BAKER HUGHES

Baker Atlas

NORWARD ENERGY SERVICES

Customer: Ranger Oil Limited
Wellname: Ranger Ft. Liard
Well Location: P-66-A
Test Dates: July 26 - 30, 1999
Formation: TIGHT HOLE

File Name: GP99-085, RANGER03.FLD
Supervisors: B. Metcalf
Customer Reps: Wayne Casler
Test Unit/Tank: TU#29
Test Type: Multi Point Test

Final Edited Copy

GENERAL INFORMATION

Client Information:

Company: Ranger Oil Limited

Contact: Leroy Brown

Phone: Fax: e-mail:

Site Information:

Contact: Wayne Casler

Phone: 1-600-700-5696 Fax: e-mail:

Well Information:

Name: Ranger Ft.Liard

Operator: Ranger Oil

Location-Downhole: P-66-A

Location-Surface: Ft.Liard

Test Information:

Company:	Norward Energy Services		
Representative:	Paul Ringrose		
Supervisor:	Bill Metcalf		
Test Type:	Multi point Test	Job Number:	GP99-085
Test Unit:	T.U.#29		
Start Date:	1999/07/26	Start Time:	16:00:00
End Date:	1999/07/30	End Time:	09:00:00
Report Date:	1999/09/01	Prepared By:	C. Brunt
Remarks:		Qualified By:	

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/26
Final Test Date: 1999/07/30

FieldNotes

Ranger Ft.Liard

Job Number: GP99-085

Gas Meter 1

Meter Type:	Orifice Meter	
Meter Size:	154.02	mm
Previous Gas Production:	0.000	10^3m^3
Tap Type:	Flange	
Tap Location:	Downstream	
Gas Gravity (G):	0.743	
CO_2:	16.72	%
H_2S:	1.30	%
N_2:	4.91	%
Critical Temperature (T_c):	208.40	K
Critical Pressure (P_c):	5058.00	kPa

Oil Meter 1

Meter Type:	Produced Volume	
Measurement Type:	Incremental	
Columns for Produced Volume:		
Previous Oil Production:	0.000	m^3
Previous Water Production:	0.000	m^3

Water Meter 1

Meter Type:	Produced Volume	
Measurement type:	Incremental	
Columns for Produced Volume:		
Previous Water Production:	0.000	m^3

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/26
Final Test Date: 1999/07/30

