

DNF/AL  
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**2.0 PÁGINA DE CERTIFICADO DA AMOSTRAGEM**

Os dados e cálculos para esta amostragem foram obtidos e atuados por mim de acordo com padrões e procedimentos da Gyrodata do Brasil LTDA, são verdadeiros e corretos pelo meu melhor conhecimento.

Lúcio Oliveira

**Data: 06 de maio de 2019**

Os dados e cálculos para esta amostragem foram checados por mim e conforme os padrões e procedimentos da Gyrodata do Brasil LTDA.

Este relatório representa uma amostragem direcional do poço baseado nos dados originais obtidos na localização do poço.

Checado por :

Operations Manager


Lucas Assad

**Data: 06 de maio de 2019**

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**Parte 3**  
**Detalhes da Amostragem**

3.0     DETALHES DA AMOSTRAGEM

UNPM/AL  
Is - 7.520  



Cliente	:	Braskem
Sonda	:	N/A
Campo	:	Sal Gema
Poço	:	Mina 37
Latitude	:	9.630402222 deg. S
Longitude	:	35.751299444 deg. W
Data da amostragem	:	30 de Abril de 2019
Tipo de amostragem	:	Gyro Multishot Contínuo
Referência de profundidade	:	Ground
Max. Profundidade da amostragem	:	1172.00m
Origem da seção vertical	:	-
Azimute da seção vertical	:	-
Referência Norte	:	Norte de Grid
Grid Correction	:	-0.46
Método de cálculo	:	Mínima Curvatura
Surveyors	:	Lucio Oliveira

OP

## ANEXO 8

- Resultados das avaliações com giroscópio  
(Continuação 2)



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**Parte 4**  
**Listagem Definitiva da Amostragem**

**4.0 LISTAGEM DEFINITIVA DA AMOSTRAGEM**

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A Gyrodata Directional Survey

for

BRASKEM

Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA

Job Number: BZ0519GVC044

Run Date: 30 Abr 2019 to 01 May 2019  
Report Generated: 02 May 2019 07:43

Surveyor: Lucio Francisco De Oliveira Filho

Calculation Method: MINIMUM CURVATURE

Survey surface coordinates obtained from: Directional Drilling Company  
UTM Zone: 25 South  
Survey Latitude: 9.630402 deg. S  
Longitude: 35.751299 deg. W

Azimuth Correction:

**Gyro: -0.46000 deg to Grid North**

Depth Reference: Rotary Table (4.9m)

**Sea Bed/Ground Level Elevation: RKB GREAT OIL RIG 106**

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Well Head Location

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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED INCL		AZIMUTH		VERTICAL		DOGLEG		HORIZONTAL		
DEPTH				DEPTH		SEVERITY		COORDINATES		
meters		deg.		meters		deg/30m		meters		
0.00	0.00	0.00	0.00	0.00	0.00	0.00		N	0.00	E

0 - 1172 MTS DE REGISTRO CONTINUO MULTISHOT COM GIROSCÓPIO NORTH SEEKING.  
CORRIDO DENTRO DE LINER 7".

PROFUNDIDADES MEDIDAS REFERENCIADAS À MESA ROTATIVA DA SONDA DE PERFURAÇÃO GREAT OIL  
106 - 4.9m. PROFUNDIDADES COLETADAS DIRETAMENTE DA UNIDADE DE WIRELINE DA EMPRESA  
FLODIM

TODOS OS AZIMUTHS DO REGISTRO ESTÃO CORREGIDOS AO GRID NORTE.  
DISTANCIA DA PONTA DA FERRAMENTA AO SENSOR, 1.50 MTS.

21.82	1.11	39.21	21.82	1.53	0.16 N	0.13 E
23.82	1.13	38.84	23.82	0.32	0.19 N	0.16 E
25.80	1.15	39.49	25.80	0.36	0.22 N	0.18 E
27.79	1.17	41.51	27.79	0.69	0.26 N	0.21 E
29.95	1.17	44.33	29.95	0.80	0.29 N	0.24 E
31.99	1.20	43.45	31.99	0.52	0.32 N	0.27 E
33.80	1.21	40.07	33.80	1.19	0.35 N	0.29 E
36.03	1.23	43.89	36.03	1.13	0.38 N	0.33 E
37.80	1.23	39.66	37.80	1.54	0.41 N	0.35 E
38.03	1.23	42.71	38.03	8.54	0.41 N	0.35 E
40.03	1.19	41.60	40.02	0.70	0.44 N	0.38 E
41.80	1.19	40.79	41.79	0.29	0.47 N	0.41 E
42.03	1.19	43.62	42.02	7.67	0.48 N	0.41 E
43.80	1.21	41.66	43.79	0.77	0.50 N	0.44 E
44.01	1.21	44.47	44.00	8.48	0.51 N	0.44 E
45.79	1.20	42.02	45.78	0.88	0.53 N	0.46 E
48.05	1.21	43.45	48.04	0.42	0.57 N	0.50 E
50.03	1.18	42.70	50.02	0.51	0.60 N	0.52 E
52.00	1.14	40.37	51.99	0.96	0.63 N	0.55 E
53.00	1.12	39.23	52.99	0.94	0.64 N	0.56 E
54.00	1.09	36.61	53.99	1.73	0.66 N	0.58 E



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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
55.00	1.05	35.68	54.99	1.28	0.67 N	0.59 E
56.00	1.02	33.48	55.99	1.48	0.69 N	0.60 E
57.00	0.99	33.56	56.99	0.93	0.70 N	0.61 E
58.00	0.96	32.55	57.99	0.99	0.72 N	0.62 E
59.00	0.93	31.97	58.99	1.03	0.73 N	0.62 E
60.00	0.88	29.95	59.99	1.78	0.75 N	0.63 E
61.00	0.82	28.35	60.99	1.77	0.76 N	0.64 E
62.00	0.77	25.73	61.99	2.00	0.77 N	0.65 E
63.00	0.70	22.22	62.99	2.47	0.78 N	0.65 E
64.00	0.64	17.97	63.99	2.40	0.79 N	0.65 E
65.00	0.59	359.38	64.99	6.09	0.80 N	0.66 E
66.00	0.59	341.11	65.99	5.61	0.81 N	0.65 E
67.00	0.60	332.74	66.99	2.61	0.82 N	0.65 E
68.00	0.62	324.96	67.99	2.56	0.83 N	0.65 E
69.00	0.65	314.62	68.99	3.51	0.84 N	0.64 E
70.00	0.68	306.64	69.99	3.01	0.85 N	0.63 E
71.00	0.78	297.55	70.99	4.41	0.85 N	0.62 E
72.00	0.87	291.13	71.99	3.95	0.86 N	0.61 E
73.00	0.99	285.69	72.99	4.36	0.87 N	0.59 E
74.00	1.11	280.83	73.99	4.60	0.87 N	0.57 E
75.00	1.26	279.12	74.99	4.68	0.87 N	0.55 E
76.00	1.39	274.82	75.99	4.96	0.88 N	0.53 E
77.00	1.53	271.98	76.99	4.54	0.88 N	0.50 E
78.00	1.65	269.05	77.99	4.32	0.88 N	0.48 E
79.00	1.76	267.48	78.99	3.67	0.88 N	0.45 E
80.00	1.86	266.49	79.99	3.11	0.88 N	0.41 E
81.00	1.94	265.84	80.99	2.52	0.87 N	0.38 E
82.00	2.01	265.27	81.99	2.12	0.87 N	0.35 E
83.00	2.07	264.82	82.99	1.92	0.87 N	0.31 E
84.00	2.13	264.30	83.99	1.97	0.86 N	0.28 E
85.00	2.20	263.67	84.98	2.13	0.86 N	0.24 E
86.00	2.27	262.93	85.98	2.35	0.86 N	0.20 E
87.00	2.35	262.25	86.98	2.37	0.85 N	0.16 E
88.00	2.42	261.73	87.98	2.23	0.84 N	0.12 E

