL CATIONS	1553.0	66.1	TOTAL ANIONS	2910.0	64.5

ION BALANCE:	1.2	%
TOTAL DISSOLVED SOLIDS:	3942.0	MG/L
MEASURED RESISTIVITY:	1.770	OHM-M AT TEMP 77. F 25. C
SODIUM TO TOTAL CATION RATIO:	75.0	%
PH:	7.5	
SODIUM CHLORIDE EQUIVALENT:	3223.	
EQUIVALENT RW AT 75 F:	1.71	

STIFF DIAGRAM



PLOTTED: 21/10/88

SANTOS EXPLORATION DATA BASE

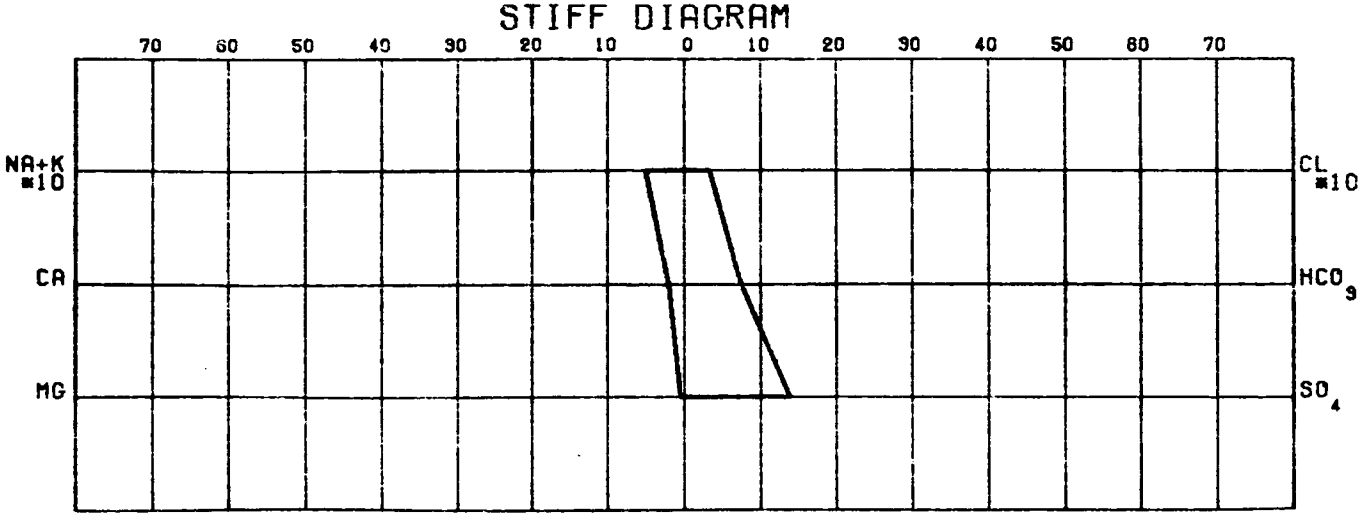
WATER ANALYSIS

WELL: BIG LAKE 4 LAB: AMDEL
TEST: DST 2 DATE: / /19
SAMPLE: .
DEPTH: 7685. - 7840. FT (KB) - FT (SUBSEA)
FORMATION: TOOLACHEE TOOLACHEE COAL DARALINGIE
COMMENT: REC: 105' W; RW(RIG)=1.1 @ 74 DEG F; 8.3 MMCFD: TOOLACHEE/DARALINGIE

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	1100.0	47.8	CHLORIDE	1195.0	33.7
POTASSIUM	100.0	2.6	BICARBONATE	455.0	7.5
CALCIUM	40.0	2.0	CARBONATE		
MAGNESIUM	6.0	0.5	SULPHATE	665.0	13.9
IRON	79.0	2.8	NITRATE	0.0	0.0
			HYDROXIDE		
TOTAL CATIONS	1325.0	55.7	TOTAL ANIONS	2315.0	55.0

ION BALANCE: 0.7 %
TOTAL DISSOLVED SOLIDS: 3409.0 MG/L
MEASURED RESISTIVITY: 1.934 OHM-M AT TEMP 77. F 25. C
SODIUM TO TOTAL CATION RATIO: 85.9 %
PH: 7.1
SODIUM CHLORIDE EQUIVALENT: 2961.
EQUIVALENT RW AT 75 F: 1.86

STIFF DIAGRAM



PLOTTED: 21/10/88

00078

SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: BIG LAKE 4 LAB: AMDEL

TEST: PROD DATE: 18/10/1984

SAMPLE: .

DEPTH: - FT (KB) - FT (SUBSEA)

FORMATION:

COMMENT: LET 16-18/10/84: G@5MMSCFD. W@93.6BPD. WGR=18.72: IMBAL DUE TO NH3: TOOL/DARAL

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	4220.0	183.5	CHLORIDE	7870.0	221.7
POTASSIUM	76.0	1.9	BICARBONATE	517.0	8.5
CALCIUM	150.0	7.5	CARBONATE		
MAGNESIUM	42.0	3.5	SULPHATE	4.4	0.1
IRON			NITRATE	4.0	0.1
			HYDROXIDE		
TOTAL CATIONS	4488.0	196.4	TOTAL ANIONS	8395.4	230.3

ION BALANCE: -8.0 %

TOTAL DISSOLVED SOLIDS: 12600.0 MG/L

MEASURED RESISTIVITY: 0.426 OHM-M AT TEMP 77. F 25. C

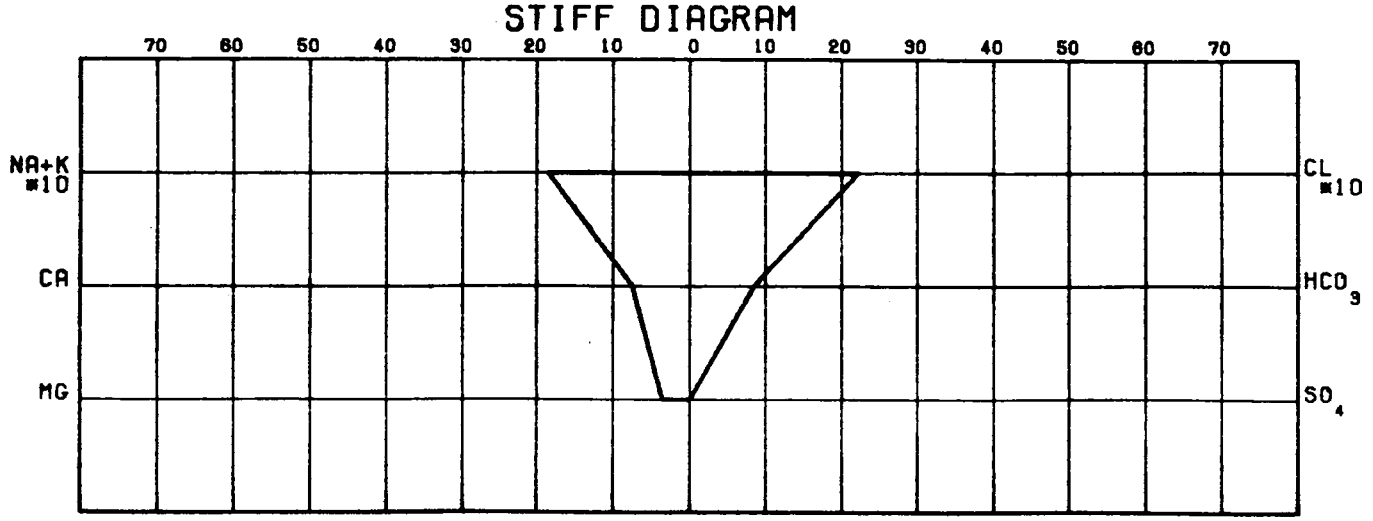
SODIUM TO TOTAL CATION RATIO: 93.4 %

PH: 6.9

SODIUM CHLORIDE EQUIVALENT: 12470.

EQUIVALENT RW AT 75 F: 0.47

STIFF DIAGRAM



PLOTTED: 21/10/84

D/F env. 2007

SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: BIG LAKE 4 LAB: AMDEL

TEST: PROD DATE: 23/02/1985

SAMPLE: .

DEPTH: - FT (KB) - FT (SUBSEA)

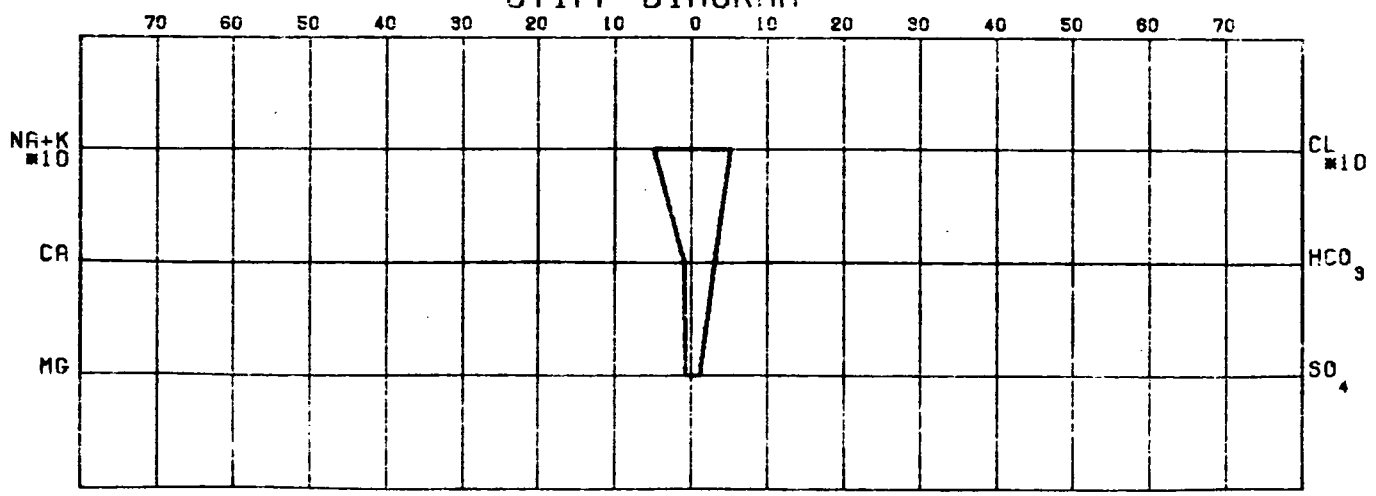
FORMATION:

COMMENT: LET 21-23/2/85: G@0.7MMSCFD, H/C@1.38PD, W@4.8BPD, WGR=6.57: NH3: TOOL/DARAL

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	1100.0	47.8	CHLORIDE	1800.0	50.7
POTASSIUM	41.0	1.0	BICARBONATE	186.0	3.0
CALCIUM	18.0	0.9	CARBONATE		
MAGNESIUM	9.4	0.8	SULPHATE	57.0	1.2
IRON			NITRATE	4.0	0.1
			HYDROXIDE		
TOTAL CATIONS	1168.4	50.5	TOTAL ANIONS	2047.0	55.0

ION BALANCE:	-4.2	%
TOTAL DISSOLVED SOLIDS:	3120.0	MG/L
MEASURED RESISTIVITY:	1.670	OHM-M AT TEMP 77. F 25. C
SODIUM TO TOTAL CATION RATIO:	94.6	%
PH:	5.7	
SODIUM CHLORIDE EQUIVALENT:	3061.	
EQUIVALENT RW AT 75 F:	1.80	

STIFF DIAGRAM



PLOTTED: 21/10/88

SANTOS EXPLORATION DATA BASE

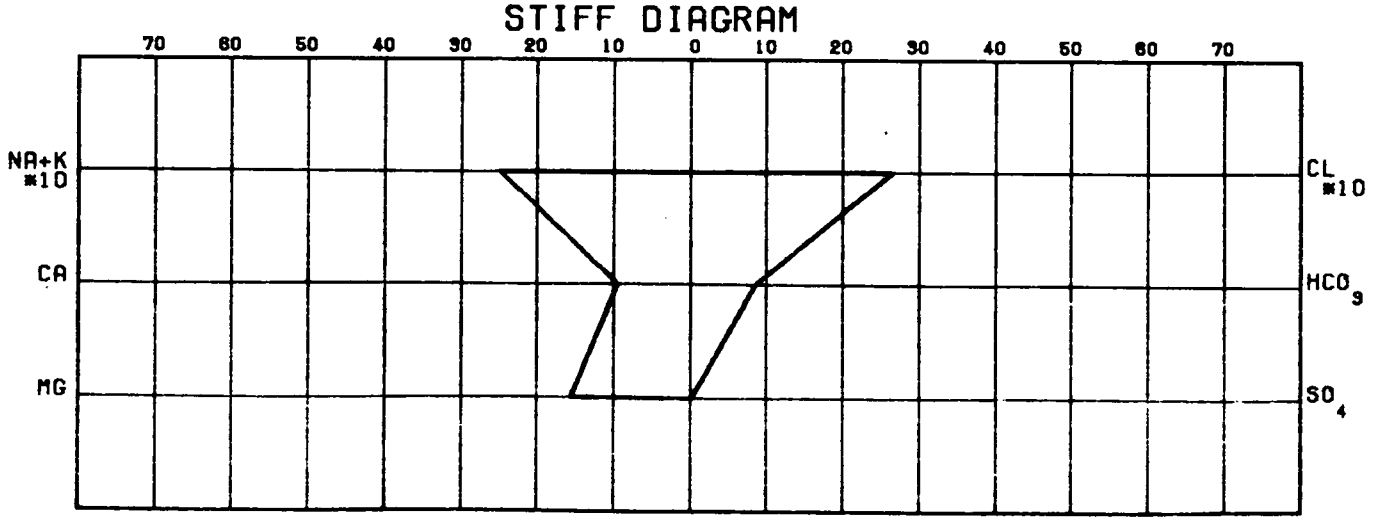
WATER ANALYSIS

WELL: BIG LAKE 4 LAB: AMDEL
TEST: PROD DATE: 27/04/1986
SAMPLE: .
DEPTH: - FT (KB) - FT (SUBSEA)
FORMATION:
COMMENT: LET 26-27/4/86: G@0.801MMSCFD. H/C@8BPD. W@32.6BPD. WGR=40.7: TOOL/DARAL

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	5700.0	247.8	CHLORIDE	9420.0	265.4
POTASSIUM	12.0	0.3	BICARBONATE	521.0	8.5
CALCIUM	190.0	9.5	CARBONATE		
MAGNESIUM	190.0	15.6	SULPHATE	5.7	0.1
IRON			NITRATE	4.0	0.1
			HYDROXIDE		
TOTAL CATIONS	6092.0	273.3	TOTAL ANIONS	9950.7	274.1

