





**Braskem**

Campo: Sal Gema

Poço: Mina 25

Gyro Multishot Contínuo

Data da Amostragem: 2 de Abril de 2019

**Número de Trabalho: BZ0419GVC028**

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**Parte 1**  
**Discussão**

**1.0 DISCUSSÃO**

O Giroscópio FA088 foi utilizado para fazer uma amostragem na Mina 25.  
A amostragem foi coletada da superfície até 728.00m.  
Todas as Profundidades estão referenciadas à cabeça do poço.  
A referência ao norte é Norte Verdadeiro.  
Todas as Profundidades foram tomadas do cabo de perfilagem da unidade Flodim.

**Parte 2**  
**Página de Certificado da Amostragem**



**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 / Leonardo Gomes

**Data: 02 de Abril 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: 02 de Abril de 2019**

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

**3.0 DETALHES DA AMOSTRAGEM**

Cliente	:	Braskem
Sonda	:	N/A
Campo	:	Sal Gema
Poço	:	Mina 25
Latitude	:	9.640852 deg. S
Longitude	:	35.746696 deg. W
Data da amostragem	:	3 de Abril de 2019
Tipo de amostragem	:	Gyro Multishot Contínuo
Referência de profundidade	:	Ground
Max. Profundidade da amostragem	:	728 metros
Origem da seção vertical	:	-
Azimute da seção vertical	:	-
Referência Norte	:	Norte Verdadeiro
Grid Correction	:	-
Método de cálculo	:	Mínima Curvatura
Surveyors	:	Lúcio Oliveira / Leonardo Gomes



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

#### 4.0 LISTAGEM DEFINITIVA DA AMOSTRAGEM

### A Gyrodata Directional Survey

for

**BRASKEM**

Well: **Mina 25,**

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC028

Run Date: 02 Apr 2019

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 9.640852 deg. S

Longitude: 35.746696 deg. W

Well Head Location -

From Local Horizontal Reference: N 0.00 m. E 0.00 m.

Azimuth Correction:

Gyro: Bearings are Relative to True North

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Local Horizontal Reference

## Relatório de Amostragem Mina 25

**gyrodata**

## A Gyrodata Directional Survey

BRASKEM

Well: Mina 25

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
0.00	0.00	0.00	0.00	0.00	0.00 N	0.00 E
31.00	0.42	159.62	31.00	0.00	0.11 S	0.04 E
32.00	0.42	158.25	32.00	0.00	0.11 S	0.04 E
33.00	0.41	153.07	33.00	0.00	0.12 S	0.04 E
34.00	0.41	160.00	34.00	0.00	0.13 S	0.05 E
35.00	0.43	160.87	35.00	0.00	0.13 S	0.05 E
36.00	0.43	164.45	36.00	0.00	0.14 S	0.05 E
37.00	0.40	166.73	37.00	0.00	0.15 S	0.05 E
38.00	0.39	168.06	38.00	0.00	0.15 S	0.06 E
39.00	0.40	170.12	39.00	0.00	0.16 S	0.06 E
40.00	0.39	169.78	40.00	0.00	0.17 S	0.06 E
41.00	0.38	167.73	41.00	0.00	0.17 S	0.06 E
42.00	0.39	167.98	42.00	0.00	0.18 S	0.06 E
43.00	0.41	168.44	43.00	0.00	0.19 S	0.06 E
44.00	0.40	166.40	44.00	0.00	0.19 S	0.06 E
45.00	0.39	167.72	45.00	0.00	0.20 S	0.07 E
46.00	0.40	169.74	46.00	0.16	0.21 S	0.07 E
47.00	0.38	169.45	47.00	0.18	0.21 S	0.07 E
48.00	0.35	168.70	48.00	0.16	0.22 S	0.07 E
49.00	0.35	170.44	49.00	0.19	0.23 S	0.07 E
50.00	0.35	170.42	50.00	0.23	0.23 S	0.07 E
51.00	0.34	170.17	51.00	0.24	0.24 S	0.07 E
52.00	0.34	170.09	52.00	0.22	0.24 S	0.07 E
53.00	0.35	168.74	53.00	0.24	0.25 S	0.07 E
54.00	0.35	168.57	54.00	0.25	0.26 S	0.08 E
55.00	0.34	166.09	55.00	0.24	0.26 S	0.08 E
56.00	0.34	163.46	56.00	0.26	0.27 S	0.08 E
57.00	0.33	159.37	57.00	0.29	0.27 S	0.08 E
58.00	0.31	157.37	58.00	0.34	0.28 S	0.08 E
59.00	0.30	152.31	59.00	0.36	0.28 S	0.08 E
60.00	0.29	150.96	60.00	0.39	0.29 S	0.09 E
61.00	0.27	146.75	61.00	0.44	0.29 S	0.09 E
62.00	0.25	146.26	62.00	0.46	0.29 S	0.09 E
63.00	0.25	146.34	63.00	0.45	0.30 S	0.09 E
64.00	0.23	146.14	64.00	0.48	0.30 S	0.10 E
65.00	0.22	141.25	65.00	0.54	0.30 S	0.10 E