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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
89.00	2.48	261.38	88.98	1.91	0.84 N	0.08 E
90.00	2.53	261.11	89.98	1.60	0.83 N	0.03 E
91.00	2.58	260.84	90.98	1.40	0.82 N	0.01W
92.00	2.62	260.49	91.98	1.26	0.82 N	0.06W
93.00	2.64	260.27	92.98	0.78	0.81 N	0.10W
94.00	2.67	259.91	93.98	1.00	0.80 N	0.15W
95.00	2.69	259.62	94.97	0.73	0.79 N	0.19W
96.00	2.70	259.52	95.97	0.28	0.78 N	0.24W
97.00	2.70	259.43	96.97	0.18	0.78 N	0.29W
98.00	2.70	259.49	97.97	0.08	0.77 N	0.33W
99.00	2.70	259.54	98.97	0.07	0.76 N	0.38W
100.00	2.70	259.51	99.97	0.07	0.75 N	0.42W
101.00	2.71	259.49	100.97	0.13	0.74 N	0.47W
102.00	2.71	259.42	101.97	0.11	0.73 N	0.52W
103.00	2.71	259.26	102.97	0.28	0.72 N	0.56W
104.00	2.72	259.11	103.96	0.27	0.72 N	0.61W
105.00	2.72	258.92	104.96	0.31	0.71 N	0.66W
106.00	2.73	258.76	105.96	0.25	0.70 N	0.70W
107.00	2.73	258.57	106.96	0.33	0.69 N	0.75W
108.00	2.74	258.44	107.96	0.23	0.68 N	0.80W
109.00	2.74	258.33	108.96	0.24	0.67 N	0.84W
110.00	2.76	258.23	109.96	0.39	0.66 N	0.89W
111.00	2.77	258.17	110.96	0.43	0.65 N	0.94W
112.00	2.77	258.18	111.96	0.15	0.64 N	0.99W
113.00	2.78	258.20	112.95	0.12	0.63 N	1.03W
114.00	2.79	258.21	113.95	0.36	0.62 N	1.08W
115.00	2.80	258.06	114.95	0.32	0.61 N	1.13W
116.00	2.80	257.85	115.95	0.32	0.60 N	1.18W
117.00	2.80	257.58	116.95	0.39	0.59 N	1.22W
118.00	2.80	257.42	117.95	0.24	0.58 N	1.27W
119.00	2.80	257.36	118.95	0.11	0.57 N	1.32W
120.00	2.81	257.34	119.95	0.18	0.56 N	1.37W
121.00	2.82	257.25	120.94	0.38	0.55 N	1.41W
122.00	2.84	257.06	121.94	0.58	0.53 N	1.46W



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A Gyrodata Directional Survey.

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
123.00	2.86	256.77	122.94	0.74	0.52 N	1.51 W
124.00	2.87	256.46	123.94	0.70	0.51 N	1.56 W
125.00	2.89	256.25	124.94	0.48	0.50 N	1.61 W
126.00	2.89	256.08	125.94	0.32	0.49 N	1.66 W
127.00	2.90	256.01	126.94	0.16	0.48 N	1.71 W
128.00	2.90	255.96	127.94	0.14	0.46 N	1.76 W
129.00	2.91	255.95	128.93	0.15	0.45 N	1.80 W
130.00	2.92	255.94	129.93	0.33	0.44 N	1.85 W
131.00	2.94	255.86	130.93	0.67	0.43 N	1.90 W
132.00	2.97	255.65	131.93	1.07	0.41 N	1.95 W
133.00	3.02	255.34	132.93	1.55	0.40 N	2.00 W
134.00	3.08	254.96	133.93	1.84	0.39 N	2.06 W
135.00	3.14	254.53	134.93	1.91	0.37 N	2.11 W
136.00	3.19	254.16	135.93	1.76	0.36 N	2.16 W
137.00	3.24	253.80	136.92	1.50	0.34 N	2.21 W
138.00	3.28	253.55	137.92	1.25	0.33 N	2.27 W
139.00	3.31	253.36	138.92	1.10	0.31 N	2.32 W
140.00	3.35	253.24	139.92	1.13	0.29 N	2.38 W
141.00	3.39	253.13	140.92	1.31	0.28 N	2.44 W
142.00	3.44	253.02	141.92	1.48	0.26 N	2.49 W
143.00	3.50	252.89	142.91	1.64	0.24 N	2.55 W
144.00	3.55	252.74	143.91	1.70	0.22 N	2.61 W
145.00	3.61	252.42	144.91	1.95	0.20 N	2.67 W
146.00	3.69	251.94	145.91	2.38	0.19 N	2.73 W
147.00	3.77	251.24	146.91	2.87	0.16 N	2.79 W
148.00	3.86	250.60	147.90	2.95	0.14 N	2.85 W
149.00	3.95	250.09	148.90	2.79	0.12 N	2.92 W
150.00	4.02	249.77	149.90	2.43	0.10 N	2.98 W
151.00	4.10	249.60	150.90	2.16	0.07 N	3.05 W
152.00	4.16	249.48	151.89	2.06	0.05 N	3.12 W
153.00	4.23	249.44	152.89	1.98	0.02 N	3.19 W
154.00	4.30	249.39	153.89	2.07	0.01 S	3.26 W
155.00	4.37	249.35	154.88	2.25	0.03 S	3.33 W
156.00	4.46	249.25	155.88	2.59	0.06 S	3.40 W
157.00	4.56	249.09	156.88	2.99	0.09 S	3.47 W