ION BALANCE: -0.2 %
TOTAL DISSOLVED SOLIDS: 15800.0 MG/L
MEASURED RESISTIVITY: 0.417 OHM-M AT TEMP 77. F 25. C
SODIUM TO TOTAL CATION RATIO: 90.7 %
PH: 6.3
SODIUM CHLORIDE EQUIVALENT: 15650.
EQUIVALENT RW AT 75 F: 0.39

STIFF DIAGRAM



PLOTTED: 21/10/88

00081

SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: BIG LAKE 4 LAB: AMDEL

TEST: PROD DATE: 12/05/1986

SAMPLE:

DEPTH: - FT (KB) - FT (SUBSEA)

FORMATION:

COMMENT:

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	5700.0	247.8	CHLORIDE	9420.0	265.4
POTASSIUM	12.0	0.3	BICARBONATE	521.0	8.5
CALCIUM	190.0	9.5	CARBONATE		
MAGNESIUM	190.0	15.6	SULPHATE	5.7	0.1
IRON			NITRATE	4.0	0.1
			HYDROXIDE		
TOTAL CATIONS	6092.0	273.3	TOTAL ANIONS	9950.7	274.1

ION BALANCE: -0.2 %

TOTAL DISSOLVED SOLIDS: 15800.0 MG/L

MEASURED RESISTIVITY: 0.417 OHM-M AT TEMP 77. F 25. C

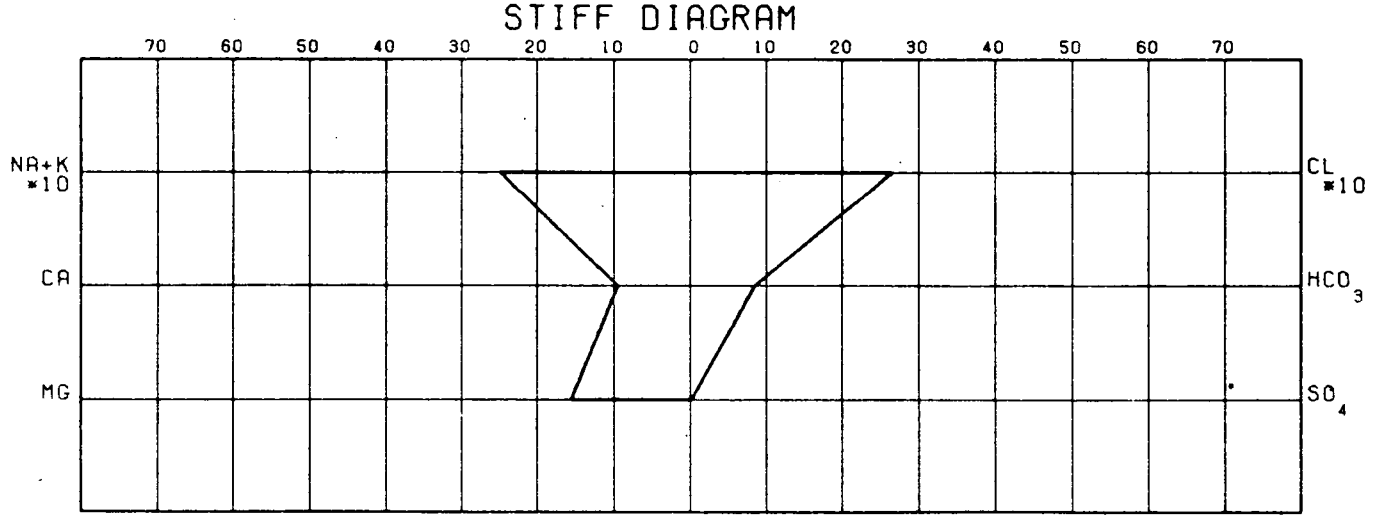
SODIUM TO TOTAL CATION RATIO: 90.7 %

PH: 6.3

SODIUM CHLORIDE EQUIVALENT: 15650.

EQUIVALENT RW AT 75 F: 0.39

STIFF DIAGRAM



PLOTTED: 07/11/86

emv. 2007

Ree. 13/11/86

SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: BIG LAKE 4 LAB: AMDEL

TEST: PROD DATE: 27/10/1986

SAMPLE: .

DEPTH: - FT (KB) - FT (SUBSEA)

FORMATION:

COMMENT: LET 26-27/10/86: G@2.342MMSCFD, W@139.6BPD, WGR=59.61: TOOL/DARAL

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	5300.0	230.4	CHLORIDE	8880.0	250.1
POTASSIUM	87.0	2.2	BICARBONATE	589.0	9.7
CALCIUM	180.0	9.0	CARBONATE		
MAGNESIUM	60.0	4.9	SULPHATE	22.0	0.5
IRON			NITRATE	4.0	0.1
			HYDROXIDE		
TOTAL CATIONS	5627.0	246.6	TOTAL ANIONS	9495.0	260.3

ION BALANCE: -2.7 %

TOTAL DISSOLVED SOLIDS: 14800.0 MG/L

MEASURED RESISTIVITY: 0.408 OHM-M AT TEMP 77. F 25. C

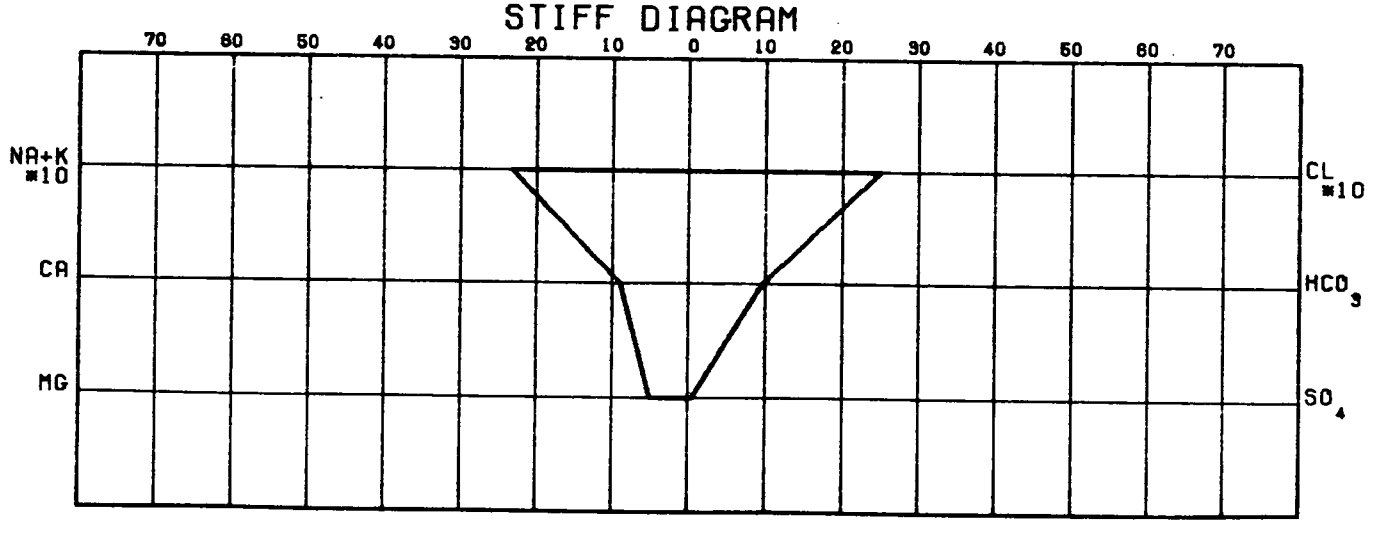
SODIUM TO TOTAL CATION RATIO: 93.5 %

PH: 6.6

SODIUM CHLORIDE EQUIVALENT: 14640.

EQUIVALENT RW AT 75 F: 0.41

STIFF DIAGRAM



PLOTTED: 21/10/86

SANTOS EXPLORATION DATA BASE

WATER ANALYSIS

WELL: BIG LAKE 4 LAB: AMDEL

TEST: PROD DATE: 18/02/1987

SAMPLE: .

DEPTH: - FT (KB) - FT (SUBSEA)

FORMATION:

COMMENT: LET 4-6/2/87: G@7.03MMSCFD. H/C@NIL. W@214.37BPD: WGR=30.5BPD: IMBAL DUE TO NH3

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	4910.0	213.5	CHLORIDE	8680.0	244.5
POTASSIUM	66.0	1.7	BICARBONATE	513.6	8.4
CALCIUM	103.0	5.1	CARBONATE		
MAGNESIUM	52.0	4.3	SULPHATE	6.0	0.1
IRON			NITRATE	0.1	0.0
			HYDROXIDE		
TOTAL CATIONS	5131.0	224.6	TOTAL ANIONS	9199.7	253.1

ION BALANCE: -6.0 %

TOTAL DISSOLVED SOLIDS: 14074.0 MG/L

MEASURED RESISTIVITY: 0.370 OHM-M AT TEMP 77. F 25. C

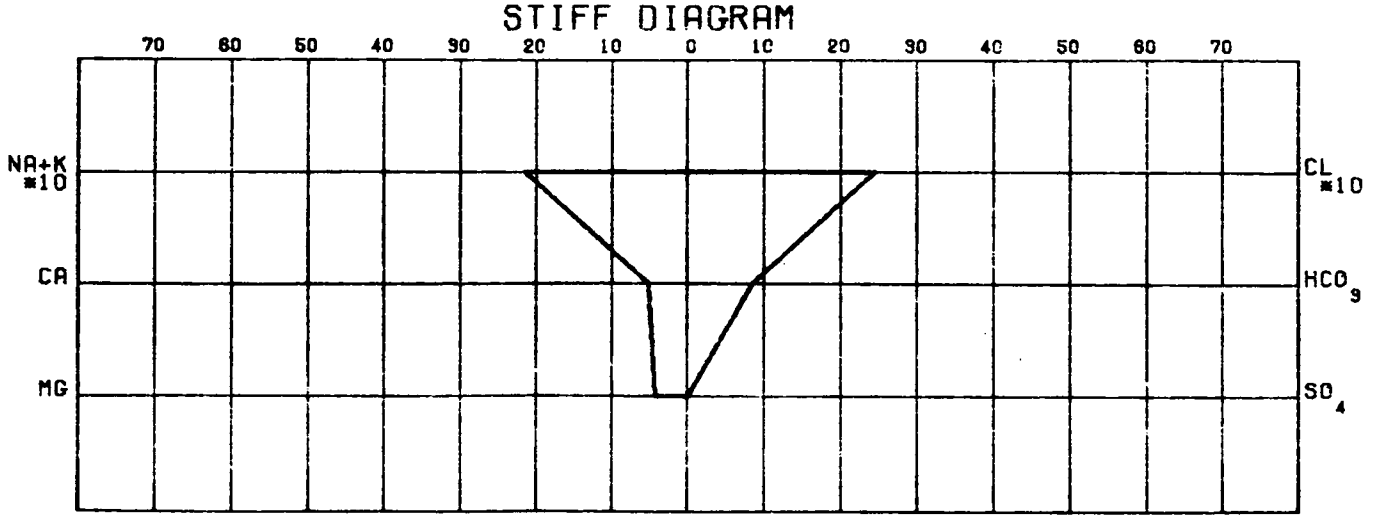
SODIUM TO TOTAL CATION RATIO: 95.1 %

PH: 5.8

SODIUM CHLORIDE EQUIVALENT: 13932.

EQUIVALENT RW AT 75 F: 0.43

STIFF DIAGRAM



PLOTTED: 21/10/88

SANTOS EXPLORATION DATA BASE

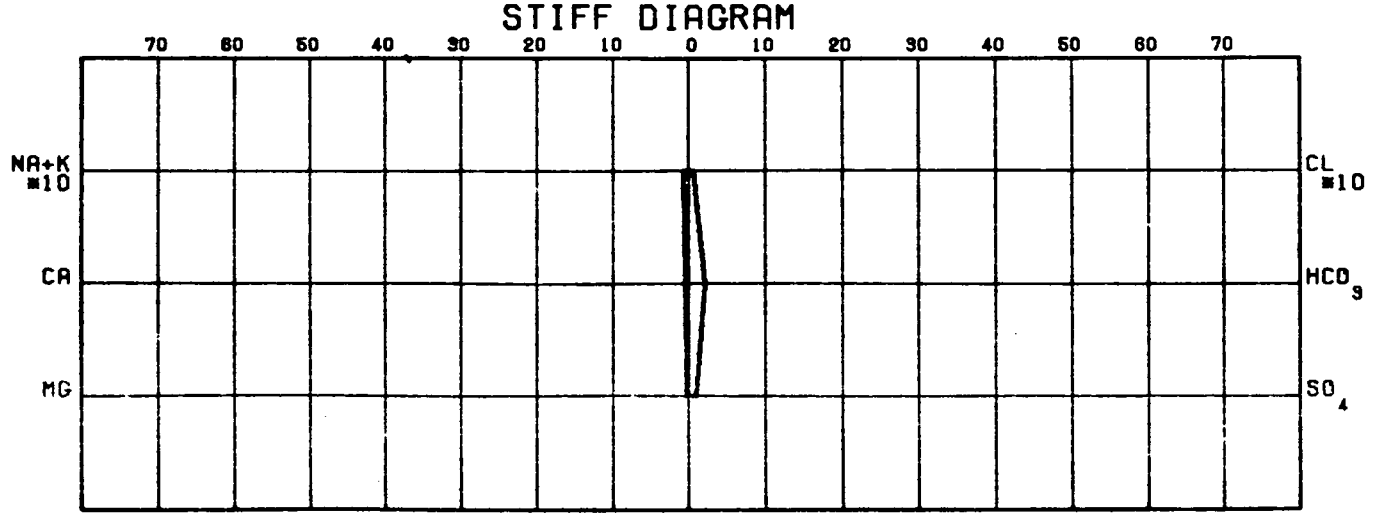
WATER ANALYSIS

WELL: BIG LAKE 4 LAB: AMDEL
TEST: PROD DATE: 15/06/1987
SAMPLE: .
DEPTH: - FT (KB) - FT (SUBSEA)
FORMATION:
COMMENT: LET 15/6/87: G@1.37MMSCFD. H/C@1.05BPD. W@4.38BPD. WGR=3.2: NH3&B: TOOL/DARAL

CATIONS	MG/L	MEQ/L	ANIONS	MG/L	MEQ/L
SODIUM	84.0	3.7	CHLORIDE	192.0	5.4
POTASSIUM	100.0	2.6	BICARBONATE	128.7	2.1
CALCIUM	7.9	0.4	CARBONATE		
MAGNESIUM	3.4	0.3	SULPHATE	50.0	1.0
IRON			NITRATE	0.1	0.0
			HYDROXIDE		
TOTAL CATIONS	195.3	6.9	TOTAL ANIONS	370.8	8.6

ION BALANCE:	-10.9	%
TOTAL DISSOLVED SOLIDS:	501.0	MG/L
MEASURED RESISTIVITY:	10.000	OHM-M AT TEMP 77. F 25. C
SODIUM TO TOTAL CATION RATIO:	53.1	%
PH:	5.3	
SODIUM CHLORIDE EQUIVALENT:	465.	
EQUIVALENT RW AT 75 F:	10.77	

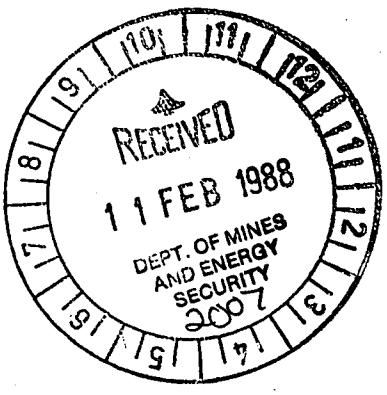
STIFF DIAGRAM



PLOTTED: 21/10/88

SANTOS LIMITED
RESERVOIR ENGINEERING DEPARTMENT
BIG LAKE #4
PRODUCTION LOGGING SURVEY 6/2/87

Report No: RE:077/87
Author: C.L. Pidcock
Date: January, 1988



1. INTRODUCTION

Big Lake #4 is located in the south-western portion of the Big Lake field. The well was drilled and completed in 1972 in the Toolachee and Daralingie sands. In 1984 the well was producing approximately 5 MMscfd prior to the shut-in of the Big Lake field. Subsequent to this the well was brought back on line at rates below 1 MMscfd. The well was loading up with water and could not produce when the Big Lake compressors were off line.