FieldNotes
Field Measurements

Ranger Ft.Liard
Job Number: GP99-085

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
1	1999/07/26	16:00:00	Open masters and obtain opening pressures.																			
2		16:00:00	11300	200																		
3		16:15:00	Pressure up to choke.																			
4		16:19:59					0.00	0	0.0	0	0.000	0.000	0.00	0	0.00	0.00	0.00	0.000	0.000	0.000		
5		16:20:00	Open well to flow on a 9.525mm.																			
6		16:30:00	15700										3.70	100	3.70	531.91	3.70	0.000	0.000	0.000		
7		16:45:00	Increase choke to 11.11mm.																			
8		16:58:00	Meter in service with a 76.2mm orifice plate.																			
9		17:00:00	15800			11.11	76.20	2200	10.0	18	176.416	4.902	3.50	100	3.50	168.00	7.20	0.000	0.000	0.000		
10		17:20:00	Decrease back pressure, meter out of service.																			
11		17:30:00	16900		20	11.11							2.52	100	2.52	120.96	9.72	0.000	0.000	0.000		
12	1999/07/26	18:00:00	17700		21	11.11							2.68	100	2.68	128.64	12.40	0.000	0.000	0.000		
13		18:00:00	Meter out of service.																			
14		18:10:00	Meter in service with a 50.8mm orifice plate.																			
15		18:30:00	18300	13400	24	11.11	50.80	2400	68.0	9	211.773	17.033	2.30	100	2.30	110.40	14.70	0.000	0.000	0.000	4	136000
16		19:00:00	18700	13400	24	11.11	50.80	2550	70.0	13	219.726	21.528	1.35	100	1.35	64.80	16.05	0.000	0.000	0.000	4	136000
17		19:00:00	Bleed off casing.																			
18		19:30:00	18930		26	11.11	50.80	2600	77.0	16	231.371	26.227	1.25	100	1.25	60.00	17.30	0.000	0.000	0.000	4	120000
19		20:00:00	19150		27	11.11	50.80	2650	75.0	18	229.573	31.029	1.10	100	1.10	52.80	18.40	0.000	0.000	0.000	4	116000
20		20:00:00	H2S by Kitagawa = 27 ppm.																			
21		20:30:00	19350		28	11.11	50.80	2700	76.0	22	231.394	35.830	1.10	100	1.10	52.80	19.50	0.000	0.000	0.000	4	114000
22		21:00:00	19450		29	11.11	50.80	2800	81.4	24	243.029	40.772	0.75	100	0.75	36.00	20.25	0.000	0.000	0.000	5	114000
23		21:30:00	19480		30	11.11	50.80	2750	79.6	24	238.109	45.784	0.60	100	0.60	28.80	20.85	0.000	0.000	0.000	5	108000
24		22:00:00	19500		32	11.11	50.80	2750	81.0	25	239.727	50.762	1.20	100	1.20	57.60	22.05	0.000	0.000	0.000	5	102000
25		22:01:00	Open choke to 15.88 mm, meter out of service to change plate.																			
26		22:15:00	Meter in service with a 69.85mm (2.75in) plate.																			
27		22:30:00	16950		36	15.88	69.85	2850	91.0	22	502.840	58.497	1.70	100	1.70	81.60	23.75	0.000	0.000	0.000	5	102000
28		23:00:00	16900	11200	39	15.88	69.85	2850	92.0	23	504.580	68.991	1.80	100	1.80	86.40	25.55	0.000	0.000	0.000	5	100000
29		23:30:00	16900	11200	38	15.88	69.85	2850	91.0	26	498.727	79.442	1.55	100	1.55	74.40	27.10	0.000	0.000	0.000	5	90000
30		23:30:00	H2S by Kitagawa = 1.4%.																			
31	1999/07/27	00:00:00	16950	10700	42	15.88	69.85	2900	90.0	28	498.334	89.828	1.30	100	1.30	62.40	28.40	0.000	0.000	0.000	5	90000
32		00:30:00	17000	10700	42	15.88	69.85	2900	91.6	30	500.778	100.235	1.25	100	1.25	60.00	29.65	0.000	0.000	0.000	5	90000
33		01:00:00	17050	10700	47	15.88	69.85	2900	92.0	31	500.885	110.669	0.92	100	0.92	44.16	30.57	0.000	0.000	0.000	5	90000
34		01:30:00	17160	10400	50	15.88	69.85	2950	93.0	34	505.018	121.147	0.90	100	0.90	43.20	31.47	0.000	0.000	0.000	5	86000
35		02:00:00	17250	10700	51	15.88	69.85	2950	94.0	35	506.764	131.687	0.90	100	0.90	43.20	32.37	0.000	0.000	0.000	5	80000
36		02:30:00	17250	10700	51	15.88	69.85	2950	94.0	38	503.833	142.214	0.70	100	0.70	33.60	33.07	0.000	0.000	0.000	5	82000
37		03:00:00	17250	10600	55	15.88	69.85	2950	94.0	40	501.912	152.690	1.00	100	1.00	48.00	34.07	0.000	0.000	0.000	5	82000
38		03:00:00	H2S by Kitagawa = 1.2%.																			
39		03:30:00	17270	10600	56	15.88	69.85	2970	94.4	42	502.803	163.156	0.60	100	0.60	28.80	34.67	0.000	0.000	0.000	5	78000
40		04:00:00	17300	10900	55	15.88	69.85	3000	95.0	42	506.981	173.675	0.85	100	0.85	40.80	35.52	0.000	0.000	0.000	5	74000
41		04:30:00	17370	11100	56	15.88	69.85	3000	95.0	44	505.081	184.217	0.75	100	0.75	36.00	36.27	0.000	0.000	0.000	5	66000
42		05:00:00	17400	11200	57	15.88	69.85	3000	96.0	46	505.875	194.748	0.70	100	0.70	33.60	36.97	0.000	0.000	0.000	5	60000
43		05:30:00	17400	11000	58	15.88	69.85	3000	96.0	48	504.014	205.267	0.60	100	0.60	28.80	37.57	0.000	0.000	0.000	5	64000
44	1999/07/27	06:00:00	17400	10800	58	15.88	69.85	3000	96.0	50	502.178	215.749	0.80	100	0.80	38.40	38.37	0.000	0.000	0.000	5	68000
45		06:30:00	17400	10800	59	15.88	69.85	3900	74.0	44	509.171	226.283	0.76	100	0.76	36.48	39.13	0.000	0.000	0.000	5	66000
46		07:00:00	17400	11100	63	15.88	69.85	3900	74.0	42	511.185	236.912	0.65	100	0.65	31.20	39.78	0.000	0.000	0.000	5	64000
47		07:30:00	17450	11400	61	15.88	69.85	3800	75.0	40	509.806	247.548	0.60	100	0.60	28.80	40.38	0.000	0.000	0.000	5	64000