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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
158.00	4.66	248.84	157.88	3.18	0.12 S	3.55W
159.00	4.77	248.57	158.87	3.22	0.15 S	3.62W
160.00	4.86	248.35	159.87	2.96	0.18 S	3.70W
161.00	4.95	248.23	160.87	2.60	0.21 S	3.78W
162.00	5.03	248.18	161.86	2.34	0.24 S	3.86W
163.00	5.10	248.20	162.86	2.07	0.27 S	3.94W
164.00	5.16	248.24	163.85	1.98	0.31 S	4.03W
165.00	5.23	248.33	164.85	1.94	0.34 S	4.11W
166.00	5.29	248.44	165.85	1.94	0.37 S	4.20W
167.00	5.36	248.51	166.84	2.11	0.41 S	4.28W
168.00	5.44	248.47	167.84	2.43	0.44 S	4.37W
169.00	5.54	248.39	168.83	2.95	0.48 S	4.46W
170.00	5.66	248.23	169.83	3.60	0.51 S	4.55W
171.00	5.79	248.10	170.82	3.92	0.55 S	4.64W
172.00	5.92	247.96	171.82	3.84	0.59 S	4.74W
173.00	6.03	247.90	172.81	3.28	0.63 S	4.83W
174.00	6.12	247.94	173.81	2.70	0.67 S	4.93W
175.00	6.19	248.05	174.80	2.28	0.71 S	5.03W
176.00	6.26	248.20	175.79	2.09	0.75 S	5.13W
177.00	6.33	248.30	176.79	2.10	0.79 S	5.23W
178.00	6.40	248.39	177.78	2.24	0.83 S	5.34W
179.00	6.49	248.37	178.78	2.55	0.87 S	5.44W
180.00	6.59	248.30	179.77	3.07	0.91 S	5.55W
181.00	6.71	248.16	180.76	3.66	0.96 S	5.65W
182.00	6.84	248.04	181.76	4.07	1.00 S	5.76W
183.00	6.98	248.00	182.75	4.02	1.05 S	5.87W
184.00	7.10	248.03	183.74	3.63	1.09 S	5.99W
185.00	7.20	248.08	184.73	3.04	1.14 S	6.10W
186.00	7.28	248.11	185.72	2.46	1.18 S	6.22W
187.00	7.35	248.09	186.72	2.16	1.23 S	6.34W
188.00	7.42	248.05	187.71	2.01	1.28 S	6.46W
189.00	7.49	248.01	188.70	2.14	1.33 S	6.58W
190.00	7.57	247.94	189.69	2.42	1.38 S	6.70W
191.00	7.65	247.88	190.68	2.35	1.43 S	6.82W



## A Gyrodata Directional Survey

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BRASKEM

Well: MINA #37, LINER 7"

Location: GREAT OIL 106, SAL GEMA

Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
192.00	7.72	247.81	191.67	2.12	1.48 S	6.95W
193.00	7.84	247.66	192.66	3.50	1.53 S	7.07W
194.00	7.98	247.49	193.65	4.52	1.58 S	7.20W
195.00	8.09	247.39	194.64	3.18	1.64 S	7.33W
196.00	8.20	247.32	195.63	3.22	1.69 S	7.46W
197.00	8.28	247.27	196.62	2.44	1.75 S	7.59W
198.00	8.37	247.20	197.61	2.81	1.80 S	7.72W
199.00	8.45	247.11	198.60	2.52	1.86 S	7.86W
200.00	8.51	247.04	199.59	1.80	1.92 S	8.00W
201.00	8.58	246.91	200.58	2.18	1.97 S	8.13W
202.00	8.67	246.77	201.57	2.81	2.03 S	8.27W
203.00	8.76	246.69	202.56	2.75	2.09 S	8.41W
204.00	8.86	246.67	203.55	2.91	2.15 S	8.55W
205.00	8.97	246.65	204.53	3.15	2.21 S	8.69W
206.00	9.07	246.58	205.52	3.26	2.28 S	8.84W
207.00	9.18	246.43	206.51	3.26	2.34 S	8.98W
208.00	9.28	246.22	207.50	3.19	2.40 S	9.13W
209.00	9.38	246.03	208.48	3.07	2.47 S	9.28W
210.00	9.47	245.93	209.47	2.81	2.54 S	9.43W
211.00	9.56	245.91	210.46	2.52	2.60 S	9.58W
212.00	9.63	245.96	211.44	2.26	2.67 S	9.73W
213.00	9.70	246.02	212.43	2.09	2.74 S	9.88W
214.00	9.77	246.10	213.41	2.28	2.81 S	10.04W
215.00	9.87	246.17	214.40	2.78	2.88 S	10.19W
216.00	9.98	246.21	215.38	3.46	2.95 S	10.35W
217.00	10.12	246.25	216.37	4.06	3.02 S	10.51W
218.00	10.25	246.30	217.35	4.09	3.09 S	10.67W
219.00	10.37	246.38	218.34	3.59	3.16 S	10.84W
220.00	10.47	246.45	219.32	2.85	3.23 S	11.00W
221.00	10.54	246.52	220.30	2.25	3.31 S	11.17W
222.00	10.61	246.61	221.29	2.19	3.38 S	11.34W
223.00	10.68	246.71	222.27	2.23	3.45 S	11.51W
223.00	10.71	246.70	222.27	0.00	3.45 S	11.51W
224.00	10.77	246.91	223.25	2.15	3.53 S	11.68W



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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
225.00	10.83	247.12	224.23	2.15	3.60 S	11.85W
226.00	10.87	247.30	225.22	1.57	3.67 S	12.02W
227.00	10.95	247.47	226.20	2.59	3.74 S	12.20W
228.00	11.05	247.68	227.18	3.23	3.82 S	12.38W
229.00	11.15	247.95	228.16	3.38	3.89 S	12.55W
230.00	11.26	248.18	229.14	3.56	3.96 S	12.73W
231.00	11.37	248.39	230.12	3.52	4.04 S	12.92W
232.00	11.44	248.49	231.10	2.18	4.11 S	13.10W
233.00	11.51	248.61	232.08	2.22	4.18 S	13.29W
234.00	11.55	248.79	233.06	1.61	4.25 S	13.47W
235.00	11.58	248.97	234.04	1.41	4.33 S	13.66W
236.00	11.62	249.15	235.02	1.62	4.40 S	13.85W
237.00	11.67	249.36	236.00	1.97	4.47 S	14.04W
238.00	11.73	249.60	236.98	2.32	4.54 S	14.23W
239.00	11.76	249.77	237.96	1.37	4.61 S	14.42W
240.00	11.79	249.92	238.94	1.29	4.68 S	14.61W
241.00	11.83	250.06	239.92	1.48	4.75 S	14.80W
242.00	11.88	250.25	240.90	1.90	4.82 S	14.99W
243.00	11.94	250.57	241.87	2.68	4.89 S	15.19W
244.00	11.99	250.95	242.85	2.80	4.96 S	15.38W
245.00	12.02	251.29	243.83	2.30	5.03 S	15.58W
246.00	12.04	251.57	244.81	1.85	5.09 S	15.78W
247.00	12.07	251.76	245.79	1.49	5.16 S	15.98W
248.00	12.10	251.94	246.76	1.45	5.22 S	16.18W
249.00	12.13	252.12	247.74	1.45	5.29 S	16.37W
250.00	12.14	252.33	248.72	1.36	5.35 S	16.57W
251.00	12.17	252.55	249.70	1.66	5.42 S	16.78W
252.00	12.19	252.83	250.68	1.87	5.48 S	16.98W
253.00	12.20	253.12	251.65	1.86	5.54 S	17.18W
254.00	12.21	253.42	252.63	1.93	5.60 S	17.38W
255.00	12.20	253.69	253.61	1.74	5.66 S	17.58W
256.00	12.21	253.92	254.58	1.49	5.72 S	17.79W
257.00	12.23	254.05	255.56	1.02	5.78 S	17.99W
258.00	12.23	254.15	256.54	0.64	5.84 S	18.19W