A PLT (Production Logging Tool) survey was run on the 6th February 1987 to determine the relative flow contribution from each sand under dynamic conditions and to try and locate from which sand the water was being produced. A shut-in survey was also performed to check for cross flow between sands under static conditions.

2. SUMMARY

The well was logged at a maximum flow rate and under shut-in conditions. Slugging of liquids causing a continually changing flow regime made the data very difficult to analyse. The following results were derived using the data available and engineering judgement.

SAND		WELL FLOWING Q (MMscfd) Ptf = 472 psia	WELL FLOWING % of Total Ptf = 472 psia	WELL SHUT-IN Q (MMscfd) Pts = 1302 psia
Toolachee:				
Lower Unit B:-	74-5	0.25	3.5	0
	75-3	0	0	-0.68
Unit C	75-5	0.24	3.4	0.35
	76-0	2.57	36.0	-0.36
Sub Total Toolachee		3.06	42.9	-0.69
Upper Daralingie	76-7	0	0	0
Lower Daralingie	77-3	4.07	57.1	0.69
TOTAL		7.13	100.0	0

The survey also found approximately 550 BWPD was being produced from below the bottom perforations. The probable source of this water is a leak in the casing at 8200'KB which corresponds to the base of the Epsilon sands.

3. CONCLUSIONS & RECOMMENDATIONS

1. The Lower Daralingie sand (77-3) is the major gas producer under normal operating conditions.

2. During the survey, approximately 550 BWPD was being produced from below the bottom perforations in the Lower Daralingie Beds. As recommended by this study, a bridge plug was set above the Epsilon Formation in March 1987. During the June 1987 LET Test, Big Lake 4 was producing only 5 BWPD and 1.4 MMscfd of gas at a FWHP of 600 psia.

3. There is crossflow from the Daralingie Beds into the Toolachee Unit 'C' and Unit 'B' sands when the well is shut-in.

4. TOOL CONFIGURATION

The PLT tool string was composed of the following:

1. Gamma Ray - For depth control and detection of sands producing significant volumes of water

2. Thermometer - To locate zones of gas entry and to obtain downhole temperatures for the calculation of 1/Bg.

3. Strain Gauge - To measure down hole pressures for 1/Bg calculation.

4. Gradiomanometer - To measure fluid densities to determine gas/water entry points.

5. Full Bore Spinner - To measure fluid velocities in the wellbore.

5. DISCUSSION

5.1 Survey Method

Prior to the test commencing the well was flowed on a 40"/64" choke for 12 hours. The well was choked back to 10/64" as the PLT tool was run in the hole, returned to the initial choke setting and flowed for an additional two hours. It was found that the well was slugging and consequently there was a poor gradiomanometer and spinner response. The well was subsequently opened to 64/64" choke where it stabilized at a tubing head pressure of 472 psi. The well was still found to be slugging liquid, however, the gradiomanometer and spinner response had improved. The flow rate measured through the separator was 7.13 MMscfd with an associated liquid rate of 201 BWPD.

The test was conducted at this flow rate over the interval 7576' - 8000'KB, with the tool making 8 passes (4 up and 4 down). The well was then shut-in and allowed to build-up until the pressure had stabilized. An additional 8 passes (4 up and 4 down) were then made while the well was shut-in. Static tests were also done at specified depths subsequent to the flow and shut-in passes.

5.2 Interpretation

There are some large discrepancies in the data from the survey due to the inability of the well to obtain a constant flow regime. Readings of spinner speed vs logging speed were taken at locations above and below each set of perforations and are shown in Tables 1 and 2. This data was used to construct the lines shown in Figures 1 and 2. Due to the large variation in results these data show considerable scatter and the plots were therefore constructed using engineering judgement.

Velocities were calculated for each corresponding depth. The results indicate flow originating from below the bottom perforations and as a result the flow response line was unable to be constructed. The threshold velocity for the spinner was estimated at 17 ft/min and the spinner respone at 0.13 RPS/ft/min. These values concur with those estimated by Schlumberger.

The Bg values were calculated using pressure and temperature data from the PLT logs. The overall flow rate was calculated at 7.34 MMscfd. This is compatable with the rate of 7.14 MMscfd measured through the separator. The 7.34 MMscfd represents both gas and water production as the well was continually producing with slug flow. It was decided to use 7.14 MMscfd as the actual gas rate because it gave a better representation of gas production from each sand. Flow was apportioned to each sand weighted on the corresponding velocity. This is shown in Figure 3. The flow from below the bottom perforations was determined to be water at an approximate rate of 550 BWPD calculated from the response measured at 7950'KB in Figure 1. It should be noted that water at a rate of 210 BPD was measured through the separator and this lower rate may be due to the slug flow regime.

The results from the PLT survey while the well was shut in indicate that there is crossflow between the sands. Gas flowed from the Lower Daralingie Bed (77-3) into the Toolachee Unit 'C' 75-5 and 76-0 sands at a rate of 0.69 MMscfd. There also appeared to be some crossflow from the 75-5 sand into the 75-3 sand at a rate of 0.68 MMscfd. Down hole crossflow would therefore occur from the Lower Daralingie Formation into the Toolachee Formation if the well is shut-in. This is shown in Figure 3. This crossflow is typical of the south western Big Lake wells as reported in PLT's run on Big Lake #7 (ref:RE:188/84) and Big Lake #24 (ref: RE-IN:033/83). The crossflow in Big Lake #4 shows that the Lower Daralingie formation continues to deplete slower than the Toolachee formation.

The PLT test also tried to locate the origin of the water being produced below the bottom perforations. Two possibilities were:

(i) water was being produced from the Epsilon Formation through a leak in the casing.

(ii) water was coming through the bridge plug from the Patchawarra Formation which had previously been fracture stimulated.

The tool was only run to 8600'KB since it was not possible to proceed any further due to the temperature approaching 410°F (the tool's limit). A kick in the spinner response and some anomalies in the temperature and pressure gradients were recorded at 8200'KB. This depth corresponds to the bottom of the Epsilon formation and therefore makes the first of the two possibilities the more plausible.

TABLE I
FLOW METER DATA
BIG LAKE #4

RATE = 7.13 MMscfd @ Ptf = 472 psia
SPINNER SPEED (revolutions per second)

CABLE VELOCITY (ft/min)	DEPTH (ft KB) 7576	7619	7656	7667	7687	7718	7736	7802	7874	7950
Logging Down:										
32	63.0	57.3	56.4	56.0	54.9	54.8	44.4	33.0	34.9	4.6
68	74.0	61.6	62.0	61.2	60.1	60.0	49.6	36.9	39.8	7.8
82	78.8	65.6	65.3	62.6	61.9	62.2	52.2	40.2	41.5	9.9
112	80.4	72.8	70.4	68.0	67.0	66.2	56.0	41.4	43.5	12.3
Logging Up:										
32	54.8	52.8	51.2	48.8	54.4	50.8	43.3	29.2	30.8	1.6
46	48.1	50.2	51.7	51.6	47.6	46.8	38.4	30.9	24.8	4.9
77	46.6	52.8	44.3	47.6	45.8	45.8	37.2	29.2	27.8	7.1
116	43.9	46.0	46.8	47.6	43.6	42.4	33.2	20.9	23.4	11.6

WP:5033N(11)

CLP/jbf

18/6/87

TABLE 2
FLOW METER DATA
BIG LAKE #4

SHUT-IN SURVEY @ Pts = 1302 psia
SPINNER SPEED (revolutions per second)

CABLE VELOCITY (ft/min)	DEPTH (ft KB) 7576	7619	7656	7667	7687	7718	7736	7802	7874	7950
Logging Down:										
113	11.0	11.0	13.0	11.0	13.0	13.0	12.8	14.6	13.2	12.2
80	8.0	8.0	9.7	8.0	10.0	10.1	9.8	11.8	10.2	9.0
66	6.1	6.1	7.5	6.1	8.4	8.7	8.3	10.0	8.1	8.0
33	0.5	0.0	3.0	0.0	1.5	3.8	3.6	6.2	2.2	3.7
Logging Up:										
33	0.0	0.0	+2.3	0.0	0.0	0.0	0.0	+1.0	+1.5	-2.0
56	-4.0	-4.2	-2.3	-4.5	-2.2	-2.2	-2.2	-1.2	-1.2	-4.0
84	-7.8	-8.0	-4.0	-8.0	-5.8	-5.8	-5.3	-3.5	-3.5	-8.0
100	-10.0	-10.0	-6.0	-10.0	-8.0	-8.0	-7.8	-6.0	-6.0	-10.0

4P:5033N(12)
CLP/jbf
18/6/87

TABLE 3

Bg V. Q.

GAS PRODUCTION

DEPTH (ft)	RATE: -- 7.13 MMscfd 1/Bg (scf/ft^3)	VELOCITY (ft/min)	FLOW (MMscfd)	WELL SHUT-IN 1/Bg (scf/ft^3)	VELOCITY (ft/min)	FLOW (MMscfd)
7576	53.2	447.8	7.13	81.0	0.0	0.0
7619	53.4	432.4	6.88	81.1	0.0	0.0
7656	53.5	432.4	6.88	81.1	27.0	0.68
7667	53.6	424.7	6.76	81.1	0.0	0.0
7687	53.6	417.0	6.64	81.2	13.0	0.33
7718	53.7	417.0	6.64	81.3	13.0	0.33
7736	53.8	324.7	5.17	81.3	15.5	0.39
7802	54.0	255.5	4.07	81.8	27.0	0.69
7874	54.0	255.5	4.07	82.6	27.0	0.69

WP:5033N(13)
CLP/jbf
18/6/87

TABLE 4

SAND FLOW SUMMARY

SAND		PERFORATED INTERVAL (ft.KB)	WELL FLOWING Ptf = 472 psia Q (MMscfd)	% of Total	WELL SHUT-IN Pts = 1302 psia Q (MMscfd)
TOOLACHEE:					
Lower Unit B	74-5	7586-7591	0.25	3.5	0
	75-3	7646-7651	0	0	-0.68
Unit C	75-5	(7661-7666	0.12	1.7	0.68
		(7668-7675	0.12	1.7	-0.33
		(7698-7713	0	0	0
	76-0	(7722-7734	1.47	20.6	-0.06
		(7737-7773	1.10	15.4	-0.30
TOOLACHEE TOTAL					
DARALINGIE:					
76-7		7831-7839	0	0	0
LOWER DARALINGIE:					
77-3		7908-7914	4.07	57.1	0.69
TOTAL			7.13	100.0	0.00

NOTE: There was a flow of approx. 550 BWPD measured at 7950 ft.