Relatório de Amostragem Mina 25

A Gyrodata Directional Survey

BRASKEM  
 Well: Mina 25  
 Location: RIGLESS, SAL GEMA  
 Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
66.00	0.22	143.21	66.00	0.59	0.31 S	0.10 E
67.00	0.21	142.68	67.00	0.67	0.31 S	0.10 E
68.00	0.20	139.74	68.00	0.76	0.31 S	0.11 E
69.00	0.18	141.88	69.00	0.86	0.32 S	0.11 E
70.00	0.16	146.53	70.00	0.93	0.32 S	0.11 E
71.00	0.14	143.87	71.00	1.02	0.32 S	0.11 E
72.00	0.12	138.77	72.00	1.09	0.32 S	0.11 E
73.00	0.10	129.00	73.00	1.16	0.32 S	0.11 E
74.00	0.09	107.82	74.00	1.21	0.32 S	0.12 E
75.00	0.08	81.88	75.00	1.27	0.32 S	0.12 E
76.00	0.08	54.41	76.00	1.32	0.32 S	0.12 E
77.00	0.08	20.86	77.00	1.39	0.32 S	0.12 E
78.00	0.10	9.92	78.00	1.48	0.32 S	0.12 E
79.00	0.13	357.14	79.00	1.57	0.32 S	0.12 E
80.00	0.19	354.61	80.00	1.66	0.32 S	0.12 E
81.00	0.25	348.99	81.00	1.77	0.31 S	0.12 E
82.00	0.33	345.16	82.00	1.87	0.31 S	0.12 E
83.00	0.41	340.98	83.00	1.96	0.30 S	0.12 E
84.00	0.51	338.68	84.00	2.05	0.29 S	0.11 E
85.00	0.59	338.44	85.00	2.14	0.29 S	0.11 E
86.00	0.69	337.77	86.00	2.23	0.28 S	0.10 E
87.00	0.77	338.22	87.00	2.31	0.26 S	0.10 E
88.00	0.85	339.05	88.00	2.40	0.25 S	0.10 E
89.00	0.91	338.60	89.00	2.48	0.24 S	0.09 E
90.00	0.98	337.76	90.00	2.56	0.22 S	0.08 E
91.00	1.05	337.32	91.00	2.64	0.20 S	0.08 E
92.00	1.14	336.14	92.00	2.72	0.19 S	0.07 E
93.00	1.23	335.11	93.00	2.82	0.17 S	0.06 E
94.00	1.34	334.59	94.00	2.90	0.15 S	0.05 E
95.00	1.44	334.22	95.00	2.97	0.13 S	0.04 E
96.00	1.56	333.93	96.00	3.00	0.10 S	0.03 E
97.00	1.66	333.86	97.00	2.98	0.08 S	0.02 E
98.00	1.77	333.79	98.00	2.97	0.05 S	0.00 E
99.00	1.87	333.54	99.00	2.96	0.02 S	0.01W
100.00	1.98	333.06	100.00	2.98	0.01 N	0.03W
101.00	2.09	332.50	100.99	2.98	0.04 N	0.04W