DNPM/AL

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Q11

## A Gyrodata Directional Survey

BRASKEM

Well: MINA #37, LINER 7"

Location: GREAT OIL 106, SAL GEMA

Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
259.00	12.24	254.20	257.52	0.44	5.89 S	18.40W
260.00	12.26	254.24	258.49	0.65	5.95 S	18.60W
261.00	12.27	254.35	259.47	0.76	6.01 S	18.81W
262.00	12.29	254.48	260.45	1.02	6.07 S	19.01W
263.00	12.32	254.60	261.43	1.18	6.12 S	19.22W
264.00	12.38	254.69	262.40	1.89	6.18 S	19.42W
265.00	12.41	254.73	263.38	0.94	6.24 S	19.63W
266.00	12.41	254.95	264.36	1.42	6.29 S	19.84W
267.00	12.43	255.13	265.33	1.31	6.35 S	20.05W
268.00	12.45	255.30	266.31	1.25	6.40 S	20.25W
269.00	12.52	255.52	267.28	2.54	6.46 S	20.46W
270.00	12.55	255.67	268.26	1.33	6.51 S	20.67W
271.00	12.56	255.85	269.24	1.21	6.56 S	20.88W
272.00	12.58	255.98	270.21	1.04	6.62 S	21.10W
273.00	12.62	256.03	271.19	1.24	6.67 S	21.31W
274.00	12.65	256.09	272.16	0.98	6.72 S	21.52W
275.00	12.69	256.18	273.14	1.34	6.78 S	21.73W
276.00	12.72	256.25	274.12	1.01	6.83 S	21.95W
277.00	12.75	256.38	275.09	1.24	6.88 S	22.16W
278.00	12.80	256.53	276.07	1.80	6.93 S	22.38W
279.00	12.88	256.68	277.04	2.60	6.98 S	22.59W
280.00	12.95	256.86	278.02	2.42	7.03 S	22.81W
281.00	13.06	256.93	278.99	3.33	7.09 S	23.03W
282.00	13.12	257.00	279.96	1.86	7.14 S	23.25W
283.00	13.16	257.04	280.94	1.23	7.19 S	23.47W
284.00	13.21	257.05	281.91	1.50	7.24 S	23.69W
285.00	13.27	257.07	282.89	1.81	7.29 S	23.92W
286.00	13.33	257.14	283.86	1.86	7.34 S	24.14W
287.00	13.42	257.16	284.83	2.70	7.39 S	24.37W
288.00	13.52	257.16	285.80	3.00	7.44 S	24.59W
289.00	13.63	257.12	286.78	3.31	7.50 S	24.82W
290.00	13.74	257.05	287.75	3.34	7.55 S	25.05W
291.00	13.86	257.00	288.72	3.62	7.60 S	25.28W
292.00	13.96	256.94	289.69	3.03	7.66 S	25.52W




DNPAAL  
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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
293.00	14.07	256.90	290.66	3.31	7.71 S	25.75W
294.00	14.17	256.86	291.63	3.01	7.77 S	25.99W
295.00	14.25	256.81	292.60	2.43	7.82 S	26.23W
296.00	14.33	256.78	293.57	2.41	7.88 S	26.47W
297.00	14.39	256.74	294.54	1.82	7.94 S	26.71W
298.00	14.46	256.65	295.51	2.21	7.99 S	26.96W
299.00	14.54	256.58	296.47	2.46	8.05 S	27.20W
300.00	14.64	256.49	297.44	3.08	8.11 S	27.44W
301.00	14.78	256.28	298.41	4.49	8.17 S	27.69W
302.00	14.91	256.09	299.38	4.16	8.23 S	27.94W
303.00	15.04	255.87	300.34	4.26	8.29 S	28.19W
304.00	15.13	255.69	301.31	3.04	8.36 S	28.44W
305.00	15.22	255.54	302.27	2.95	8.42 S	28.70W
306.00	15.29	255.42	303.24	2.30	8.49 S	28.95W
307.00	15.37	255.31	304.20	2.55	8.56 S	29.21W
308.00	15.44	255.21	305.16	2.25	8.62 S	29.46W
309.00	15.52	255.11	306.13	2.53	8.69 S	29.72W
310.00	15.59	255.02	307.09	2.22	8.76 S	29.98W
311.00	15.67	254.94	308.06	2.49	8.83 S	30.24W
312.00	15.75	254.81	309.02	2.62	8.90 S	30.50W
313.00	15.85	254.58	309.98	3.54	8.97 S	30.76W
314.00	15.97	254.39	310.94	3.92	9.05 S	31.03W
315.00	16.09	254.32	311.90	3.65	9.12 S	31.29W
316.00	16.21	254.32	312.86	3.60	9.20 S	31.56W
317.00	16.27	254.36	313.82	1.83	9.27 S	31.83W
318.00	16.32	254.34	314.78	1.51	9.35 S	32.10W
319.00	16.38	254.28	315.74	1.87	9.42 S	32.37W
320.00	16.44	254.20	316.70	1.92	9.50 S	32.64W
321.00	16.50	254.13	317.66	1.90	9.58 S	32.92W
322.00	16.55	254.05	318.62	1.65	9.66 S	33.19W
323.00	16.59	254.02	319.58	1.23	9.73 S	33.47W
324.00	16.63	253.98	320.54	1.25	9.81 S	33.74W
325.00	16.68	253.91	321.49	1.62	9.89 S	34.02W
326.00	16.71	253.86	322.45	1.00	9.97 S	34.29W