WP:5033N(14)

CLP/jbf

18/6/87

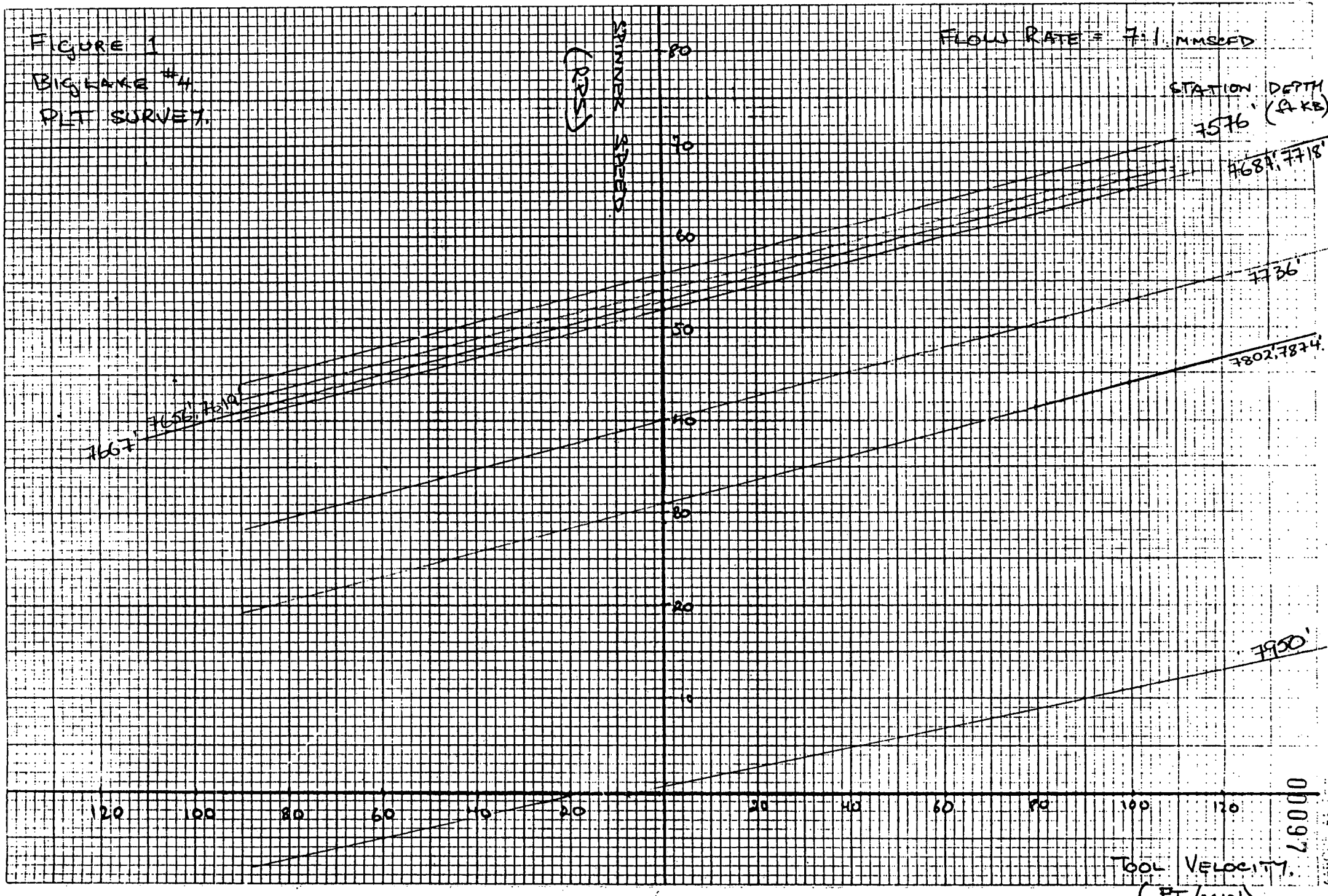


FIGURE 1
BIG LAKE #4
PLT SURVEY.
FLOW RATE = 7.1 MMSCFD
SPINNER (RPS)
STATION DEPTH (ft KB)
7576'
7687', 7718'
7736'
7802', 7874'
7950'
7667'
7656', 7719'
80
70
60
50
40
30
20
10
120
100
80
60
40
20
20
40
60
80
100
120
6000
TOOL VELOCITY.
(FT/MIN)

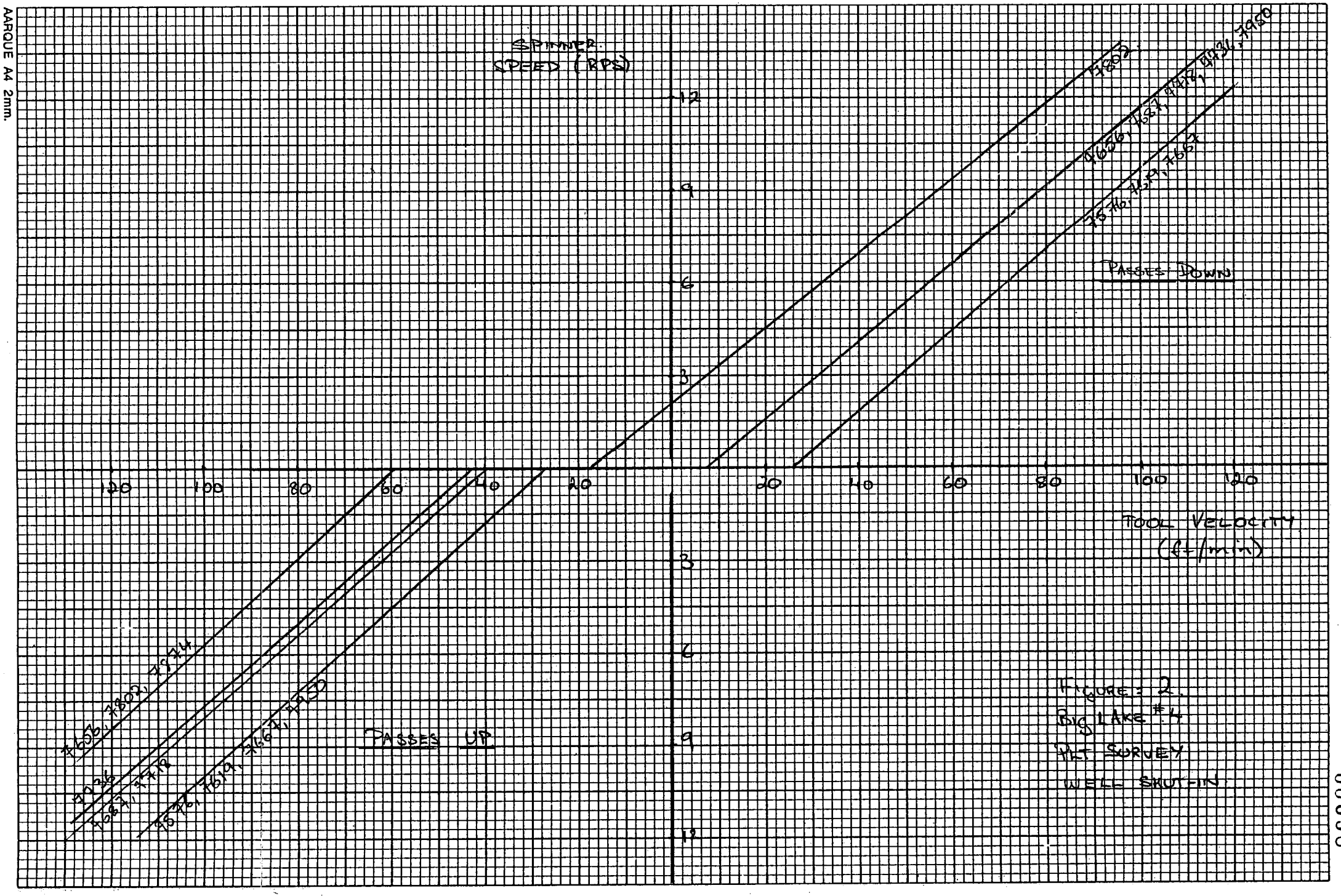


FIGURE: 2.
BIG LAKE #4
VLT SURVEY
WELL SHUT-IN

AARQUE A4 2mm.