Fast

FieldNotes
Field Measurements

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
48	1999/07/27	08:00:00	17520	11600	62	15.88	69.85	3850	72.0	39	503.838	258.106	0.55	100	0.55	26.40	40.93	0.000	0.000	0.000	5	66000
49		08:30:00	17520	11600	64	15.88	69.85	3800	71.5	39	498.688	268.549	0.55	100	0.55	26.40	41.48	0.000	0.000	0.000	5	64000
50		09:00:00	17530	12000	64	15.88	69.85	3800	71.5	38	499.691	278.949	0.50	100	0.50	24.00	41.98	0.000	0.000	0.000	5	64000
51		09:30:00	17530	11100	63	15.88	69.85	3800	71.5	38	499.691	289.359	0.60	100	0.60	28.80	42.58	0.000	0.000	0.000	5	62000
52		09:44:00	Open choke to 17.46mm and change orifice plate to 88.9mm.																			
53	1999/07/27	10:00:00	16400	10700	67	17.46	88.90	2650	47.0	38	568.141	300.483	1.00	100	1.00	48.00	43.58	0.000	0.000	0.000	5	60000
54		10:30:00	16900	10100	70	17.46	88.90	2650	47.0	38	568.141	312.319	0.30	100	0.30	14.40	43.88	0.000	0.000	0.000	5	60000
55		11:00:00	16600	9500	72	17.46	88.90	2700	47.0	39	572.445	324.200	0.65	100	0.65	31.20	44.53	0.000	0.000	0.000	5	60000
56		11:30:00	16610	8700	69	17.46	88.90	2700	47.0	40	571.372	336.115	0.62	100	0.62	29.76	45.15	0.000	0.000	0.000	5	60000
57		12:00:00	16610	8200	69	17.46	88.90	2700	47.0	40	571.372	348.018	0.60	100	0.60	28.80	45.75	0.000	0.000	0.000	5	56000
58		12:30:00	16615	8200	69	17.46	88.90	2700	47.0	40	571.372	359.922	0.40	100	0.40	19.20	46.15	0.000	0.000	0.000	5	50000
59		12:30:00	Shut in well and monitor buildups.																			
60		12:35:00	21500	7500			0.00	0	0.0	0	0.000	359.922										
61		12:40:00	21500	7250																		
62		12:45:00	21570	7100																		
63		13:00:00	21700	6750																		
64		13:00:00	Shut in master valve, and bleed off and begin to rig in Tree Savers.																			
65		14:20:00	Dowell rigged in, hold pre-job safety meeting.																			
66		14:40:00	Dowell begin acid frac.																			
67		15:20:00	Frac completed.																			
68		15:50:00	Rig Dowell and T.S.I. off of wellhead.																			
69		17:00:00	1000	1200																		
70		17:00:00	Open well to flow on a 9.525mm.																			
71		17:00:01	1000	1200			0.00	0	0.0	0	0.000	359.922	0.00	0	0.00	0.00	46.15	0.000	0.000	0.000		
72		17:08:01	Increase choke to 11.11mm.																			
73		17:30:00	2250	900	32	11.11							4.95	100	4.95	237.73	51.10	0.000	0.000	0.000		
74	1999/07/27	18:00:00	2960	700	35	11.11							5.85	100	5.85	280.80	56.95	0.000	0.000	0.000		
75		18:30:00	3920	650	36	11.11							3.25	100	3.25	156.00	60.20	0.000	0.000	0.000		
76		19:00:00	7500	650	38	11.11							5.70	100	5.70	273.60	65.90	0.000	0.000	0.000	5	226000
77		19:30:00	10530	400	39	11.11							3.95	100	3.95	189.60	69.85	0.000	0.000	0.000	5	238000
78		20:00:00	10750	200	40	11.11	88.90	850	1.0	36	47.945	365.915	2.89	100	2.89	138.72	72.74	0.000	0.000	0.000	5	240000
79		20:30:00	13350	300	43	11.11	88.90	1100	1.5	38	65.936	367.101	3.80	100	3.80	182.40	76.54	0.000	0.000	0.000	5	236000
80		21:00:00	14600	300	40	11.11	88.90	1350	2.0	38	83.898	368.662	2.50	100	2.50	120.00	79.04	0.000	0.000	0.000	5	224000
81		21:30:00	15510	200	42	11.11	88.90	1500	3.0	36	108.470	370.665	2.33	100	2.33	111.84	81.37	0.000	0.000	0.000	5	224000
82		22:00:00	16270	250	43	11.11	88.90	1450	3.5	36	115.255	372.996	2.65	100	2.65	127.20	84.02	0.000	0.000	0.000	5	222000
83		22:30:00	16750	250	41	11.11	88.90	1450	4.0	34	123.651	375.484	2.00	100	2.00	96.00	86.02	0.000	0.000	0.000	5	214000
84		23:00:00	17290	250	43	11.11	88.90	1500	4.5	32	133.800	378.166	2.15	100	2.15	103.20	88.17	0.000	0.000	0.000	5	208000
85		23:30:00	17600	250	42	11.11	88.90	1600	5.0	36	144.487	381.065	1.60	100	1.60	76.80	89.77	0.000	0.000	0.000	5	206000
86	1999/07/28	00:00:00	17960	250	38	11.11	88.90	1575	5.5	42	148.805	384.120	1.72	100	1.72	82.56	91.49	0.000	0.000	0.000	5	200000
87		00:00:00	H2S by Kitagawa = 1.1%																			
88		00:30:00	18250	250	42	11.11	88.90	1600	6.0	40	157.165	387.307	1.50	100	1.50	72.00	92.99	0.000	0.000	0.000	5	198000
89		00:35:00	Open choke to 12.70mm.																			
90		01:00:00	17700	250	40	12.70	88.90	1400	7.0	36	160.281	390.614	1.65	100	1.65	79.20	94.64	0.000	0.000	0.000	5	197000
91		01:30:00	17800	250	44	12.70	88.90	1600	8.0	32	184.109	394.201	2.10	100	2.10	100.80	96.74	0.000	0.000	0.000	5	194000
92		02:00:00	18150	300	46	12.70	88.90	1950	9.7	32	223.434	398.447	1.95	100	1.95	93.60	98.69	0.000	0.000	0.000	5	188000
93		02:30:00	18300	350	42	12.70	88.90	2000	10.0	28	231.466	403.185	2.11	100	2.11	101.28	100.80	0.000	0.000	0.000	5	184000
94		03:00:00	18550	300	44	12.70	88.90	2100	10.0	34	234.493	408.039	1.40	100	1.40	67.20	102.20	0.000	0.000	0.000	5	176000