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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED INCL	AZIMUTH	VERTICAL	DOGLEG	HORIZONTAL
DEPTH			SEVERITY	COORDINATES
meters	deg.	deg.	deg/30m	meters
327.00	16.75	253.82	323.41 1.25	10.05 S 34.57W
328.00	16.78	253.84	324.37 0.92	10.13 S 34.85W
329.00	16.81	253.87	325.32 0.94	10.21 S 35.12W
330.00	16.85	253.88	326.28 1.20	10.29 S 35.40W
331.00	16.90	253.85	327.24 1.52	10.37 S 35.68W
332.00	16.95	253.81	328.20 1.54	10.46 S 35.96W
333.00	17.00	253.76	329.15 1.56	10.54 S 36.24W
334.00	17.05	253.74	330.11 1.51	10.62 S 36.52W
335.00	17.10	253.74	331.06 1.50	10.70 S 36.80W
336.00	17.13	253.72	332.02 0.92	10.78 S 37.09W
337.00	17.19	253.67	332.98 1.85	10.87 S 37.37W
338.00	17.24	253.58	333.93 1.70	10.95 S 37.65W
339.00	17.30	253.53	334.89 1.85	11.03 S 37.94W
340.00	17.38	253.55	335.84 2.41	11.12 S 38.22W
341.00	17.45	253.61	336.79 2.17	11.20 S 38.51W
342.00	17.52	253.68	337.75 2.19	11.29 S 38.80W
343.00	17.60	253.74	338.70 2.46	11.37 S 39.09W
344.00	17.68	253.75	339.65 2.40	11.46 S 39.38W
345.00	17.75	253.75	340.61 2.10	11.54 S 39.67W
346.00	17.82	253.70	341.56 2.15	11.63 S 39.96W
347.00	17.89	253.61	342.51 2.26	11.71 S 40.26W
348.00	17.99	253.50	343.46 3.17	11.80 S 40.55W
349.00	18.11	253.36	344.41 3.83	11.89 S 40.85W
350.00	18.26	253.26	345.36 4.60	11.98 S 41.15W
351.00	18.41	253.18	346.31 4.56	12.07 S 41.45W
352.00	18.55	253.18	347.26 4.20	12.16 S 41.75W
353.00	18.67	253.18	348.21 3.60	12.25 S 42.06W
354.00	18.76	253.17	349.16 2.70	12.35 S 42.37W
355.00	18.84	253.18	350.10 2.40	12.44 S 42.68W
356.00	18.91	253.16	351.05 2.11	12.53 S 42.98W
357.00	19.00	253.15	351.99 2.70	12.63 S 43.30W
358.00	19.10	253.15	352.94 3.00	12.72 S 43.61W
359.00	19.21	253.15	353.88 3.30	12.82 S 43.92W
360.00	19.34	253.13	354.83 3.91	12.91 S 44.24W
361.00	19.47	253.05	355.77 3.98	13.01 S 44.56W



UNPMAL  
Is: 7.534  


A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
362.00	19.62	252.99	356.71	4.54	13.11 S	44.88W
363.00	19.80	252.93	357.66	5.43	13.21 S	45.20W
364.00	19.96	252.96	358.60	4.81	13.31 S	45.52W
365.00	20.10	252.98	359.54	4.21	13.41 S	45.85W
366.00	20.19	252.97	360.47	2.70	13.51 S	46.18W
367.00	20.25	252.97	361.41	1.80	13.61 S	46.51W
368.00	20.32	252.99	362.35	2.11	13.71 S	46.84W
369.00	20.39	252.97	363.29	2.11	13.81 S	47.17W
370.00	20.45	252.98	364.23	1.80	13.91 S	47.51W
371.00	20.53	252.99	365.16	2.40	14.02 S	47.84W
372.00	20.64	252.97	366.10	3.31	14.12 S	48.18W
373.00	20.75	252.95	367.03	3.31	14.22 S	48.52W
374.00	20.87	252.93	367.97	3.61	14.33 S	48.86W
375.00	20.97	252.85	368.90	3.12	14.43 S	49.20W
376.00	21.06	252.81	369.84	2.73	14.54 S	49.54W
377.00	21.13	252.77	370.77	2.14	14.64 S	49.88W
378.00	21.20	252.76	371.70	2.10	14.75 S	50.23W
379.00	21.25	252.77	372.63	1.50	14.86 S	50.58W
380.00	21.29	252.78	373.57	1.20	14.97 S	50.92W
381.00	21.34	252.78	374.50	1.50	15.07 S	51.27W
382.00	21.39	252.77	375.43	1.50	15.18 S	51.62W
383.00	21.44	252.77	376.36	1.50	15.29 S	51.97W
384.00	21.49	252.78	377.29	1.50	15.40 S	52.32W
385.00	21.53	252.74	378.22	1.28	15.51 S	52.67W
386.00	21.57	252.72	379.15	1.22	15.62 S	53.02W
387.00	21.61	252.70	380.08	1.22	15.73 S	53.37W
388.00	21.64	252.66	381.01	1.00	15.83 S	53.72W
389.00	21.67	252.67	381.94	0.91	15.94 S	54.07W
390.00	21.70	252.67	382.87	0.90	16.06 S	54.42W
391.00	21.73	252.71	383.80	1.00	16.17 S	54.78W
392.00	21.77	252.75	384.73	1.28	16.28 S	55.13W
393.00	21.80	252.77	385.65	0.93	16.39 S	55.49W
394.00	21.83	252.75	386.58	0.93	16.50 S	55.84W
395.00	21.86	252.75	387.51	0.90	16.61 S	56.20W

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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
396.00	21.89	252.77	388.44	0.93	16.72 S	56.55W
397.00	21.94	252.82	389.37	1.60	16.83 S	56.91W
398.00	21.99	252.84	390.29	1.52	16.94 S	57.27W
399.00	22.04	252.86	391.22	1.52	17.05 S	57.62W
400.00	22.06	252.85	392.15	0.61	17.16 S	57.98W
401.00	22.09	252.82	393.08	0.96	17.27 S	58.34W
402.00	22.11	252.81	394.00	0.61	17.38 S	58.70W
403.00	22.15	252.80	394.93	1.21	17.49 S	59.06W
404.00	22.19	252.81	395.85	1.21	17.60 S	59.42W
405.00	22.23	252.83	396.78	1.22	17.71 S	59.78W
406.00	22.26	252.81	397.71	0.93	17.83 S	60.14W
407.00	22.28	252.78	398.63	0.69	17.94 S	60.51W
408.00	22.29	252.78	399.56	0.30	18.05 S	60.87W
409.00	22.28	252.80	400.48	0.38	18.16 S	61.23W
410.00	22.31	252.80	401.41	0.90	18.28 S	61.59W
411.00	22.34	252.81	402.33	0.91	18.39 S	61.96W
412.00	22.40	252.82	403.26	1.80	18.50 S	62.32W
413.00	22.46	252.85	404.18	1.83	18.61 S	62.68W
414.00	22.50	252.89	405.10	1.28	18.73 S	63.05W
415.00	22.54	252.91	406.03	1.22	18.84 S	63.42W
416.00	22.57	252.90	406.95	0.91	18.95 S	63.78W
417.00	22.60	252.87	407.88	0.96	19.06 S	64.15W
418.00	22.63	252.86	408.80	0.91	19.18 S	64.52W
419.00	22.67	252.86	409.72	1.20	19.29 S	64.88W
420.00	22.70	252.87	410.64	0.91	19.40 S	65.25W
421.00	22.72	252.90	411.57	0.69	19.52 S	65.62W
422.00	22.72	252.90	412.49	0.00	19.63 S	65.99W
423.00	22.72	252.88	413.41	0.23	19.74 S	66.36W
424.00	22.72	252.84	414.33	0.46	19.86 S	66.73W
425.00	22.74	252.79	415.26	0.83	19.97 S	67.10W
426.00	22.76	252.74	416.18	0.83	20.09 S	67.47W
427.00	22.77	252.75	417.10	0.32	20.20 S	67.84W
428.00	22.78	252.80	418.02	0.65	20.32 S	68.21W
429.00	22.80	252.86	418.94	0.92	20.43 S	68.58W