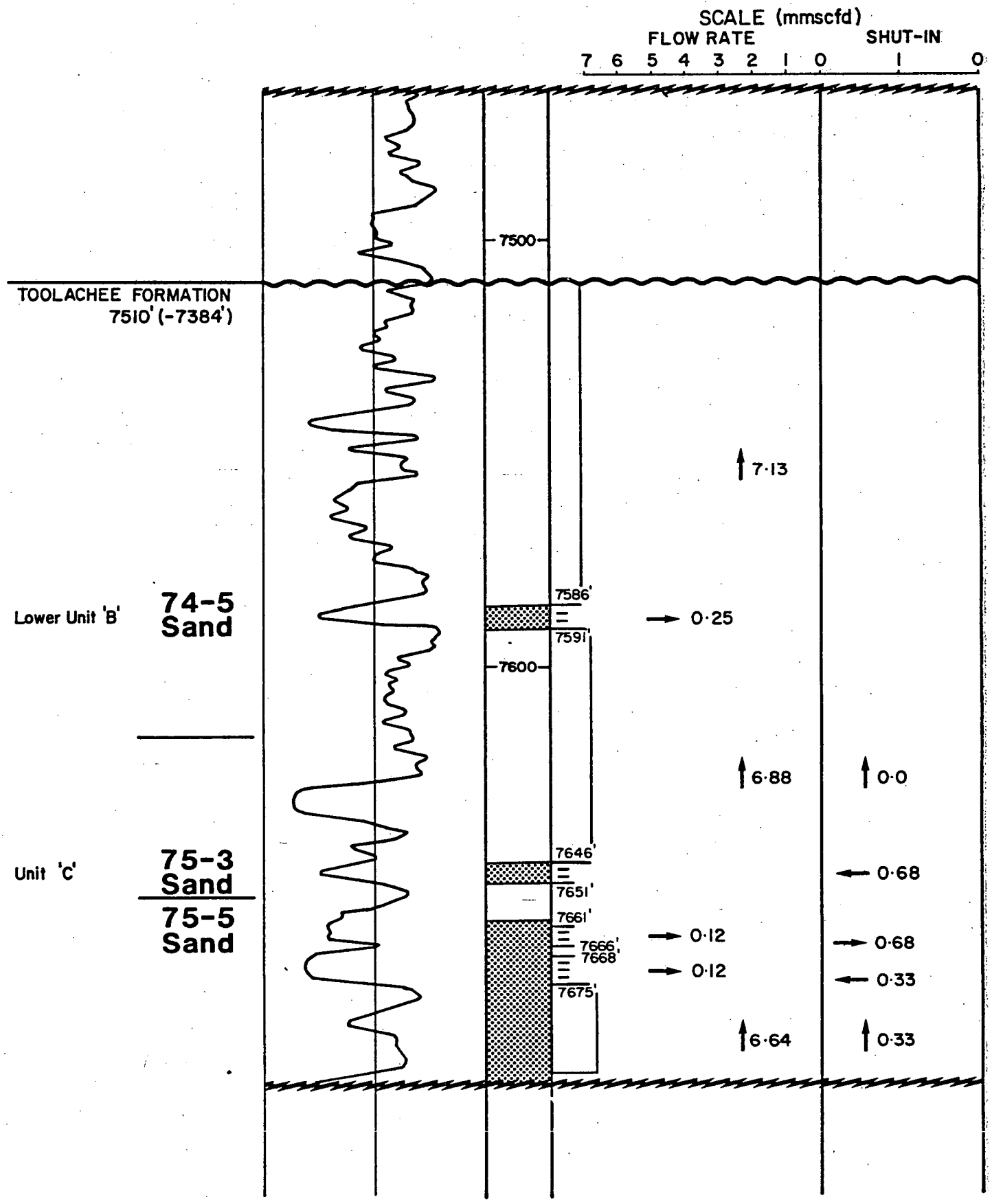
000098

BIG LAKE 4 PLT SURVEY

FIGURE 3

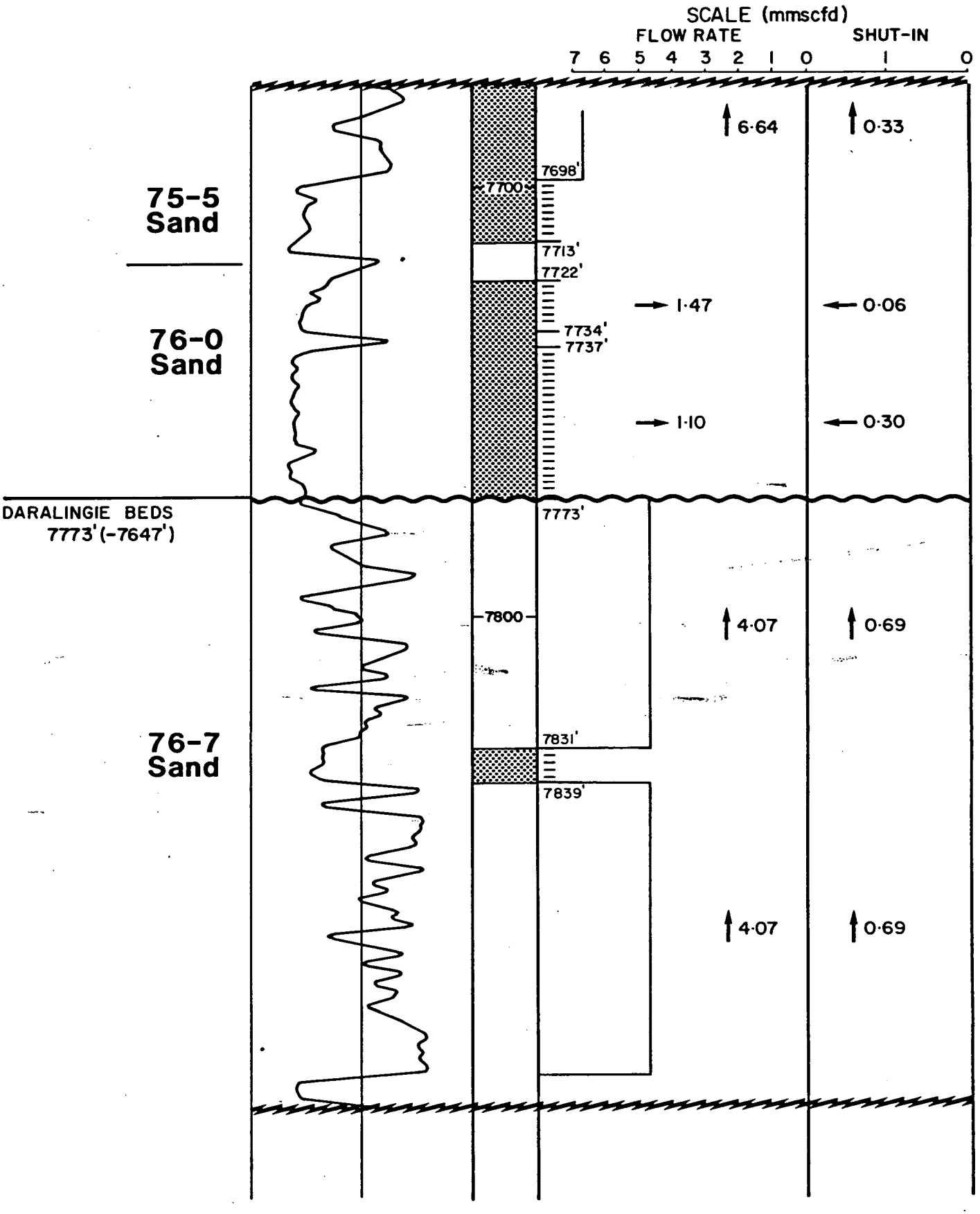
GAMMA RAY OVERLAY AND FLOW DIAGRAM

00099



GAMMA RAY OVERLAY AND FLOW DIAGRAM

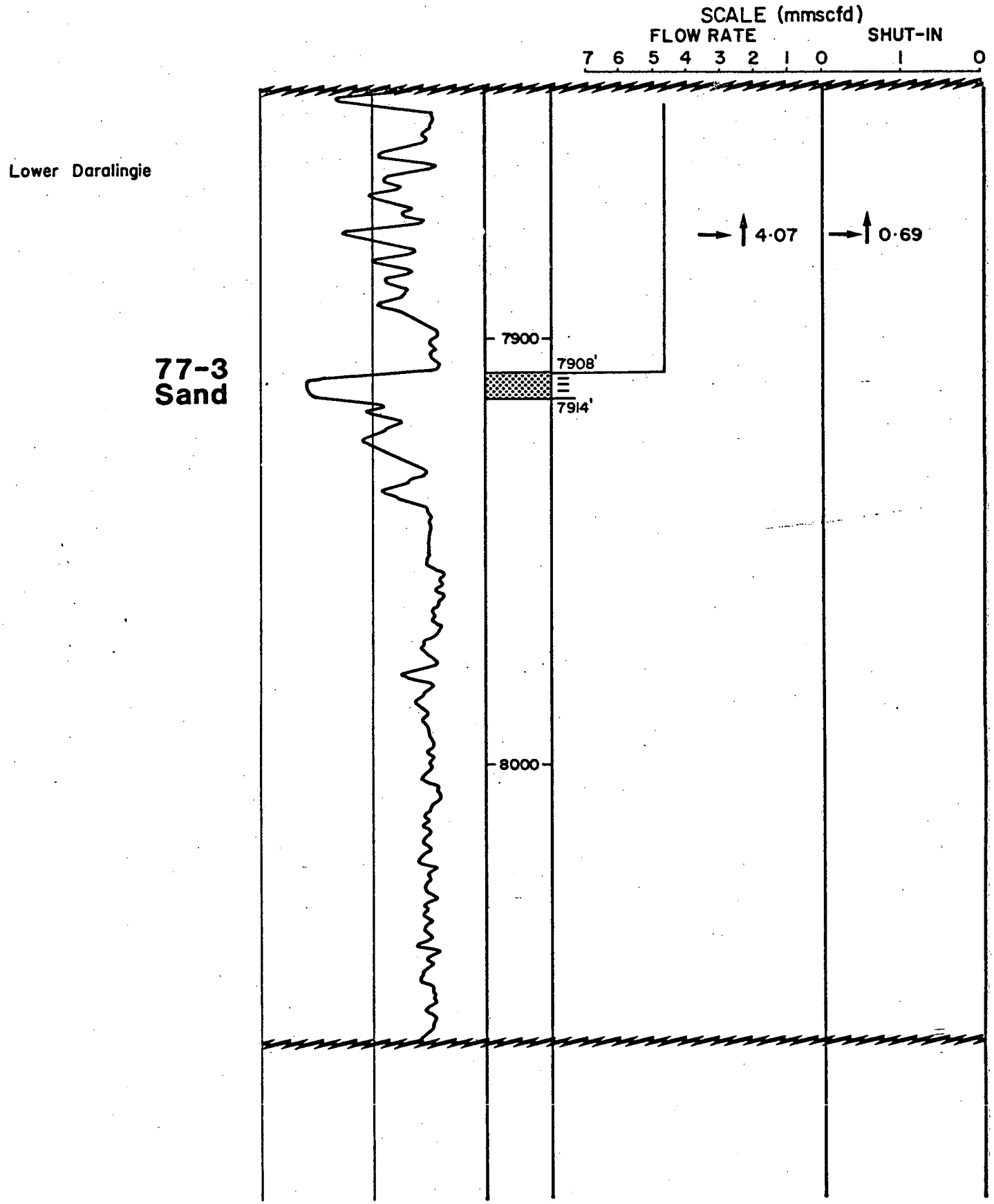
00100



BIG LAKE 4 PLT SURVEY

00101

GAMMA RAY OVERLAY AND FLOW DIAGRAM



ROLLING BOTTOMHOLE PRESSURE SURVEY GAS CALCULATION SHEET

WELL: Big Lake #4 Pf = 5100 kPa ✓

ORIFICE SIZE: 44.450 mm 1.750 " ✓ T = 56 °C ✓

LINE SIZE: 87.325 mm 3.438 " ✓ Diff = 9.7 kPa ✓

Cumulative Production to end of August = 1263.596 $m^3 \times 10^6$ ✓

Number of hours online in August = 708 ✓

Production in August = 1.601 $m^3 \times 10^6$ ✓

Average flow rate in August = (1.601 / 708) x 24 = 0.054 $m^3 \times 10^6/d$ ✓

Number of days online in August after Shut In 1600 hrs 30/8/87
= NIL

Production up to 1600 hrs 30/8/87 = 1.601 - $m^3 \times 10^6$

Total cumulative production =

= 1263.596 $m^3 \times 10^6$

= 44850.076 mmscf ✓

Flow rate just prior to Shut In = 0.084 $m^3 \times 10^6$ ✓

= 2.988 mmscf/d ✓

2007

4 NOV 87

WP 2946G(13)
LGA/jfs : 8/12/86

SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO.	SANTOS	RUN 01	FIELD BIG LAKE	WELL 04	
EFF DEPTH		WELL STAT		TOOL HUNG	7738'
CASING 7"	-	CASING PRESS		ON BOTTOM	1303 30/8
LINER	-	TUBING PRESS		OFF BOTTOM	0600 4/9
DATE	870826	ELEMENT RANGE	0 - 3107	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	1600 30/8
MAX TEMP		PICK-UP		ON-PROD	
PERF	7586'-7914'	CAL SER NO.	56429	MPP	7750'
TUBING 2-3/8"	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP		

SURVEY DATA

CO. SANTOS RUN 01 FIELD BIG LAKE WELL 04

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
16:00	1285.2	0.0	0.0	18:25	1527.1	241.9	2.4
16:03	1347.8	62.7	.1	18:58	1525.2	240.0	3.0
16:05	1420.8	135.6	.1	20:28	1523.4	238.2	4.5
16:09	1487.1	201.9	.2	0:08	1522.2	237.0	8.1
16:12	1511.1	225.9	.2	4:45	1522.4	237.2	12.7
16:12	1523.5	238.3	.2	12:13	1522.5	237.3	20.2
16:15	1526.3	241.1	.3	20:42	1522.9	237.7	28.7
16:20	1529.5	244.3	.3	5:25	1522.7	237.5	37.4
16:31	1530.7	245.5	.5	13:06	1522.7	237.5	45.1
16:37	1532.9	247.7	.6	1:11	1522.2	237.0	57.2
16:47	1537.4	252.2	.8	15:29	1520.9	235.7	71.5
17:02	1540.7	255.5	1.0	3:56	1519.4	234.2	83.9
17:19	1539.7	254.5	1.3	19:57	1519.2	234.0	99.9
17:34	1535.7	250.5	1.6	6:01	1519.3	234.1	110.0
17:56	1530.5	245.3	1.9	0:00	0.0	0.0	0.0

LUB IN DWT = 790 PSI / OUT = 1257 PSI
LUB IN AMERADA = 781 PSI / OUT = 1262 PSI

SANTOS LTD
39 GRENFELL ST
ADELAIDE

SUB-SURFACE PRESSURE SURVEY

CO. SANTOS		RUN 02 FIELD BIG LAKE		WELL 04	
EFF DEPTH		WELL STAT		TOOL HUNG	7744'
CASING 7"	-	CASING PRESS		ON BOTTOM	1303 30/8
LINER	-	TUBING PRESS		OFF BOTTOM	0600 4/9
DATE	870826	ELEMENT RANGE	0 - 3121	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	1600 30/8
MAX TEMP		PICK-UP		ON-PROD	
PERF	7586'-7914'	CAL SER NO.	28515	MPP	7750'
TUBING 2-3/8"	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP		

SURVEY DATA

CO. SANTOS RUN 02 FIELD BIG LAKE WELL 04

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
16:00	1286.5	0.0	0.0	18:20	1524.2	237.6	2.3
16:02	1342.0	55.5	.0	19:17	1523.9	237.3	3.3
16:04	1407.6	121.1	.1	20:58	1523.2	236.6	5.0
16:06	1467.4	180.9	.1	23:17	1522.4	235.9	7.3
16:09	1513.5	226.9	.2	3:19	1521.7	235.2	11.3
16:13	1528.4	241.9	.2	7:35	1521.5	234.9	15.6
16:21	1530.7	244.2	.3	16:40	1522.2	235.6	24.7
16:32	1534.2	247.7	.5	1:00	1522.3	235.7	33.0
16:41	1539.9	253.4	.7	11:04	1520.6	234.1	43.1
16:53	1539.9	253.3	.9	22:58	1520.4	233.9	55.0
17:05	1536.9	250.3	1.1	10:53	1519.7	233.2	66.9
17:16	1533.1	246.5	1.3	1:21	1517.9	231.3	81.3
17:28	1531.0	244.4	1.5	18:14	1516.1	229.5	98.2
17:52	1526.7	240.1	1.9	6:00	1517.3	230.7	110.0

LUB IN DWT = 790 PSI / OUT = 1257 PSI
LUB IN AMERADA = 786 PSI / OUT = 1267 PSI

SANTOS LTD.

00105

ISO-CHRONAL AND BUILD-UP SURVEY

Well: BIG LAKE # A. Date: 30.8.87

Lubricator Data: ① 781 1262 — —
② 786 1267

Pressure with D.W.T. IN 790 psi OUT 1257 psi.

Time Pressured 1145 Time Depressured 0715

Time Run in Hole 1245 Time off Bottom 0600

	Bomb No. 1 Data	Bomb No. 2 Data
Element No. and Range	56429 x 3000 psi.	28515 x 3000 psi
Recorder No.	14628 x 15 hrs	13027 x 15 hrs.
Clock and Lead Screw Data	F 15306 x 120 HR	F 15309 x 120 HR.
Engage Stylus	Date: 30.8.87 Time: 1129	Date: 30.8.87 Time: 1129.
Disengage	Date: 4.9.87 Time: 0732	Date: 4.9.87 Time: 0732

Remarks: TEMP ELE RAN — 22945 x 184° — 439°F ; 14621 x 15 hrs ; F 8243 x 120 HR
WELL FLOWING ON 24/64
Max SIBH Temp = 297.8°F

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead P.S.I.G.	Casing P.S.I.G.	Wellhead Temp.	Remarks
30.8.87	1303		775	0	84	Bombs Hanging @
						7750' KB.
	1600	—	789	0	80	S.W.I
4.9.87						
	0600		1257	0		All Bombs.
	0615		1257	0		Lub.

WELL: BIG LAKE #4

TYPE OF TEST: BHP

SANTOS LTD.
WELL TEST DATA SHEET

DATE: 30.8.87

PAGE No: ONE.

DATE / TIME	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS				
															GAS	OIL	WATER	TOTAL LIQUID	G.O.R.
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS.H_2O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLS	API GRAVITY @60 °F	TANK DIP INS.	TANK PROD BBLS	FLOW RATE MMSCFD	FLOW RATE BBLS/DAY	FLOW RATE BBLS/DAY	FLOW RATE BBLS/DAY	SCF/BBL
30.8.87.																			
1000	ARRIVE ON LOCATION.																		
1030	S.W.I.	RIG UP SWAB VALVE AND W/L UNIT																	
1045	0	1253	—	16/64		OPEN WELL TO FLARE													
1100	0	885	—	22/64		OPENED CHOKE TO DROP WELLHEAD PRESSURE													
1115	0	845	—	24/64		OPENED CHOKE TO DROP WELLHEAD PRESSURE													
1145	0	750	84	24/64		ELEMENTS IN LUB PRESSURE LUB.													
1245	0	790	84	24/64		RIH WITH ELEMENTS.													
1303	0	775	84	24/64		ELEMENTS HANGING @ 7750' KB AS PER PROGRAM.													
1330	0	769	87	24/64															
1400	0	780	84	24/64															
1430	0	785	96	24/64															
1500	0	785	86	24/64															
1530	0	787	80	24/64															
1600	0	789	80.	24/64		SHUT WELL IN FOR 1.10 HR BUILD UP.													
1615	0	1267																	
1630	0	1280																	
1645	0	1284																	
1700.	0	1280																	

OPERATOR.....

00106

WELL: BIG LAKE #4

TYPE OF TEST: BHP

SANTOS LTD.
WELL TEST DATA SHEET

DATE: 30 · 8 · 87

PAGE No: TWO

DATE / TIME	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS				
															GAS	OIL	WATER	TOTAL LIQUID	G.O.R.
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS.H_2O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLS	API GRAVITY @60 °F	TANK DIP INS.	TANK PROD BBLS	FLOW RATE MMSCFD	FLOW RATE BBLS/DAY	FLOW RATE BBLS/DAY	FLOW RATE BBLS/DAY	SCF/BBL
30·8·87			CONTINUE BUILD UP																
1715	0	1275																	
1730	↑	1274																	
1745		1270																	
1800		1270																	
1815		1266																	
1830		1266																	
1845		1266																	
1900		1266																	
1915		1266																	
1930		1265																	
1945		1265																	
2000	↓	1265																	
2400	0	1265																	
31·8·87																			
0400	0	1264																	
0800	↑	1264																	
1200		1264																	
1600	↓	1263																	
1800	0	1263				BUILD UP READING CHANGED TO FIT IN WITH BIG LAKE #21.													

OPERATOR .....

WELL: BIG LAKE #1

TYPE OF TEST: BHP

SANTOS LTD.

WELL TEST DATA SHEET

DATE: 31.8.87

PAGE No: 3

DATE / TIME	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS				
															GAS	OIL	WATER	TOTAL LIQUID	G.O.R.
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS.H_2O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLS	API GRAVITY @60 °F	TANK DIP INS.	TANK PROD BBLS	FLOW RATE MMSCFD	FLOW RATE BBLS/DAY	FLOW RATE BBLS/DAY	FLOW RATE BBLS/DAY	SCF/BBL
31.8.87						CONTINUE			BUILD	UP									
2200	0	1263																	
1.9.87																			
0200	0	1262																	
0600	0	1262																	
1000	0	1262																	
1400	0	1262																	
1800	0	1262																	
2200	0	1262																	
2.9.87																			
0200	0	1262																	
0600	0	1262																	
1000	0	1262																	
1400	0	1262																	
1800	0	1261																	
2200	0	1260																	
3.9.87																			
0200	0	1260																	
0600	0	1260																	

OPERATOR: [signature]

00108

WELL: BIG LAKE #4

TYPE OF TEST: BHP

SANTOS LTD.
WELL TEST DATA SHEET

DATE: 3.9.87

PAGE No: FOUR

DATE / TIME	WELLHEAD					GAS FLOW DATA				OIL/CONDENSATE PRODUCTION			WATER PRODUCTION		WELL TEST RESULTS				
															GAS	OIL	WATER	TOTAL LIQUID	G.O.R.
	CASING PSI	TUBING PSI	TEMP. °F	CHOKE SIZE INS.	B.S.W. %	PI PSI	HW INS.H_2O	TEMP. °F	ORIFICE SIZE INS.	TANK DIP INS.	TANK PROD BBLS	API GRAVITY @60 °F	TANK DIP INS.	TANK PROD BBLS	FLOW RATE MMSCFD	FLOW RATE BBLS/DAY	FLOW RATE BBLS/DAY	FLOW RATE BBLS/DAY	SCF/BBL
3.9.87						CONTINUE BUILD UP.													
1000	0	1260																	
1400	0	1260																	
1800	0	1259																	
2200	0	1259																	
4.9.87																			
0200	0	1257																	
0600	0	1257				PULL BOMBS - END OF TEST													
0615	0	1257				IN LUB													
0715	0	1257				DEPRESSURE LUB - 6000 CHARTS													
0758	0	1257				PRESS LUB - PREPARE TO RUN STATIC GRADIENT													
0813	0	1257				RIH.													
0925	0	1257				POOH FROM MPP													
0940	0	1257				LUB													
0958	0	1257				DEPRESSURE - REMOVE BOMBS 6000 CHARTS													
1000						END OF TEST HAND WELL OVER TO PRODUCTION.													