FieldNotes
Field Measurements

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
95	1999/07/28	03:30:00	18660	300	46	12.70	88.90	2200	11.5	36	256.429	413.153	1.50	100	1.50	72.00	103.70	0.000	0.000	0.000	5	172000
96		04:00:00	18650	300	46	12.70	88.90	2200	11.5	38	255.485	418.485	1.20	100	1.20	57.60	104.90	0.000	0.000	0.000	5	170000
97		04:30:00	18800	300	46	12.70	88.90	2250	11.0	38	252.881	423.779	1.00	100	1.00	48.00	105.90	0.000	0.000	0.000	5	168000
98		05:00:00	19100	300	46	12.70	88.90	2100	13.0	38	265.444	429.176	1.10	100	1.10	52.80	107.00	0.000	0.000	0.000	5	166000
99		05:05:00	Open choke to 15.88 mm.																			
100		05:30:00	16800	400	54	15.88	88.90	2300	32.0	37	437.086	436.494	3.21	100	3.21	154.08	110.21	0.000	0.000	0.000	5	164000
101		06:00:00	H2S by Kitagawa = 1.3%.																			
102	1999/07/28	06:00:00	16900	400	56	15.88	88.90	2350	32.0	37	441.789	445.648	1.85	100	1.85	88.80	112.06	0.000	0.000	0.000	5	162000
103		06:30:00	16730	400	56	15.88	88.90	2300	36.0	38	462.835	455.071	1.65	100	1.65	79.20	113.71	0.000	0.000	0.000	5	162000
104		07:00:00	16760	400	54	15.88	88.90	2350	36.5	38	471.083	464.800	1.85	100	1.85	88.80	115.56	0.000	0.000	0.000	5	150000
105		07:30:00	16830	0	52	15.88	88.90	2350	36.5	38	471.083	474.614	1.25	100	1.25	60.00	116.81	0.000	0.000	0.000	5	150000
106		08:00:00	16800	0	53	15.88	88.90	2400	37.0	38	479.334	484.514	1.10	100	1.10	52.80	117.91	0.000	0.000	0.000	5	138000
107		08:30:00	16950	0	62	15.88	88.90	2400	37.5	39	481.683	494.525	1.15	100	1.15	55.20	119.06	0.000	0.000	0.000	5	136000
108		09:00:00	17000	0	60	15.88	88.90	2450	37.5	43	483.118	504.575	1.00	100	1.00	48.00	120.06	0.000	0.000	0.000	5	134000
109		09:30:00	17050	0	58	15.88	88.90	2450	37.5	41	484.889	514.658	0.95	100	0.95	45.60	121.01	0.000	0.000	0.000	5	132000
110	1999/07/28	10:00:00	17050	0	61	15.88	88.90	2450	37.5	40	485.782	524.769	0.80	100	0.80	38.40	121.81	0.000	0.000	0.000	5	132000
111		10:30:00	17080	0	62	15.88	88.90	2450	37.5	39	486.682	534.899	0.80	100	0.80	38.40	122.61	0.000	0.000	0.000	5	126000
112		11:00:00	17110	0	65	15.88	88.90	2450	37.5	38	487.587	545.048	0.70	100	0.70	33.60	123.31	0.000	0.000	0.000	5	120000
113		11:30:00	17130	0	66	15.88	88.90	2450	37.7	39	487.983	555.210	0.85	100	0.85	40.80	124.16	0.000	0.000	0.000	5	120000
114		12:00:00	17150	0	66	15.88	88.90	2480	37.7	39	490.970	565.407	0.60	100	0.60	28.80	124.76	0.000	0.000	0.000	5	118000
115		12:30:00	17170	0	65	15.88	88.90	2480	37.7	39	490.970	575.636	0.65	100	0.65	31.20	125.41	0.000	0.000	0.000	5	118000
116		12:30:00	Increase choke to 17.46mm.																			
117		13:00:00	16080	0	70	17.46	88.90	2800	42.1	42	548.595	586.465	0.85	100	0.85	40.80	126.26	0.000	0.000	0.000	5	116000