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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
430.00	22.80	252.89	419.87	0.35	20.55 S	68.95W
431.00	22.79	252.88	420.79	0.32	20.66 S	69.32W
432.00	22.74	252.81	421.71	1.71	20.77 S	69.69W
433.00	22.69	252.73	422.63	1.76	20.89 S	70.06W
434.00	22.65	252.70	423.56	1.25	21.00 S	70.42W
435.00	22.63	252.70	424.48	0.60	21.12 S	70.79W
436.00	22.63	252.73	425.40	0.35	21.23 S	71.16W
437.00	22.62	252.71	426.32	0.38	21.35 S	71.53W
438.00	22.62	252.67	427.25	0.46	21.46 S	71.89W
439.00	22.61	252.59	428.17	0.97	21.57 S	72.26W
440.00	22.62	252.50	429.09	1.08	21.69 S	72.63W
441.00	22.63	252.42	430.02	0.97	21.81 S	72.99W
442.00	22.63	252.32	430.94	1.15	21.92 S	73.36W
443.00	22.62	252.20	431.86	1.42	22.04 S	73.73W
444.00	22.60	252.09	432.79	1.40	22.16 S	74.09W
445.00	22.60	251.92	433.71	1.96	22.28 S	74.46W
446.00	22.61	251.76	434.63	1.87	22.40 S	74.82W
447.00	22.66	251.60	435.56	2.38	22.52 S	75.19W
448.00	22.69	251.48	436.48	1.65	22.64 S	75.56W
449.00	22.70	251.35	437.40	1.53	22.76 S	75.92W
450.00	22.70	251.24	438.32	1.27	22.89 S	76.29W
451.00	22.70	251.09	439.25	1.74	23.01 S	76.65W
452.00	22.70	250.95	440.17	1.62	23.14 S	77.02W
453.00	22.70	250.85	441.09	1.16	23.26 S	77.38W
454.00	22.70	250.71	442.01	1.62	23.39 S	77.75W
455.00	22.69	250.55	442.94	1.88	23.52 S	78.11W
456.00	22.65	250.35	443.86	2.61	23.65 S	78.47W
457.00	22.61	250.19	444.78	2.20	23.78 S	78.84W
458.00	22.57	250.06	445.70	1.92	23.91 S	79.20W
459.00	22.56	249.98	446.63	0.97	24.04 S	79.56W
460.00	22.57	249.91	447.55	0.86	24.17 S	79.92W
461.00	22.57	249.78	448.48	1.50	24.30 S	80.28W
462.00	22.57	249.60	449.40	2.07	24.43 S	80.64W
463.00	22.58	249.39	450.32	2.44	24.57 S	81.00W

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## A Gyrodata Directional Survey

BRASKEM

Well: MINA #37, LINER 7"

Location: GREAT OIL 106, SAL GEMA


Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLE SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
464.00	22.59	249.18	451.25	2.44	24.71 S	81.36W
465.00	22.59	248.96	452.17	2.54	24.84 S	81.72W
466.00	22.59	248.75	453.09	2.42	24.98 S	82.07W
467.00	22.58	248.47	454.02	3.24	25.12 S	82.43W
468.00	22.57	248.17	454.94	3.47	25.26 S	82.79W
469.00	22.56	247.76	455.86	4.73	25.41 S	83.14W
470.00	22.55	247.37	456.79	4.50	25.55 S	83.50W
471.00	22.54	247.02	457.71	4.04	25.70 S	83.85W
472.00	22.53	246.75	458.63	3.12	25.85 S	84.20W
473.00	22.53	246.57	459.56	2.07	26.00 S	84.56W
474.00	22.54	246.41	460.48	1.86	26.16 S	84.91W
475.00	22.54	246.28	461.40	1.49	26.31 S	85.26W
476.00	22.55	246.17	462.33	1.30	26.47 S	85.61W
477.00	22.54	246.06	463.25	1.30	26.62 S	85.96W
478.00	22.53	245.97	464.17	1.08	26.78 S	86.31W
479.00	22.51	245.93	465.10	0.76	26.93 S	86.66W
480.00	22.47	245.91	466.02	1.22	27.09 S	87.01W
481.00	22.42	245.89	466.95	1.52	27.24 S	87.36W
482.00	22.37	245.87	467.87	1.52	27.40 S	87.71W
483.00	22.33	245.79	468.80	1.51	27.56 S	88.05W
484.00	22.31	245.73	469.72	0.91	27.71 S	88.40W
485.00	22.31	245.68	470.65	0.57	27.87 S	88.74W
486.00	22.30	245.66	471.57	0.38	28.02 S	89.09W
487.00	22.29	245.63	472.50	0.45	28.18 S	89.44W
488.00	22.29	245.64	473.42	0.11	28.34 S	89.78W
489.00	22.30	245.61	474.35	0.45	28.49 S	90.13W
490.00	22.30	245.55	475.27	0.68	28.65 S	90.47W
491.00	22.30	245.44	476.20	1.25	28.81 S	90.82W
492.00	22.27	245.36	477.12	1.28	28.97 S	91.16W
493.00	22.22	245.37	478.05	1.50	29.12 S	91.51W
494.00	22.17	245.41	478.97	1.57	29.28 S	91.85W
495.00	22.12	245.48	479.90	1.70	29.44 S	92.19W
496.00	22.10	245.49	480.83	0.61	29.59 S	92.54W
497.00	22.08	245.48	481.75	0.61	29.75 S	92.88W