00109

OPERATOR: Dale Gillespie

00110

WIRELINE REPORT

WELL: BIG LAKE # A.

DATE: 29:8:87

PROGRAM: BIG LAKE BHP SURVEYS

PURPOSE OF WORK: TAG PBTD

REPORT OF WORK PERFORMED:

1400 ARRIVE ON LOCATION AWAIT FEILD OPERATOR
1425 S.W.I RIG UP W/L UNIT
1445 R.I.H WITH 1.75" B/BOX
1505 TAG PBTD @ 7994' W/L POOH.
1525 IN LUB.
1535 RIG OUT W/L UNIT
1600 HAND WELL OVER TO PRODUCTION.

*NB & GIN POLE NOT SECURE NEEDS TOP BRACKET.

OPERATOR'S SIGNATURE

WORK PERFORMED BY: DALE JOHNS OF EXPERTEST

WELL DATA:

Tubing Size: 2 3/8 FWHP: — SIWHP: —

Sub Surface S.V./Landing Nipple @ S.S.D. @:

"X" Nipple @ "N"/"XN" Nipple @ other

Min I.D. " @ Packer @ 7487

Perforated Interval: 7596' — 7914'

Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba

5504

WIRELINE REPORT

00111

WELL: BIG LAKE #4

DATE: 30·8·87

PROGRAM: BHP SURVEYS

PURPOSE OF WORK: RUN ELEMENTS AS PER PROGRAM

REPORT OF WORK PERFORMED:

30/8
1000 ARRIVE ON LOCATION - AWAIT PRODUCTION OPERATOR.
1030 SWI RIG UP SWAB VALVE + W/L UNIT.
1045 OPEN WELL TO FLARE - PREPARE GAUGES.
1145 PRESSURE LUB - ELEMENTS IN LUB.
1245 RIH WITH ELEMENTS.
1303 ELEMENTS HANGING @ 7750' KB (MPP)
1600 SHUT WELL. START 110HR BUILD UP.

1/9
0600 PULL ELEM
0615 ELEMENTS AT SURFACE
0715 DEPRESSURE LUB - GOOD CHARTS.
0803 RIH WITH ELEMENTS FOR STATIC GRADIENT
0950 ELEMENTS AT SURFACE - GOOD CHARTS - RIG DOWN
1000 HAND WELL BACK TO PRODUCTION

OPERATOR'S SIGNATURE

WORK PERFORMED BY: D. JOHNS OF EXPERTEST

WELL DATA:

Tubing Size: 2 3/8 FWHP: SIWHP: 1257 psi

Sub Surface S.V./Landing Nipple @ S.S.D. @:

"X" Nipple @ "N"/"XN" Nipple @ 7497 other

Min I.D. 1.791 " @ 7497 Packer @ 7470

Perforated Interval: 7594 - 8229.

Forward to: Petroleum Engineering — Adelaide
Production Department — Moomba

5504

•D 6332

EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE

** BIG LAKE # 4 **

STATIC PRESSURE GRADIENT

TEST DATE: 4/9/87

	TOP PRESSURE ELEMENT 56429/3000			BOTTOM PRESSURE ELEMENT 28515/3000		
DEPTH (FT.)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)	DEFLECTION (INCHES)	PRESSURE (PSIG)	GRADIENT (PSI/FT)
LUB	0.8140	1258.4	----	0.8120	1256.9	----
1000	0.8380	1295.6	0.0373	0.8350	1292.7	0.0358
2000	0.8610	1331.3	0.0357	0.8580	1328.6	0.0358
3000	0.8820	1363.9	0.0326	0.8795	1362.1	0.0335
4000	0.9030	1396.5	0.0326	0.8995	1393.2	0.0312
5000	0.9235	1428.4	0.0318	0.9200	1425.2	0.0319
6000	0.9450	1461.8	0.0334	0.9380	1453.2	0.0281
7000	0.9650	1492.8	0.0311	0.9585	1485.2	0.0319
7750	0.9800	1516.1	0.0311	0.9730	1507.8	0.0301
LUB	0.8150	1259.9	----	0.8140	1260.0	----

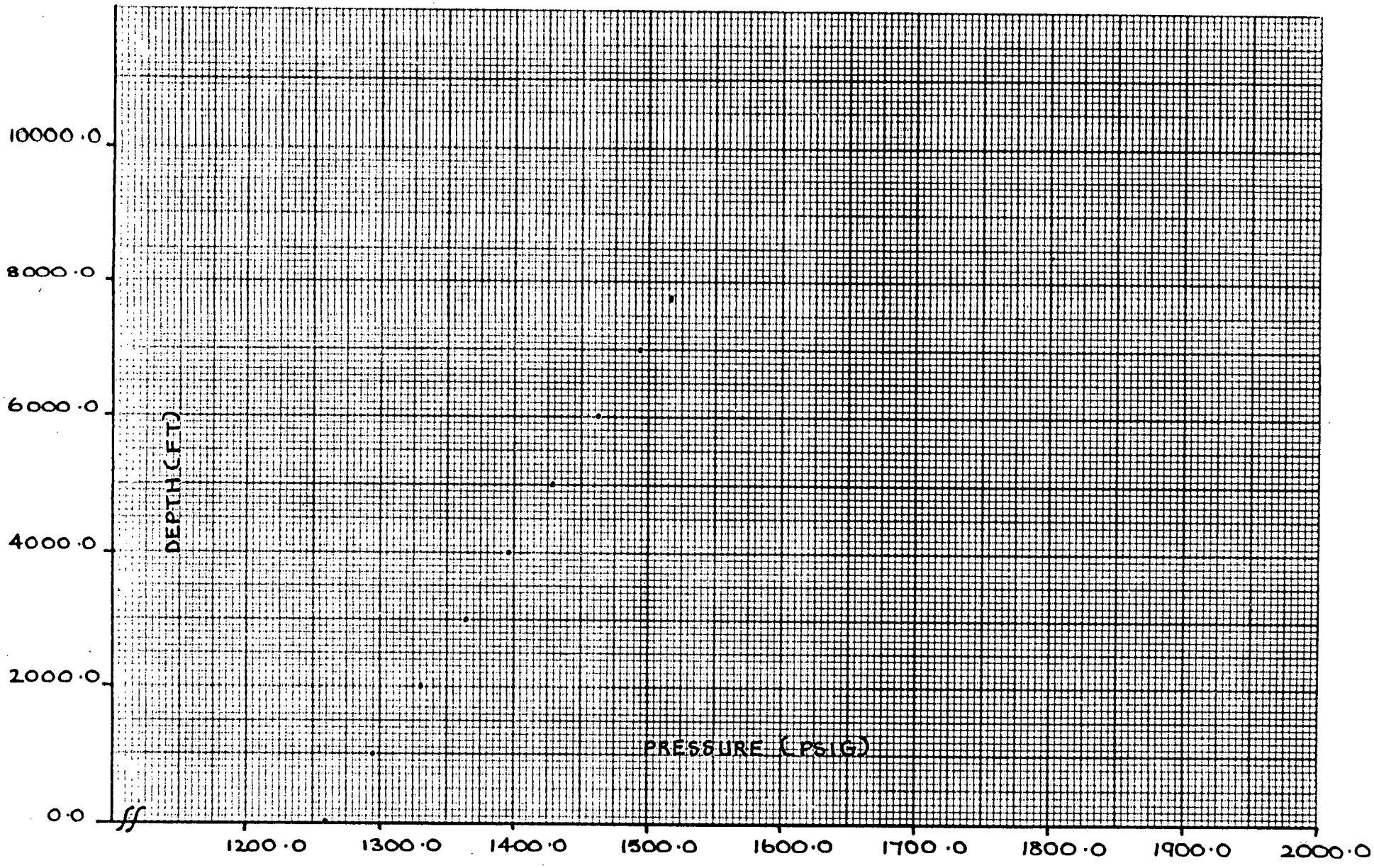
GENERAL REMARKS:
TEMP ELE USED

DWT IN: 1257
DWT OUT: 1257
MAX BHT: TEMP ELE USED 291.7°F

ELEMENT 56429/3000 CALIBRATED 26-8-87
ELEMENT 28515/3000 CALIBRATED 26-8-87

BIG LAKE #4 – STATIC PRESSURE GRADIENT – 4/9/87

ELEMENT # 56429/3000 (TOP)



Fm 5030

00113

EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE

STATIC GRADIENT SURVEY

CLIENT SANTOS

WELL BIG LAKE # 4.

OPERATOR DALE JOHNS.

DATE 4.9.87

BOMB No. 1 DATA

ELEMENT No. 56129 ELEMENT RANGE 3000 psi
RECORDER No 14629 CLOCK DATA 2518 x 3 HR
ENGAGE STYLUS 0750 DISENGAGE 1003
PRESSURE LUBRICATOR 0758

BOMB No 2 DATA

ELEMENT No. 28515 ELEMENT RANGE 3000 psi
RECORDER No 13027 x 15 TRS CLOCK DATA 2279 x 3HR.
ENGAGE STYLUS 0750. DISENGAGE 1003
BLEED LUBRICATOR 0955

DWT IN 1257 psi
DWT OUT 1257 psi

DATE	TIME	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	REMARKS
4.9.87	0813	0				0				RIH
	0816	1000				1000				HANG 5 min
	0823	2000				2000				" "
	0831	3000				3000				" "
	0839	4000				4000				" "
	0847	5000				5000				" "
	0855	6000				6000				" "
	0903	7000				7000				" "
	0910	7750				7750				HANG 15 min
	0940	0				0				" "

GENERAL REMARKS: TEMP ELE USED = 22945 x 1841 – 439°F.
14621 x 15 TRS.
2395 x 3 HR

CALIBRATED 26.8.87 @ 290°F.
TOP CLOCK BACKED OF WHILE IN HOLE

E4

00114

ROLLING BOTTOMHOLE PRESSURE SURVEY GAS CALCULATION SHEET

WELL: Big Lake #4 Pf = 4700 kPa

ORIFICE SIZE: 34.000 mm 1.339 " T = 58 °C

LINE SIZE: 87.325 mm 3.438 " Diff = 16.7 kPa

Cumulative Production to end of August = 1296.357 $m^3 \times 10^6$

Number of hours online in August = 744

Production in August = 1.679 $m^3 \times 10^6$

∴ Average flow rate in August = (1.679/744) x 24 = 0.054 $m^3 \times 10^6/d$ ✓

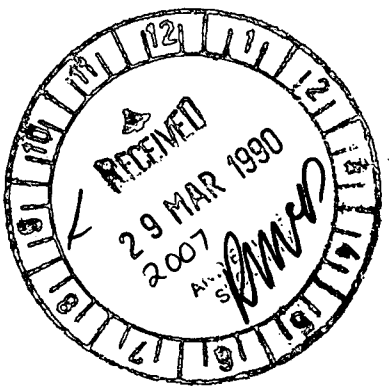
Number of days online in Sep before Shut In 0800 hrs 3 / 9 / 89
= 2.292

∴ Production up to 0800hrs 3 / 9 / 89 = 0.054 x 2.292 = 0.124 $m^3 \times 10^6$

Total cumulative production = 1296.357 + 0.124
= 1296.481 $m^3 \times 10^6$
= 46017.288 mmscf ✓

Flow rate just prior to Shut In = 0.060 $m^3 \times 10^6$ ✓
= 2.128 mmscf/d

2007



WP 2946G(13)
LGA/jfs : 8/12/86

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 01 FIELD BIG LAKE		WELL 04	
EFF DEPTH		WELL STAT		TOOL HUNG	7744'
CASING	-	CASING PRESS		ON BOTTOM	1400 2/9
LINER	-	TUBING PRESS		OFF BOTTOM	0800 7/9
DATE	890902	ELEMENT RANGE	0 - 4082	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	0800 3/9
MAX TEMP		PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	45743	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP		