118		13:30:00	16080	0	71	17.46	88.90	2800	42.5	46	547.146	597.879	0.95	100	0.95	45.60	127.21	0.000	0.000	0.000	5	118000
119	1999/07/28	14:00:00	16090	0	72	17.46	88.90	2800	42.5	46	547.146	609.278	0.75	100	0.75	36.00	127.96	0.000	0.000	0.000	5	118000
120		14:30:00	16100	0	72	17.46	88.90	2800	42.8	46	549.083	620.697	0.70	100	0.70	33.60	128.66	0.000	0.000	0.000	5	120000
121		15:00:00	16120	0	71	17.46	88.90	2800	43.0	46	550.370	632.149	0.70	100	0.70	33.60	129.36	0.000	0.000	0.000	5	112000
122		15:30:00	16120	0	72	17.46	88.90	2800	43.0	48	548.367	643.595	0.80	100	0.80	38.40	130.16	0.000	0.000	0.000	5	112000
123		16:00:00	16150	0	72	17.46	88.90	2850	43.0	48	553.278	655.070	0.87	100	0.87	41.76	131.03	0.000	0.000	0.000	5	112000
124		16:30:00	16180	0	74	17.46	88.90	2850	43.0	48	553.278	666.597	0.60	100	0.60	28.80	131.63	0.000	0.000	0.000	5	104000
125		17:00:00	16220	0	74	17.46	88.90	2880	43.0	48	556.208	678.154	0.65	100	0.65	31.20	132.28	0.000	0.000	0.000	5	100000
126		17:30:00	16220	0	74	17.46	88.90	2900	43.5	48	561.404	689.796	0.60	100	0.60	28.80	132.88	0.000	0.000	0.000	5	98000
127	1999/07/28	18:00:00	16230	0	74	17.46	88.90	2900	43.5	49	560.383	701.481	0.55	100	0.55	26.40	133.43	0.000	0.000	0.000	5	96000
128		18:30:00	16230	0	74	17.46	88.90	2900	43.5	49	560.383	713.155	0.70	100	0.70	33.60	134.13	0.000	0.000	0.000	5	94000
129		19:00:00	16240	0	74	17.46	88.89	2900	43.5	50	559.227	724.818	0.45	100	0.45	21.60	134.58	0.000	0.000	0.000	5	98000
130		19:30:00	16250	0	74	17.46	88.89	2900	43.5	50	559.227	736.469	0.70	100	0.70	33.60	135.28	0.000	0.000	0.000	5	94000
131		20:00:00	16310	0	74	17.46	88.89	2900	43.5	50	559.227	748.119	0.60	100	0.60	28.80	135.88	0.000	0.000	0.000	5	88000
132		20:30:00	16310	0	74	17.46	88.89	2900	43.5	50	559.227	759.770	0.45	100	0.45	21.60	136.33	0.000	0.000	0.000	5	88000
133		21:00:00	16310	0	74	17.46	88.89	2900	43.5	50	559.227	771.420	0.55	100	0.55	26.40	136.88	0.000	0.000	0.000	5	88000
134		21:30:00	16310	0	75	17.46	88.89	2900	43.7	50	560.517	783.084	0.50	100	0.50	24.00	137.38	0.000	0.000	0.000	5	86000
135		22:00:00	16310	0	75	17.46	88.89	2900	43.7	50	560.517	794.762	0.45	100	0.45	21.60	137.83	0.000	0.000	0.000	5	86000
136		22:30:00	16320	0	75	17.46	88.89	2900	43.7	50	560.517	806.439	0.55	100	0.55	26.40	138.38	0.000	0.000	0.000	5	88000
137		23:00:00	16320	0	75	17.46	88.89	2900	43.7	50	560.517	818.117	0.50	100	0.50	24.00	138.88	0.000	0.000	0.000	5	88000
138		23:30:00	16320	0	76	17.46	88.89	2900	43.7	50	560.517	829.794	0.50	100	0.50	24.00	139.38	0.000	0.000	0.000	5	88000
139		23:30:00	H2S by Kitagawa = 1.5%.																			
140	1999/07/29	00:00:00	16350	0	75	17.46	88.89	2900	43.7	50	560.517	841.472	0.40	100	0.40	19.20	139.78	0.000	0.000	0.000	5	88000
141		00:01:00	Shut In, monitor pressures.																			