A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

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MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
498.00	22.09	245.48	482.68	0.30	29.91 S	93.22W
499.00	22.10	245.48	483.61	0.30	30.06 S	93.56W
500.00	22.12	245.48	484.53	0.60	30.22 S	93.90W
501.00	22.13	245.49	485.46	0.32	30.37 S	94.25W
502.00	22.12	245.49	486.39	0.30	30.53 S	94.59W
503.00	22.09	245.50	487.31	0.91	30.69 S	94.93W
504.00	22.05	245.47	488.24	1.25	30.84 S	95.27W
505.00	22.02	245.45	489.17	0.93	31.00 S	95.62W
506.00	22.00	245.44	490.09	0.61	31.15 S	95.96W
507.00	21.98	245.44	491.02	0.60	31.31 S	96.30W
508.00	21.97	245.47	491.95	0.45	31.47 S	96.64W
509.00	21.96	245.51	492.88	0.54	31.62 S	96.98W
510.00	21.96	245.55	493.80	0.45	31.78 S	97.32W
511.00	21.97	245.59	494.73	0.54	31.93 S	97.66W
512.00	21.96	245.63	495.66	0.54	32.08 S	98.00W
513.00	21.97	245.68	496.58	0.64	32.24 S	98.34W
514.00	21.98	245.66	497.51	0.37	32.39 S	98.68W
515.00	21.98	245.60	498.44	0.67	32.55 S	99.02W
516.00	21.96	245.51	499.37	1.17	32.70 S	99.36W
517.00	21.93	245.48	500.29	0.96	32.86 S	99.70W
518.00	21.90	245.54	501.22	1.12	33.01 S	100.04W
519.00	21.88	245.58	502.15	0.75	33.17 S	100.38W
520.00	21.88	245.63	503.08	0.56	33.32 S	100.72W
521.00	21.87	245.64	504.01	0.32	33.47 S	101.06W
522.00	21.87	245.61	504.93	0.34	33.63 S	101.40W
523.00	21.88	245.63	505.86	0.37	33.78 S	101.74W
524.00	21.88	245.66	506.79	0.34	33.93 S	102.08W
525.00	21.88	245.68	507.72	0.22	34.09 S	102.42W
526.00	21.87	245.68	508.65	0.30	34.24 S	102.76W
527.00	21.85	245.66	509.57	0.64	34.40 S	103.10W
528.00	21.82	245.64	510.50	0.93	34.55 S	103.44W
529.00	21.79	245.63	511.43	0.91	34.70 S	103.77W
530.00	21.76	245.60	512.36	0.96	34.86 S	104.11W
531.00	21.74	245.59	513.29	0.61	35.01 S	104.45W

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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
532.00	21.73	245.60	514.22	0.32	35.16 S	104.79W
533.00	21.73	245.60	515.15	0.00	35.31 S	105.12W
534.00	21.73	245.63	516.08	0.33	35.47 S	105.46W
535.00	21.72	245.65	517.00	0.37	35.62 S	105.80W
536.00	21.72	245.66	517.93	0.11	35.77 S	106.14W
537.00	21.72	245.68	518.86	0.22	35.92 S	106.47W
538.00	21.71	245.65	519.79	0.45	36.08 S	106.81W
539.00	21.68	245.58	520.72	1.19	36.23 S	107.15W
540.00	21.65	245.58	521.65	0.90	36.38 S	107.48W
541.00	21.63	245.58	522.58	0.60	36.53 S	107.82W
542.00	21.61	245.63	523.51	0.82	36.69 S	108.15W
543.00	21.61	245.67	524.44	0.44	36.84 S	108.49W
544.00	21.60	245.68	525.37	0.32	36.99 S	108.83W
545.00	21.59	245.70	526.30	0.37	37.14 S	109.16W
546.00	21.59	245.73	527.23	0.33	37.29 S	109.50W
547.00	21.60	245.76	528.16	0.45	37.44 S	109.83W
548.00	21.60	245.80	529.09	0.44	37.60 S	110.17W
549.00	21.60	245.85	530.02	0.55	37.75 S	110.50W
550.00	21.60	245.89	530.95	0.44	37.90 S	110.84W
551.00	21.60	245.96	531.88	0.77	38.05 S	111.18W
552.00	21.60	246.02	532.81	0.66	38.20 S	111.51W
553.00	21.58	246.06	533.74	0.74	38.35 S	111.85W
554.00	21.55	246.09	534.67	0.96	38.50 S	112.18W
555.00	21.52	246.11	535.60	0.93	38.64 S	112.52W
556.00	21.50	246.15	536.53	0.74	38.79 S	112.85W
557.00	21.48	246.23	537.46	1.06	38.94 S	113.19W
558.00	21.47	246.32	538.39	1.03	39.09 S	113.52W
559.00	21.46	246.38	539.32	0.72	39.23 S	113.86W
560.00	21.45	246.45	540.25	0.82	39.38 S	114.20W
561.00	21.45	246.51	541.18	0.66	39.53 S	114.53W
562.00	21.43	246.56	542.11	0.81	39.67 S	114.87W
563.00	21.42	246.62	543.04	0.72	39.82 S	115.20W
564.00	21.39	246.68	543.97	1.11	39.96 S	115.54W
565.00	21.33	246.77	544.90	2.05	40.11 S	115.87W
566.00	21.26	246.85	545.84	2.27	40.25 S	116.20W



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A Gyrodata Directional Survey

BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
567.00	21.19	246.92	546.77	2.23	40.39 S	116.54W
568.00	21.13	246.97	547.70	1.88	40.53 S	116.87W
569.00	21.10	247.02	548.63	1.05	40.67 S	117.20W
570.00	21.09	247.05	549.57	0.44	40.81 S	117.53W
571.00	21.08	247.07	550.50	0.37	40.95 S	117.86W
572.00	21.08	247.09	551.43	0.22	41.09 S	118.20W
573.00	21.08	247.10	552.37	0.11	41.23 S	118.53W
574.00	21.08	247.12	553.30	0.22	41.37 S	118.86W
575.00	21.08	247.13	554.23	0.11	41.51 S	119.19W
576.00	21.08	247.12	555.16	0.11	41.65 S	119.52W
577.00	21.07	247.08	556.10	0.53	41.79 S	119.85W
578.00	21.05	246.98	557.03	1.23	41.93 S	120.18W
579.00	21.03	246.90	557.96	1.05	42.07 S	120.51W
580.00	21.01	246.82	558.90	1.05	42.22 S	120.84W
581.00	21.00	246.80	559.83	0.37	42.36 S	121.17W
582.00	21.00	246.78	560.77	0.22	42.50 S	121.50W
583.00	20.99	246.76	561.70	0.37	42.64 S	121.83W
584.00	20.99	246.76	562.63	0.00	42.78 S	122.16W
585.00	20.98	246.72	563.57	0.52	42.92 S	122.49W
586.00	20.97	246.72	564.50	0.30	43.06 S	122.82W
587.00	20.97	246.66	565.43	0.64	43.20 S	123.15W
588.00	20.94	246.50	566.37	1.94	43.35 S	123.47W
589.00	20.90	246.35	567.30	2.01	43.49 S	123.80W
590.00	20.85	246.21	568.24	2.12	43.63 S	124.13W
591.00	20.81	246.14	569.17	1.41	43.78 S	124.45W
592.00	20.81	246.15	570.11	0.11	43.92 S	124.78W
593.00	20.82	246.13	571.04	0.37	44.06 S	125.10W
594.00	20.84	246.13	571.97	0.60	44.21 S	125.43W
595.00	20.87	246.10	572.91	0.96	44.35 S	125.75W
596.00	20.90	246.11	573.84	0.91	44.50 S	126.08W
597.00	20.93	246.09	574.78	0.93	44.64 S	126.41W
598.00	20.96	246.10	575.71	0.91	44.79 S	126.73W
599.00	20.99	246.05	576.65	1.05	44.93 S	127.06W
600.00	21.01	246.05	577.58	0.60	45.08 S	127.39W