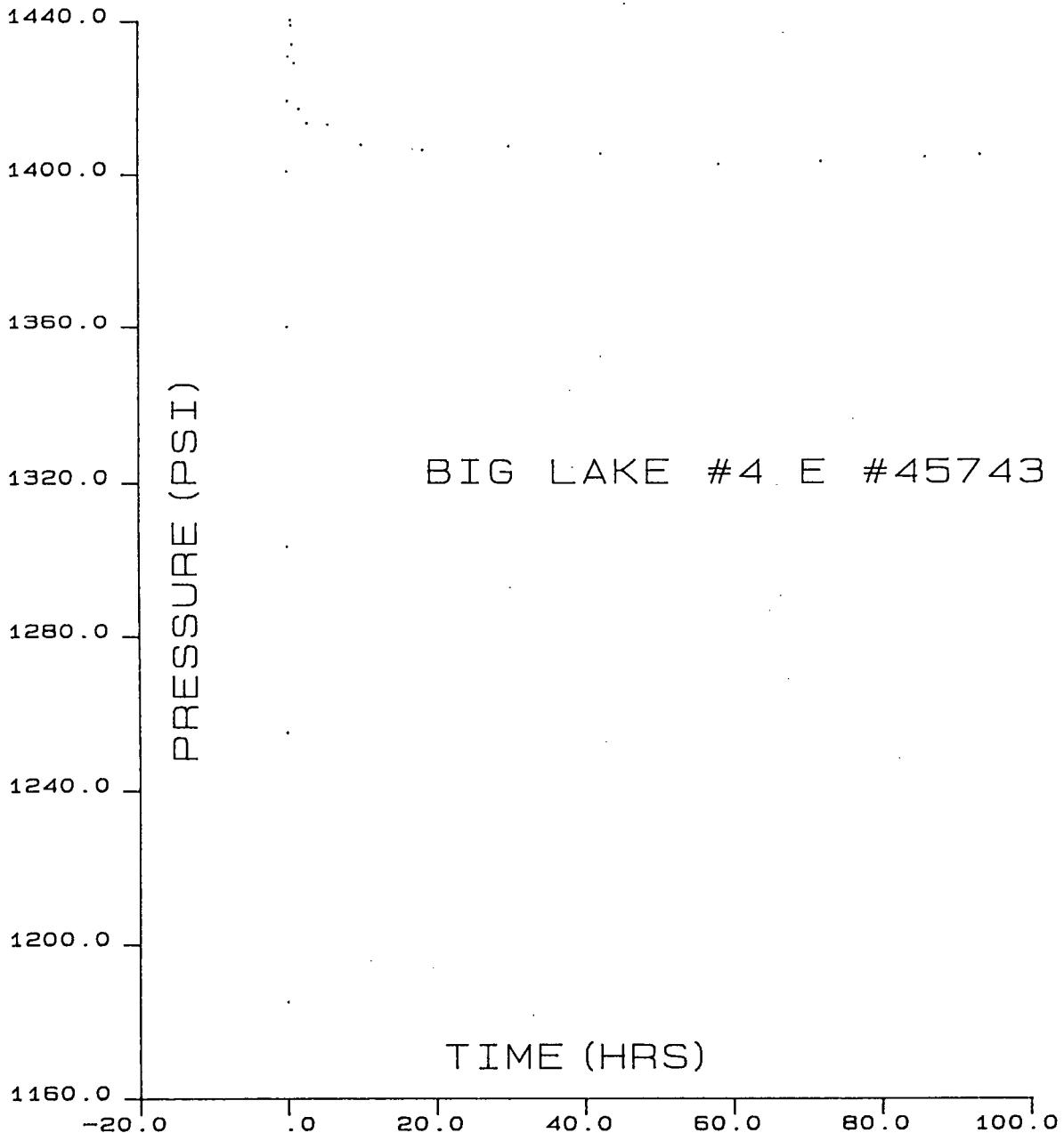
SURVEY DATA

CO. RUN 01 FIELD BIG LAKE WELL 04

TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
8:00	1185.1	1185.1	.0	9:48	1417.0	1417.0	1.8
8:01	1255.1	1255.1	.0	10:51	1413.4	1413.4	2.9
8:03	1303.4	1303.4	.0	13:43	1412.9	1412.9	5.7
8:05	1360.2	1360.2	.1	18:10	1407.6	1407.6	10.2
8:08	1400.8	1400.8	.1	2:28	1406.2	1406.2	18.5
8:13	1419.1	1419.1	.2	14:02	1407.2	1407.2	30.0
8:22	1430.7	1430.7	.4	2:24	1405.1	1405.1	42.4
8:38	1440.3	1440.3	.6	18:20	1402.3	1402.3	58.3
8:44	1438.8	1438.8	.7	8:07	1403.2	1403.2	72.1
8:54	1434.1	1434.1	.9	22:07	1404.3	1404.3	86.1
9:11	1429.0	1429.0	1.2	5:31	1404.8	1404.8	93.5

LUB IN DWT = 712 PSI / OUT = 1186 PSI
LUB IN DWT = 713 PSI / OUT = 1178 PSI

NOTE; CLOCKS RAN OUT.


BIG LAKE #4 E #45743
PRESSURE (PSI)
1440.0
1400.0
1360.0
1320.0
1280.0
1240.0
1200.0
1160.0
TIME (HRS)
-20.0
.0
20.0
40.0
60.0
80.0
100.0

SUB-SURFACE PRESSURE SURVEY

CO.		RUN 02	FIELD BIG LAKE	WELL 04	
EFF DEPTH		WELL STAT		TOOL HUNG	7750'
CASING	-	CASING PRESS		ON BOTTOM	1400 2/9
LINER	-	TUBING PRESS		OFF BOTTOM	0800 7/9
DATE	890902	ELEMENT RANGE	0 - 4067	ZERO POINT	
ELEVATION		ZONE		SHUT-IN	0800 3/9
MAX TEMP		PICK-UP		ON-PROD	
PERF	-	CAL SER NO.	45735	MPP	
TUBING	-				
UNITS	ENGLISH	PURPOSE	BUILD-UP		

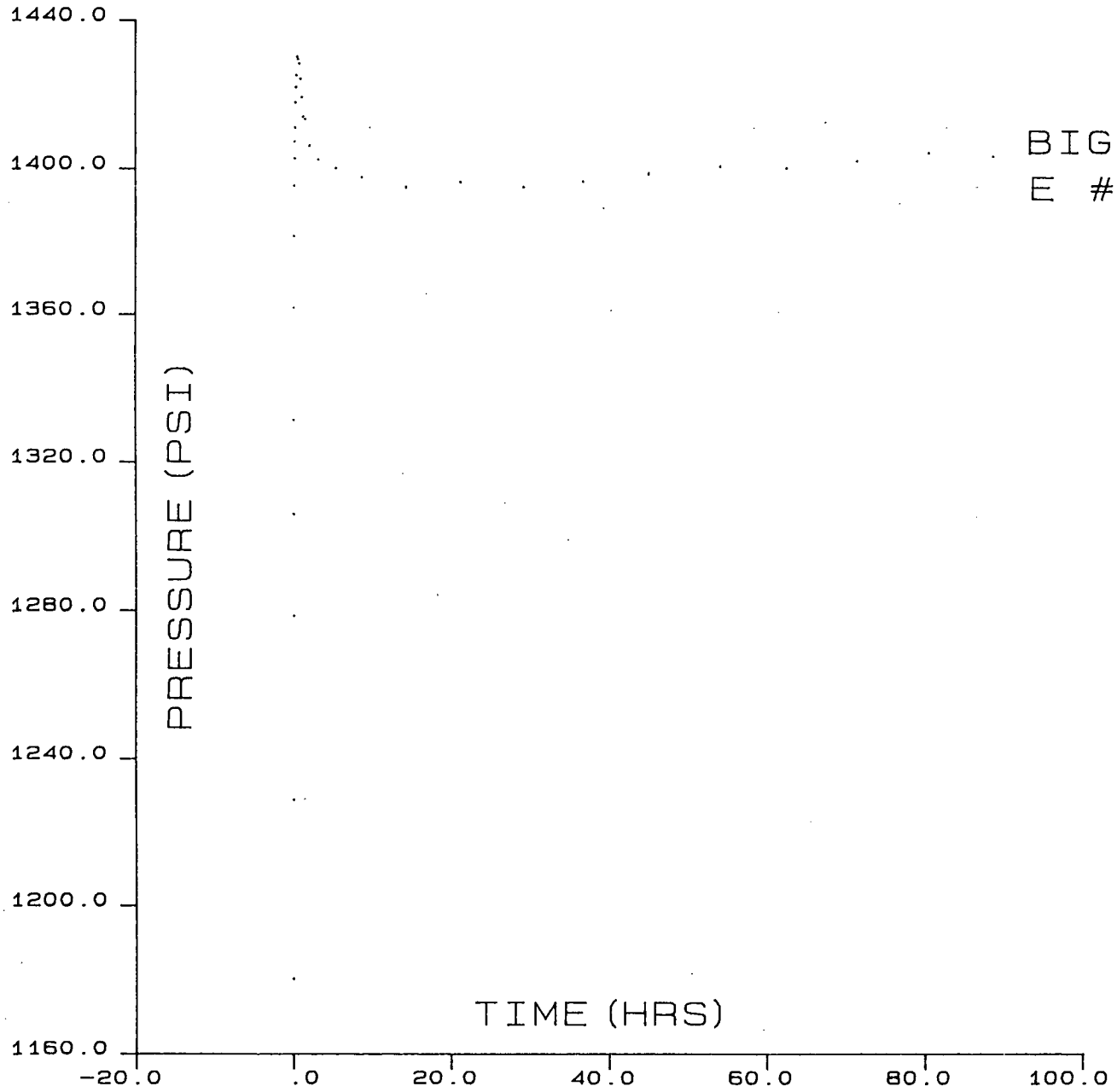
SURVEY DATA

CO. RUN 02 FIELD BIG LAKE WELL 04

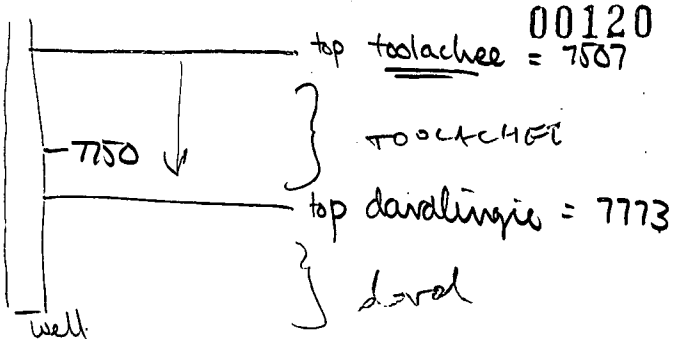
TIME	P-T	DP-DT	DTIME	TIME	P-T	DP-DT	DTIME
8:00	1180.4	1180.4	.0	9:11	1419.3	1419.3	1.2
8:02	1228.8	1228.8	.0	9:21	1414.0	1414.0	1.3
8:04	1278.5	1278.5	.1	9:36	1413.3	1413.3	1.6
8:05	1306.0	1306.0	.1	10:09	1406.1	1406.1	2.1
8:06	1331.3	1331.3	.1	11:14	1402.5	1402.5	3.2
8:07	1361.7	1361.7	.1	13:27	1400.0	1400.0	5.5
8:09	1381.6	1381.6	.1	16:45	1397.6	1397.6	8.8
8:11	1395.3	1395.3	.2	22:23	1394.8	1394.8	14.4
8:13	1402.8	1402.8	.2	5:18	1396.4	1396.4	21.3
8:15	1407.3	1407.3	.3	13:18	1394.9	1394.9	29.3
8:18	1411.2	1411.2	.3	20:48	1396.6	1396.6	36.8
8:21	1417.8	1417.8	.3	5:08	1398.6	1398.6	45.1
8:27	1421.9	1421.9	.5	14:12	1400.7	1400.7	54.2
8:31	1425.2	1425.2	.5	22:37	1400.1	1400.1	62.6
8:38	1430.1	1430.1	.6	7:32	1402.2	1402.2	71.5
8:44	1429.3	1429.3	.7	16:37	1404.3	1404.3	80.6
8:52	1428.1	1428.1	.9	0:47	1403.2	1403.2	88.8
9:02	1424.1	1424.1	1.0	5:27	1404.3	1404.3	93.5

LUB IN DWT = 712 PSI / OUT = 1186 PSI
LUB IN AMERADA = 709 PSI / OUT = 1174 PSI

NOTE ; CLOCKS RAN OUT.


BIG LAKE #4
E #45735
PRESSURE (PSI)
1440.0
1400.0
1360.0
1320.0
1280.0
1240.0
1200.0
1160.0
TIME (HRS)
-20.0
.0
20.0
40.0
60.0
80.0
100.0

00120



EXPERTEST PTY. LTD.

WIRELINE & WELL TESTING SERVICE

PO BOX 354 COWANDILLA 5033

PH. (08) 354 0488 TELEX AA87183
FAX (08) 43 7408
139 RICHMOND ROAD MARLESTON
SOUTH AUSTRALIA 5033

Tested Thursday, 7th September 1989.

CLIENT	LOCATION	FORMATION
Santos Ltd.	Big Lake # 4	0

STATIC PRESSURE GRADIENT REPORT

PRESSURE ELEMENT DATA

POSITION	SERIAL NO.	RANGE	CALIBRATED
Top	45743	4000	30/ 7/89
Bottom	45735	4000	30/ 7/89

WELL DATA

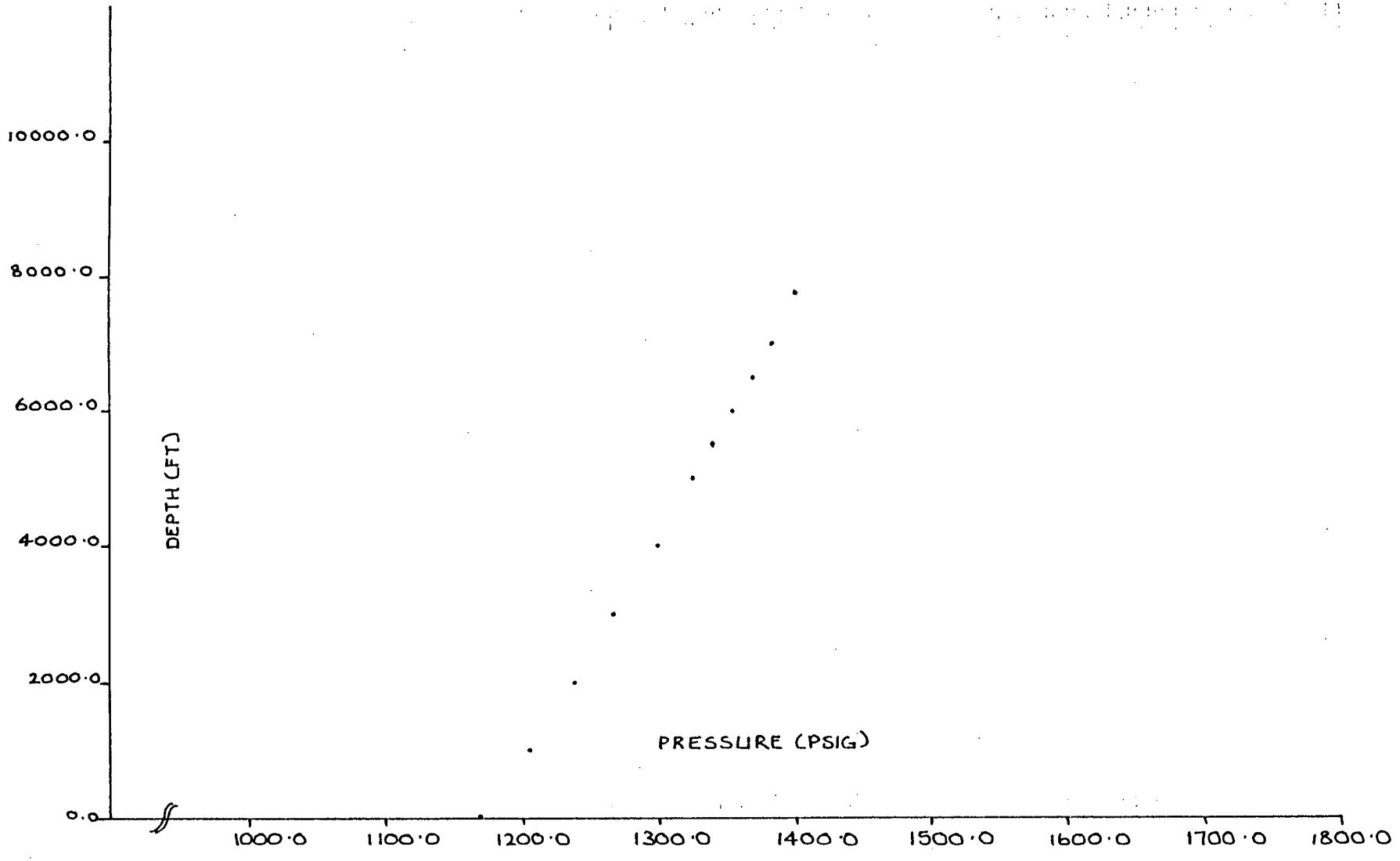
PARAMETER	VALUE
DWT In	1185 PSI
DWT Out	1181 PSI
Max BHT	274 F