Relatório de Amostragem Mina 25

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
102.00	2.20	331.95	101.99	3.00	0.07 N	0.06W
103.00	2.31	331.50	102.99	3.03	0.11 N	0.08W
104.00	2.42	331.05	103.99	3.08	0.14 N	0.10W
105.00	2.53	330.62	104.99	3.12	0.18 N	0.12W
106.00	2.65	330.13	105.99	3.18	0.22 N	0.14W
107.00	2.77	329.58	106.99	3.21	0.26 N	0.16W
108.00	2.89	328.97	107.99	3.25	0.30 N	0.19W
109.00	3.02	328.40	108.99	3.28	0.35 N	0.22W
110.00	3.14	327.90	109.99	3.33	0.39 N	0.25W
111.00	3.23	327.57	110.98	3.38	0.44 N	0.27W
112.00	3.29	327.39	111.98	3.45	0.49 N	0.31W
113.00	3.36	327.16	112.98	3.52	0.54 N	0.34W
114.00	3.46	326.83	113.98	3.59	0.59 N	0.37W
115.00	3.56	326.51	114.98	3.64	0.64 N	0.40W
116.00	3.65	326.18	115.97	3.66	0.69 N	0.44W
117.00	3.75	325.78	116.97	3.66	0.74 N	0.47W
118.00	3.85	325.39	117.97	3.64	0.80 N	0.51W
119.00	3.95	325.01	118.97	3.59	0.85 N	0.55W
120.00	4.07	324.58	119.97	3.53	0.91 N	0.59W
121.00	4.19	324.16	120.96	3.45	0.97 N	0.63W
122.00	4.31	323.73	121.96	3.38	1.03 N	0.68W
123.00	4.44	323.27	122.96	3.30	1.09 N	0.72W
124.00	4.58	322.80	123.95	3.23	1.15 N	0.77W
125.00	4.73	322.32	124.95	3.18	1.22 N	0.82W
126.00	4.89	321.82	125.95	3.16	1.28 N	0.87W
127.00	5.05	321.32	126.94	3.19	1.35 N	0.92W
128.00	5.22	320.81	127.94	3.20	1.42 N	0.98W
129.00	5.39	320.34	128.94	3.20	1.49 N	1.04W
130.00	5.54	319.96	129.93	3.20	1.57 N	1.10W
131.00	5.67	319.64	130.93	3.20	1.64 N	1.16W
132.00	5.78	319.39	131.92	3.20	1.72 N	1.23W
133.00	5.86	319.21	132.92	3.16	1.79 N	1.29W
134.00	5.92	319.05	133.91	3.10	1.87 N	1.36W
135.00	5.96	318.84	134.91	3.05	1.95 N	1.43W
136.00	6.01	318.60	135.90	3.00	2.03 N	1.50W
137.00	6.05	318.33	136.89	2.94	2.11 N	1.57W



Relatório de Amostragem Mina 25



A Gyrodata Directional Survey

BRASKEM

Well: Mina 25

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
138.00	6.10	318.04	137.89	2.88	2.19 N	1.64W
139.00	6.15	317.71	138.88	2.80	2.26 N	1.71W
140.00	6.21	317.37	139.88	2.72	2.34 N	1.78W
141.00	6.28	317.05	140.87	2.62	2.42 N	1.86W
142.00	6.36	316.71	141.87	2.52	2.50 N	1.93W
143.00	6.44	316.40	142.86	2.40	2.59 N	2.01W
144.00	6.53	316.10	143.85	2.29	2.67 N	2.09W
145.00	6.63	315.83	144.85	2.18	2.75 N	2.17W
146.00	6.72	315.57	145.84	2.09	2.83 N	2.25W
147.00	6.81	315.35	146.83	2.02	2.92 N	2.33W
148.00	6.87	315.21	147.82	1.97	3.00 N	2.41W
149.00	6.92	315.10	148.82	1.94	3.09 N	2.50W
150.00	6.98	314.99	149.81	1.91	3.17 N	2.58W
151.00	7.06	314.88	150.80	1.89	3.26 N	2.67W
152.00	7.13	314.79	151.80	1.86	3.35 N	2.76W
153.00	7.19	314.74	152.79	1.81	3.43 N	2.85W
154.00	7.26	314.68	153.78	1.77	3.52 N	2.93W
155.00	7.33	314.65	154.77	1.71	3.61 N	3.03W
156.00	7.40	314.65	155.76	1.65	3.70 N	3.12W
157.00	7.46	314.64	156.75	1.58	3.79 N	3.21W
158.00	7.53	314.63	157.75	1.52	3.88 N	3.30W
159.00	7.59	314.69	158.74	1.47	3.98 N	3.39W
160.00	7.64	314.68	159.73	1.42	4.07 N	3.49W
161.00	7.68	314.65	160.72	1.40	4.16 N	3.58W
162.00	7.72	314.69	161.71	1.41	4.26 N	3.68W
163.00	7.75	314.68	162.70	1.48	4.35 N	3.77W
164.00	7.78	314.69	163.69	1.59	4.45 N	3.87W
165.00	7.81	314.77	164.68	1.70	4.54 N	3.97W
166.00	7.84	314.80	165.67	1.78	4.64 N	4.06W
167.00	7.86	314.80	166.66	1.84	4.73 N	4.16W
168.00	7.87	314.72	167.66	1.84	4.83 N	4.26W
169.00	7.87	314.56	168.65	1.80	4.93 N	4.36W
170.00	7.88	314.42	169.64	1.70	5.02 N	4.45W
171.00	7.89	314.30	170.63	1.58	5.12 N	4.55W
172.00	7.91	314.24	171.62	1.47	5.21 N	4.65W
173.00	7.94	314.30	172.61	1.38	5.31 N	4.75W