A Gyrodata Directional Survey.

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BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
601.00	21.03	246.04	578.51	0.61	45.22 S	127.72 W
602.00	21.04	246.02	579.45	0.37	45.37 S	128.04 W
603.00	21.05	245.99	580.38	0.44	45.51 S	128.37 W
604.00	21.08	245.96	581.31	0.96	45.66 S	128.70 W
605.00	21.12	245.93	582.24	1.24	45.81 S	129.03 W
606.00	21.15	245.91	583.18	0.93	45.95 S	129.36 W
607.00	21.19	245.88	584.11	1.24	46.10 S	129.69 W
608.00	21.20	245.82	585.04	0.72	46.25 S	130.02 W
609.00	21.21	245.77	585.97	0.62	46.40 S	130.35 W
610.00	21.20	245.73	586.91	0.53	46.55 S	130.68 W
611.00	21.18	245.68	587.84	0.81	46.70 S	131.01 W
612.00	21.18	245.66	588.77	0.22	46.84 S	131.34 W
613.00	21.18	245.65	589.70	0.11	46.99 S	131.67 W
614.00	21.19	245.64	590.64	0.32	47.14 S	131.99 W
615.00	21.19	245.64	591.57	0.00	47.29 S	132.32 W
616.00	21.18	245.61	592.50	0.44	47.44 S	132.65 W
617.00	21.19	245.59	593.43	0.37	47.59 S	132.98 W
618.00	21.20	245.56	594.37	0.44	47.74 S	133.31 W
619.00	21.20	245.52	595.30	0.43	47.89 S	133.64 W
620.00	21.20	245.50	596.23	0.22	48.04 S	133.97 W
621.00	21.19	245.47	597.16	0.44	48.19 S	134.30 W
622.00	21.14	245.48	598.10	1.50	48.34 S	134.63 W
623.00	21.09	245.48	599.03	1.50	48.49 S	134.95 W
624.00	21.04	245.47	599.96	1.50	48.64 S	135.28 W
625.00	21.01	245.50	600.90	0.96	48.79 S	135.61 W
626.00	20.99	245.45	601.83	0.81	48.94 S	135.93 W
627.00	20.96	245.46	602.76	0.91	49.08 S	136.26 W
628.00	20.94	245.43	603.70	0.68	49.23 S	136.58 W
629.00	20.92	245.43	604.63	0.60	49.38 S	136.91 W
630.00	20.91	245.43	605.56	0.30	49.53 S	137.23 W
631.00	20.90	245.42	606.50	0.32	49.68 S	137.56 W
632.00	20.88	245.43	607.43	0.61	49.83 S	137.88 W
633.00	20.86	245.44	608.37	0.61	49.97 S	138.21 W
634.00	20.82	245.51	609.30	1.41	50.12 S	138.53 W



A Gyrodata Directional Survey

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BRASKEM  
Well: MINA #37, LINER 7"  
Location: GREAT OIL 106, SAL GEMA  
Job Number: BZ0519GVC044

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
635.00	20.79	245.51	610.24	0.90	50.27 S	138.85W
636.00	20.74	245.51	611.17	1.50	50.42 S	139.18W
637.00	20.71	245.49	612.11	0.92	50.56 S	139.50W
638.00	20.68	245.44	613.04	1.04	50.71 S	139.82W
639.00	20.66	245.49	613.98	0.80	50.86 S	140.14W
640.00	20.66	245.51	614.91	0.21	51.00 S	140.46W
641.00	20.65	245.54	615.85	0.44	51.15 S	140.78W
642.00	20.66	245.57	616.79	0.44	51.29 S	141.10W
643.00	20.66	245.60	617.72	0.32	51.44 S	141.43W
644.00	20.66	245.63	618.66	0.32	51.59 S	141.75W
645.00	20.65	245.64	619.59	0.32	51.73 S	142.07W
646.00	20.65	245.64	620.53	0.00	51.88 S	142.39W
647.00	20.65	245.63	621.46	0.11	52.02 S	142.71W
648.00	20.65	245.64	622.40	0.11	52.17 S	143.03W
649.00	20.68	245.66	623.34	0.92	52.31 S	143.35W
650.00	20.67	245.70	624.27	0.52	52.46 S	143.68W
651.00	20.69	245.76	625.21	0.87	52.60 S	144.00W
652.00	20.70	245.77	626.14	0.32	52.75 S	144.32W
653.00	20.71	245.78	627.08	0.32	52.89 S	144.64W
654.00	20.71	245.79	628.01	0.11	53.04 S	144.96W
655.00	20.70	245.81	628.95	0.37	53.18 S	145.29W
656.00	20.69	245.84	629.88	0.44	53.33 S	145.61W
657.00	20.67	245.86	630.82	0.64	53.47 S	145.93W
658.00	20.64	245.87	631.76	0.91	53.62 S	146.25W
659.00	20.61	245.85	632.69	0.92	53.76 S	146.58W
660.00	20.58	245.85	633.63	0.90	53.91 S	146.90W
661.00	20.57	245.84	634.56	0.32	54.05 S	147.22W
662.00	20.54	245.86	635.50	0.92	54.19 S	147.54W
663.00	20.53	245.87	636.44	0.32	54.34 S	147.86W
664.00	20.52	245.89	637.37	0.37	54.48 S	148.18W
665.00	20.52	245.88	638.31	0.11	54.62 S	148.50W
666.00	20.50	245.90	639.25	0.64	54.77 S	148.82W
667.00	20.50	245.94	640.18	0.42	54.91 S	149.14W
668.00	20.49	245.96	641.12	0.37	55.05 S	149.46W