	TOP ELEMENT			BOTTOM ELEMENT		
DEPTH FT KB	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT	DEFLECTION INCHES	PRESSURE PSIG	GRADIENT PSI/FT
LUB.	0.4360	889.8	-----	0.5760	1170.9	-----
1000	0.5930	1209.7	0.320	0.5930	1205.4	0.035
2000	0.6090	1242.3	0.033	0.6090	1237.8	0.032
3000	0.6240	1272.9	0.031	0.6230	1266.2	0.028
4000	0.6390	1303.4	0.031	0.6390	1298.6	0.032
5000	0.6530	1332.0	0.029	0.6520	1324.9	0.026
5500	0.6600	1346.2	0.029	0.6590	1339.1	0.028
6000	0.6670	1360.5	0.029	0.6660	1353.3	0.028
6500	0.6720	1370.7	0.020	0.6730	1367.5	0.028
7000	0.6790	1384.9	0.029	0.6800	1381.6	0.028
7750	0.6900	1407.4	0.030	0.6890	1399.9	0.024
LUB.	0.4820	983.6	-----	0.5750	1168.9	-----

GENERAL REMARKS

M B H T 274 F

BIG LAKE # 4 — STATIC PRESSURE GRADIENT — 7/9/89
ELEMENT # 45735 / 4000 (BOT)



Fm 5030

TELEPHONE (08) 354 0488 TELEX AA87183
EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE
136 RICHMOND ROAD MARLESTON SA 5033 POSTAL ADDRESS: PO BOX 354 COWANDILLA 5033

WIRELINE REPORT

CLIENT SANTOS WELL BIG LAKE # 4

DATE 1·9·89

PROGRAMME BOTTOM HOLE PRESSURE SURVEY

PURPOSE OF WORK BLIND BOX RUN : TO ENSURE TUBING IS CLEAR OF OBSTRUCTIONS PRIOR TO RUNNING AMERADAS

REPORT OF WORK PERFORMED

14·30 SWI RIG UP SWAB VALVE AND W/L UNIT
15·00 RUN IN HOLE WITH 1.75" BLIND BOX
15·35 TAG AN OBSTRUCTION @ 7495 KB
JAR DOWN 4 TIMES, UNABLE TO PASS THROUGH OBSTRUCTION
15·45 P.O.O.H
16·20 @ SURFACE, DEP. LUBRICATOR
WELL ON LINE, SECURE LEASE O/NIGHT

Operator's Signature

WORKED PERFORMED BY P. DOUGLAS / W. BOND OF EXPERTEST

WELL DATA:

Tubing Size 2 3/8" FWHP 4875 SIWHP 8302

Subsurface S.V./Landing Nipple @ S.S.D. @

'X' Nipple @ 'N'/'XN' Nipple @ Other @

Min. I.D. 1·990" @ 7487·00' Packer @ 7487·00'

Perforated Interval: 7586' - 7914

E1

TELEPHONE (08) 354 0488 TELEX AA87183
EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE
138 RICHMOND ROAD MARLESTON SA 5033 POSTAL ADDRESS: PO BOX 354 COWANDILLA 5033

WIRELINE REPORT

CLIENT SANTOS WELL BIG LAKE # 4

DATE 2·9·89

PROGRAMME BOTTOM HOLE PRESSURE SURVEY

PURPOSE OF WORK CLEAR OBSTRUCTION IN TUBING

REPORT OF WORK PERFORMED

07:00 STANDBY ON INSTRUCTIONS FROM P.E. OFFICE.
DO PAPERWORK & READ CHARTS FROM BIG LAKE # 22

08:30 TRAVEL TO LOCATION WITH MEDIUM SIZE WIRE LINE
UNIT # 53 & REAMING TOOLS

09:20 STAND-BY ON FIELD OPS TO SHUT WELL IN.

09:40 R.I.H. WITH 1·6" TOOL STRING. ENCOUNTER OBSTRUCTION
@ 7495 KB ; JAR DOWN 6-7 TIMES ON
OBSTRUCTION & CLEAR
RUN UP & DOWN THROUGH SEVERAL TIMES
- ALL CLEAR

10:00 R.I.H. & TAG P.B.T.D. @ 7959 'KB

10:20 P.O.O.H.

10:40 @ SURFACE ; DEP LUB ; RIG UP TANDEM PRESSURE
ELEMENTS & HANG IN LUB FOR B.H.P SURVEY

11:00 STAND-BY FOR FIELD OPS TO PUT WELL ON LINE

11:25 PUT WELL ON LINE

11:30 PRESSURE LUBRICATOR & HANG IN LUB FOR 2HRS

13:30 R.I.H WITH TANDEM PRESSURE ELEMENTS

14:00 HANG GAUGES @ 7750 'KB

Operator's Signature

WORKED PERFORMED BY P. DOUGLAS / W. BOND OF EXPERTEST

WELL DATA:

Tubing Size 2 3/8" FWHP 4909 SIWHP 8302

Subsurface S.V./Landing Nipple @ S.S.D. @

'X' Nipple @ 'N'/'XN' Nipple @ Other @

Min. I.D. 1·990" @ 7487' Packer @ 7487'

Perforated Interval: 7586 - 7914

E1

EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE
136 RICHMOND ROAD MARLESTON SA 5033 POSTAL ADDRESS PO BOX 354 COMANDILLA 5033
TELEPHONE (08) 354 0488 TELEX AA87183

STATIC GRADIENT SURVEY

CLIENT SANTOS

WELL BIG LAKE # 4 OPERATOR N. HAY DATE 7-9-89

BOMB No. 1 DATA

ELEMENT No. D-45743 ELEMENT RANGE 4000 PSI
RECORDER No 55338 CLOCK DATA 2431 X 3HR 15TLS
ENGAGE STYLUS 10:40 DISENGAGE 13:00
PRESSURE LUBRICATOR 10:50

BOMB No 2 DATA

ELEMENT No. D-45735 ELEMENT RANGE 4000 PSI
RECORDER No 55337 CLOCK DATA 2509 X 3HR 15TLS
ENGAGE STYLUS 10:40 DISENGAGE 13:00
BLEED LUBRICATOR 12:56

DWT IN 8177 KPA
DWT OUT 8149 KPA

DATE	TIME	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	DEPTH'	DEFLEC-TION	PRESSURE TEMP.	GRADIENT psi/ft	REMARKS
7-9-89		LUB	.436			LUB	.576			HANG 15' MIN
	11:05									R.I.H
	11:08	1000	.593			1000	.593			HANG 5'
	11:15	2000	.609			2000	.609			
	11:22	3000	.624			3000	.623			
	11:29	4000	.639			4000	.639			
	11:36	5000	.653			5000	.652			
	11:42	5500	.660			5500	.659			
	11:48	6000	.667			6000	.666			
	11:54	6500	.672			6500	.673			
	12:00	7000	.679			7000	.680			5'
	12:07	7750	.690			7750	.689			15'
	12:22									P.O.O.H
	12:41	LUB	.482			LUB	.575			HANG 15' MIN
										M.B.H.T 274°F

GENERAL REMARKS:

E4

00124

00125

TELEPHONE (08) 354 0488 TELEX AA87183

EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE

138 WEST BEACH ROAD MARLESTON SA 5033 POSTAL ADDRESS: PO BOX 354 COWANDILLA 5033

Well: BIG LAKE # 4 Date: 2ND SEPTEMBER 1989

Lubricator Data: ① 713 / 1178 ② 709 / 1174

Operator W. BOND

Pressure with D.W.T. In 4909 kPa (712 psi) 2.9.89 Out 8177 kPa (1186 psi) 7.9.89

Time Pressured 11.30 2.9.89 Time Depressured 10:20

Time Run in Hole 13.30 2.9.89 Time off Bottom 08.00

	Bomb No. 1 Data	Bomb No. 2 Data
Element No. and Range	D-45743 x 4000 Psi	D-45735 x 4000 Psi
Recorder No.	55338 x 15 TLS	55337 x 15 TLS
Clock and Lead Screw Data	F15308 x 120 HRS	F15309 x 120 HRS
Engage Stylus	Date: 2.9.89 Time: 10:43	Date: 2.9.89 Time: 10:43
Disengage	Date: 7.9.89 Time: 10:31	Date: 7.9.89 Time: 10:31

Remarks: MAXIMUM BOTTOMHOLE THERMOMETER RUN

Clocks Ran Out.

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead KPa	Casing KPa	Wellhead Temp. °C	Remarks
2ND	SEPTEMBER 1989					
	11.30		4909	ϕ	41	PRESSURE LUB
	13:30		4944	↑	59	RUN IN HOLE
	14:00		4985		59	HANG GAUGES @ 7750
	16:00		5040		59	
	20:00		4992		60	
	24:00		4937		60	
3RD	SEPTEMBER 1989					
	04:00		4930		60	
	06:00		4930		60	
	06:30		4930		60	
	07:00		4923		61	
	07:30		4930		61	
	08:00		4944		61	SHUT WELL IN &
	08:05		7847			COMMENCE 96 HOUR
	08:10		8184			BUILD-UP
	08:15		8253			
	08:30		8357			
	08:45		8357			
	09:00	1 HOUR	8322			
	09:15		8281			
	09:30		8246	↓		
	09:45		8226	ϕ		

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EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE
138 WEST BEACH ROAD MARLESTON SA 5033 POSTAL ADDRESS: PO BOX 354 COWANDILLA 5033

Well: BIG LAKE # 4 Date: 3RD SEPTEMBER 1989

Lubricator Data:

Operator W. BOND

Pressure with D.W.T. In 4909 kPa 2.9.89 Out 8177 MPA 7.9.89

Time Pressured 11:30 2.9.89 Time Depressured 10:20

Time Run in Hole 13:30 2.9.89 Time off Bottom 08.00

	Bomb No. 1 Data	Bomb No. 2 Data
Element No. and Range	D-45743 x 4000 psi	D-45735 x 4000 Psi
Recorder No.	55338 x 15 TLS	55337 x 15 TLS
Clock and Lead Screw Data	F15308 x 120 HRS	F15309 x 120 HRS
Engage Stylus	Date: 2.9.89 Time: 10:43	Date: 2.9.89 Time: 10:43
Disengage	Date: 7.9.89 Time: 10:31	Date: 7.9.89 Time: 10:31

Remarks: MAXIMUM BOTTOM HOLE THERMOMETER RUN

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead KPa	Casing KPa	Wellhead Temp.	Remarks
3RD	SEPTEMBER 1989					CONTINUE BUILD-UP
	10:00	2 HOURS	8226	ϕ		
	10:15		8219	∧		
	10:30		8205			
	10:45		8205			
	11:00	3 HOURS	8205			
	11:15		8205			
	11:30		8205			
	11:45		8205			
	12:00	4 HOURS	8205			COMMENCE 4 HOURLY
	14:00	6	8184			READINGS
	18:00	10	8157			
	22:00	14	8136			
4TH	SEPTEMBER 1989					
	02:00	18 HOURS	8115			
	06:00	22	8102			
	10:00	26	8129			
	14:00	30	8157			
	18:00	34	8143			
	22:00	38	8129			
5TH	SEPTEMBER 1989					
	02:00	42	8122	V		
	06:00	46	8122	ϕ		

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EXPERTEST PTY LTD
WIRELINE & WELL TESTING SERVICE

138 WEST BEACH ROAD MARLESTON SA 5033 POSTAL ADDRESS: PO BOX 354 COWANDILLA 5033

Well: BIG LAKE # 4 Date: 5TH SEPTEMBER 1989

Lubricator Data:

Operator W. BOND

Pressure with D.W.T. In 4909 Kpa 2.9.89 Out 8177 KPA 7.9.89

Time Pressured 11:30 — Time Depressured 10:20 —

Time Run in Hole 13:30 — Time off Bottom 08:00 —

	Bomb No. 1 Data	Bomb No. 2 Data
Element No. and Range	D-45743 x 4000 PSI	D-45735 x 4000 PSI
Recorder No.	55338 x 15 TLS	55337 x 15 TLS
Clock and Lead Screw Data	F15308 x 120HR	F15309 x 120 HR
Engage Stylus	Date: 2.9.89 Time: 10:43	Date: 2.9.89 Time: 10:43
Disengage	Date: 7.9.89 Time: 10:31	Date: 7.9.89 Time: 10:31

Remarks: MAXIMUM BOTTOM HOLE THERMOMETER RUN

Well-Head Data for Final Build-up

Date	Time	Hours shut-in Time	Wellhead Kpa	Casing Kpa	Wellhead Temp.	Remarks
5TH	SEPTEMBER 1989					
	10:00	50 HOURS	8136	Ø		CONTINUE TO MONITOR
	14:00	54	8150	Ø		BUILD-UP
	18:00	58	8150	Ø		TAKEN FROM W.H. CHART
	22:00	62	8143	Ø		
6TH	SEPTEMBER 1989					
	02:00	66	8122	Ø		
	06:00	70	8122	Ø		
	10:00	74	8129	Ø		
	14:00	78	8150	Ø		
	18:00	82	8150	Ø		
	22:00	86	8136	Ø		
7TH	SEPTEMBER 1989					
	02:00	90	8129	Ø		
	06:00	94	8129	Ø		
	08:00					OFF BOTTOM
	08:20					ARRIVE AT LUB
						M.B.H.T. 276°F

DELHI, BIG LAKE, # 4

CORE 1

9790' — 9798'9"

● CLOSE-UP PHOTOGRAPH.

97,92 97,91 97,90

97,95 97,94 97,93

9794 ←

97,98 97,97 97,96

12"

50 cm.

00128

DELHI, BIG LAKE. # 4

CORE. 2

9806'—9814'4"

● CLOSE-UP PHOTOGRAPH.

98,08 98,07 98,06

98,11 98,10 98,09

98,14 98,13 98,12

12"

50 cm.

00129