Relatório de Amostragem Mina 25

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
174.00	7.98	314.42	173.60	1.33	5.41 N	4.85W
175.00	8.04	314.55	174.59	1.32	5.51 N	4.95W
176.00	8.12	314.69	175.58	1.32	5.60 N	5.05W
177.00	8.22	314.84	176.57	1.31	5.70 N	5.15W
178.00	8.35	315.08	177.56	1.25	5.81 N	5.25W
179.00	8.51	315.37	178.55	1.14	5.91 N	5.35W
180.00	8.68	315.71	179.54	0.98	6.02 N	5.46W
181.00	8.83	316.08	180.52	0.78	6.13 N	5.56W
182.00	8.95	316.44	181.51	0.59	6.24 N	5.67W
183.00	9.02	316.65	182.50	0.45	6.35 N	5.78W
184.00	9.03	316.75	183.49	0.38	6.47 N	5.89W
185.00	9.00	316.77	184.48	0.38	6.58 N	5.99W
186.00	8.95	316.77	185.46	0.40	6.69 N	6.10W
187.00	8.90	316.72	186.45	0.44	6.81 N	6.21W
188.00	8.88	316.77	187.44	0.46	6.92 N	6.31W
189.00	8.88	316.85	188.43	0.50	7.03 N	6.42W
190.00	8.91	316.95	189.41	0.55	7.14 N	6.52W
191.00	8.95	317.10	190.40	0.62	7.26 N	6.63W
192.00	8.97	317.26	191.39	0.71	7.37 N	6.73W
193.00	8.94	317.40	192.38	0.82	7.49 N	6.84W
194.00	8.85	317.46	193.37	0.95	7.60 N	6.95W
195.00	8.71	317.43	194.35	1.09	7.71 N	7.05W
196.00	8.53	317.33	195.34	1.22	7.82 N	7.15W
197.00	8.34	317.23	196.33	1.33	7.93 N	7.25W
198.00	8.16	317.13	197.32	1.39	8.04 N	7.35W
199.00	8.02	317.09	198.31	1.40	8.14 N	7.44W
200.00	7.91	317.14	199.30	1.38	8.24 N	7.54W
201.00	7.84	317.21	200.29	1.35	8.34 N	7.63W
202.00	7.79	317.30	201.28	1.31	8.44 N	7.72W
203.00	7.76	317.39	202.27	1.31	8.54 N	7.81W
204.00	7.73	317.58	203.27	1.32	8.64 N	7.91W
205.00	7.71	317.76	204.26	1.35	8.74 N	8.00W
206.00	7.70	317.96	205.25	1.38	8.84 N	8.09W
207.00	7.68	318.17	206.24	1.39	8.94 N	8.17W
208.00	7.67	318.38	207.23	1.35	9.04 N	8.26W
209.00	7.67	318.51	208.22	1.25	9.14 N	8.35W