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
142	1999/07/29	00:01:00					0.00	0	0.0	0	0.000	841.472	0.00	0	0.00	0.00	139.78	0.000	0.000	0.000		
143		00:05:00	20750	0																		
144		00:10:00	21130	0																		
145		00:15:00	21270	0																		
146		00:20:00	21350	0																		
147		00:25:00	21400	0																		
148		00:30:00	21450	0																		
149		00:45:00	21540	0																		
150		01:00:00	21550	40		0.00	0.00	0	0.0	0	0.000	841.472	0.00	0	0.00	0.00	139.78	0.000	0.000	0.000		
151		01:00:00	Pressure up to choke and open to flow on a 17.46mm choke.																			
152		01:05:00	17200	30																		
153		01:05:00	Meter in service with a 88.89mm orifice plate.																			
154		01:10:00	17100	10																		
155		01:15:00	16860	10	64	17.46	88.89	2950	45.7	40	589.048	847.607	0.00	0	0.00	0.00	139.78	0.000	0.000	0.000		
156		01:30:00	16550	0	68	17.46	88.89	2850	43.7	42	563.848	853.612	0.40	100	0.40	38.40	140.18	0.000	0.000	0.000	5	88000
157		01:45:00	16460	0	69	17.46	88.89	2850	43.8	44	562.398	859.478										
158		02:00:00	17460	0	71	17.46	88.89	2850	43.9	44	563.042	865.340	0.55	100	0.55	26.40	140.73	0.000	0.000	0.000	5	88000
159		02:01:00	Shut in and monitor pressures.																			
160		02:01:00					0.00	0	0.0	0	0.000	865.340	0.00	0	0.00	0.00	140.73	0.000	0.000	0.000		
161		02:05:00	20500	60																		
162		02:10:00	21100	90																		
163		02:15:00	21330	120																		
164		02:20:00	21400	140																		
165		02:25:00	21450	170																		
166		02:30:00	21500	200																		
167		02:45:00	21560	260																		
168		03:00:00	21600	320			0.00	0	0.0	0	0.000	865.340	0.00	0	0.00	0.00	140.73	0.000	0.000	0.000		
169		03:01:00	Pressure up to choke and open up on a 17.46mm choke.																			
170		03:05:00	17200	360																		
171		03:05:00	Meter in service with a 88.89mm orifice plate.																			
172		03:10:00	17040	400																		
173		03:15:00	16860	445																		
174		03:30:00	16580	525	65	17.46	88.89	2800	44.0	40	562.855	877.066	0.45	100	0.45	21.60	141.18	0.000	0.000	0.000	5	80000
175		03:45:00	16500	660																		
176		04:00:00	16450	750	68	17.46	88.89	2800	44.0	40	562.855	888.792	0.45	100	0.45	21.60	141.63	0.000	0.000	0.000	5	80000
177		04:30:00	16450	940	70	17.46	88.89	2800	44.0	42	560.750	900.496	0.65	100	0.65	31.20	142.28	0.000	0.000	0.000	5	80000
178		05:00:00	16460	1130	70	17.46	88.89	2800	44.0	44	558.672	912.157	0.40	100	0.40	19.20	142.68	0.000	0.000	0.000	5	80000
179		05:30:00	16460	1290	71	17.46	88.89	2800	44.0	44	558.672	923.796	0.50	100	0.50	24.00	143.18	0.000	0.000	0.000	5	80000
180	1999/07/29	06:00:00	16460	1460	72	17.46	88.89	2800	44.0	44	558.672	935.435	0.60	100	0.60	28.80	143.78	0.000	0.000	0.000	5	80000
181		06:30:00	16460	1460	72	17.46	88.90	2800	44.0	44	558.814	947.075	0.45	100	0.45	21.60	144.23	0.000	0.000	0.000	5	80000
182		07:00:00	16460	1600	72	17.46	88.90	2800	44.0	44	558.814	958.717	0.40	100	0.40	19.20	144.63	0.000	0.000	0.000	5	74000
183		07:30:00	16470	1775	72	17.46	88.90	2800	44.0	44	558.814	970.359	0.45	100	0.45	21.60	145.08	0.000	0.000	0.000	5	76000
184		08:00:00	16470	0	72	17.46	88.90	2800	44.0	44	558.814	982.001	0.40	100	0.40	19.20	145.48	0.000	0.000	0.000	5	76000
185		08:30:00	16450	0	72	17.46	88.90	2800	44.0	44	558.814	993.643	0.40	100	0.40	19.20	145.88	0.000	0.000	0.000	5	74000
186		08:30:00	Shut in well and monitor buildups.																			
187		08:35:00	20900				0.00	0	0.0	0	0.000	993.643	0.00	0	0.00	0.00	145.88	0.000	0.000	0.000		
188		08:40:00	21180																			

	Date	Clock Time	Tbg Pres	Csg Pres	WHT	Choke	Orifice	Static Pres	Diff Pres	Meter Temp	Gas Rate	Cum. Gas	Fld Gain	BSW	H2O Gain	H2O Rate	Cum H2O	Oil Gain	Oil Rate	Cum. Oil	Ph	Salinity
	yyyy/mm/d	hh:mm:ss	kPa(g)	kPa(g)	°C	mm	mm	kPa(g)	kPa	°C	$10^3m^3/d$	10^3m^3	m^3	%	m^3	m^3/d	m^3	m^3	m^3/d	m^3		ppm
189	1999/07/29	08:45:00	21300																			
190		09:00:00	21440																			
191		09:15:00	21680																			
192		09:20:00	Shut in master valve and bleed off wellhead, and take perf ball catcher apart.																			
193		10:24:00	347 perf balls recovered.																			
194		11:19:00	Begin to pressure test flowline and Bonnett's B.O.P.'s and lubricator.																			
195		12:45:00	Wireline running in hole.																			
196		14:14:00	Wireline at surface.																			
197		19:55:00	Start preasure testing.																			
198		20:35:00	Pressure test complete.																			
199		21:00:00	Open masters and monitor buildups.																			
200		21:00:00	21450	2200																		
201		22:00:00	21450	2200																		
202		23:00:00	21430	2150																		
203	1999/07/30	00:00:00	21430	2125																		
204		01:00:00	21420	2125																		
205		02:00:00	21420	2125																		
206		03:00:00	21360	2100																		
207		04:00:00	21370	2075																		
208		05:00:00	21380	2075																		
209	1999/07/30	06:00:00	21380	2050																		
210		07:00:00	21300	2000																		
211		08:00:00	21540	1800																		
212		09:00:00	21690	1300																		
213		09:00:00	FILE CONTINUED ON RANGER04.FLD.																			
214		09:00:00					0.00	0	0.0	0	0.000	993.643	0.00	0	0.00	0.00	145.88	0.000	0.000	0.000		

AGAT® Laboratories

GAS ANALYSIS

CONTAINER IDENTIFICATION: AGAT 21885

LABORATORY NUMBER: GG41644C

OPERATOR NAME: RANGER OIL LIMITED

UNIQUE WELL IDENTIFIER:

WELL NAME:

ELEVATIONS KB m: GRD m:

FIELD OR AREA: FORT LIARD

POOL OR ZONE: TIGHT HOLE

NAME OF SAMPLER:

COMPANY: NORWARD

TEST TYPE: NO: TEST RECOVERY:

TEST INTERVAL OR PERFS:

SAMPLING POINT: TEST UNIT

	SEPARATOR	TREATER	RESERVOIR	SOURCE	SAMPLED	RECEIVED
GAUGE PRESSURE kPa				2800	2800	2830
TEMPERATURE °C				44	44	21

DATE SAMPLED (Y-M-D): 99-07-29

DATE RECEIVED (Y-M-D): 99-08-12

DATE REPORTED (Y-M-D): 99-08-19

ANALYST: LQ NCO

OTHER INFORMATION: P-66-A

COMP	MOLE FRACTION AIR FREE AS RECEIVED	MOLE FRACTION AIR FREE ACID GAS FREE	PETROLEUM LIQUID CONTENT mL/m³
H_2	0.0013	0.0015	
He	0.0011	0.0013	
N_2	0.0491	0.0598	
CO_2	0.1672	0.0000	
H_2S	0.0130	0.0000	
C_1	0.7682	0.9373	
C_2	0.0001	0.0001	
C_3	0.0000	0.0000	0.0
IC_4	0.0000	0.0000	0.0
NC_4	0.0000	0.0000	0.0
IC_5	0.0000	0.0000	0.0
NC_5	0.0000	0.0000	0.0
C_6	0.0000	0.0000	0.0
C_7 +	0.0000	0.0000	0.0
C_8			
C_9			
C_{10}+			
TOTAL	1.0000	1.0000	0.0

GROSS HEATING VALUE MJ/m³ 15° C AND 101.325 kPa

MOISTURE AND ACID GAS FREE: 35.43

AIR FREE AS RECEIVED: 29.38

VAPOUR PRESSURE PENTANES PLUS: 0.0 kPa

RELATIVE DENSITY

MOISTURE FREE AS SAMPLED		MOISTURE AND ACID GAS FREE	
MEASURED	CALCULATED	MEASURED	CALCULATED
	0.743		0.577

PSEUDO CRITICAL PROPERTIES (CALCULATED)

AS SAMPLED		ACID GAS FREE	
pPc (abs)	pTc	pPc (abs)	pTc
5058 kPa	208.4 K	4521 kPa	186.2 K

RELATIVE MOLECULAR MASS

TOTAL GAS: 21.5

C_{7+}: 0.0

H_2S g/m³: 18.67

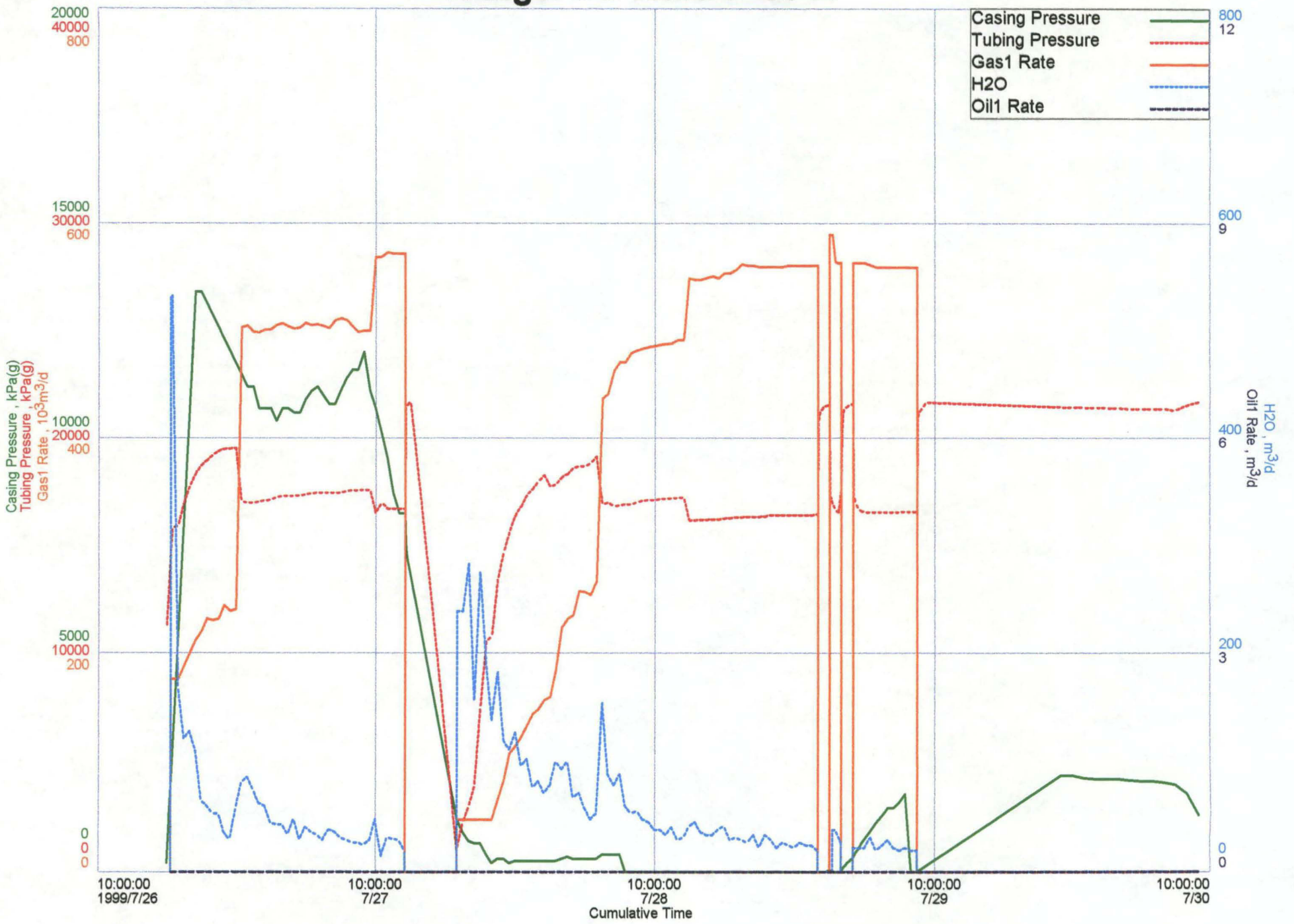
REMARKS:

EXCEED NORMAL LIMITS : CO2
FIELD H2S = 1.3%/LAB = 0.62%

Ranger Oil Limited
P-66-A
Start Test Date: 1999/07/26
Final Test Date: 1999/07/30

Ranger Ft. Liard P-66-A

Ranger Ft.Liard
Job Number: GP99-085



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Fast