Relatório de Amostragem Mina 25

A Gyrodata Directional Survey						
BRASKEM						
Well: Mina 25						
Location: RIGLESS, SAL GEMA						
Job Number: BZ0419GVC028						
MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
210.00	7.67	318.64	209.21	1.11	9.24 N	8.44W
211.00	7.67	318.73	210.20	0.95	9.34 N	8.53W
212.00	7.67	318.76	211.19	0.78	9.44 N	8.62W
213.00	7.66	318.75	212.18	0.64	9.54 N	8.70W
214.00	7.66	318.83	213.18	0.56	9.64 N	8.79W
215.00	7.66	319.02	214.17	0.52	9.74 N	8.88W
216.00	7.65	319.25	215.16	0.51	9.84 N	8.97W
217.00	7.65	319.48	216.15	0.50	9.94 N	9.05W
218.00	7.64	319.80	217.14	0.49	10.04 N	9.14W
219.00	7.64	320.02	218.13	0.47	10.14 N	9.23W
220.00	7.64	320.10	219.12	0.45	10.25 N	9.31W
221.00	7.65	320.15	220.11	0.43	10.35 N	9.40W
222.00	7.65	320.29	221.10	0.41	10.45 N	9.48W
223.00	7.66	320.34	222.10	0.40	10.55 N	9.57W
224.00	7.67	320.36	223.09	0.40	10.66 N	9.65W
225.00	7.68	320.38	224.08	0.41	10.76 N	9.74W
226.00	7.69	320.38	225.07	0.43	10.86 N	9.82W
227.00	7.70	320.33	226.06	0.46	10.96 N	9.91W
228.00	7.71	320.39	227.05	0.50	11.07 N	9.99W
229.00	7.71	320.52	228.04	0.53	11.17 N	10.08W
230.00	7.72	320.70	229.03	0.55	11.28 N	10.16W
231.00	7.73	320.87	230.02	0.56	11.38 N	10.25W
232.00	7.73	320.99	231.01	0.57	11.48 N	10.33W
233.00	7.74	321.06	232.01	0.57	11.59 N	10.42W
234.00	7.75	321.08	233.00	0.58	11.69 N	10.50W
235.00	7.76	321.06	233.99	0.61	11.80 N	10.59W
236.00	7.78	321.08	234.98	0.66	11.90 N	10.67W
237.00	7.80	321.12	235.97	0.71	12.01 N	10.76W
238.00	7.82	321.13	236.96	0.78	12.11 N	10.84W
239.00	7.84	321.18	237.95	0.87	12.22 N	10.93W
240.00	7.87	321.26	238.94	0.97	12.33 N	11.01W
241.00	7.89	321.39	239.93	1.06	12.43 N	11.10W
242.00	7.92	321.57	240.92	1.15	12.54 N	11.19W
243.00	7.95	321.79	241.91	1.20	12.65 N	11.27W
244.00	7.97	322.00	242.90	1.22	12.76 N	11.36W
245.00	8.00	322.16	243.89	1.21	12.87 N	11.44W



A Gyrodata Directional Survey						
BRASKEM						
Well: Mina 25						
Location: RIGLESS, SAL GEMA						
Job Number: BZ0419GVC028						
MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
246.00	8.03	322.25	244.88	1.19	12.98 N	11.53W
247.00	8.06	322.31	245.87	1.16	13.09 N	11.61W
248.00	8.09	322.36	246.86	1.12	13.20 N	11.70W
249.00	8.13	322.36	247.85	1.08	13.31 N	11.78W
250.00	8.16	322.42	248.84	1.03	13.42 N	11.87W
251.00	8.22	322.55	249.83	0.98	13.54 N	11.96W
252.00	8.28	322.62	250.82	0.93	13.65 N	12.05W
253.00	8.37	322.73	251.81	0.88	13.77 N	12.13W
254.00	8.46	323.00	252.80	0.84	13.88 N	12.22W
255.00	8.56	323.28	253.79	0.81	14.00 N	12.31W
256.00	8.66	323.55	254.78	0.77	14.12 N	12.40W
257.00	8.73	323.86	255.77	0.73	14.24 N	12.49W
258.00	8.78	324.11	256.76	0.68	14.37 N	12.58W
259.00	8.81	324.26	257.74	0.62	14.49 N	12.67W
260.00	8.81	324.38	258.73	0.56	14.62 N	12.76W
261.00	8.80	324.45	259.72	0.50	14.74 N	12.85W
262.00	8.78	324.48	260.71	0.45	14.86 N	12.94W
263.00	8.75	324.51	261.70	0.42	14.99 N	13.02W
264.00	8.71	324.42	262.69	0.42	15.11 N	13.11W
265.00	8.68	324.37	263.67	0.44	15.23 N	13.20W
266.00	8.64	324.33	264.66	0.46	15.36 N	13.29W
267.00	8.61	324.29	265.65	0.50	15.48 N	13.38W
268.00	8.58	324.27	266.64	0.55	15.60 N	13.46W
269.00	8.55	324.35	267.63	0.61	15.72 N	13.55W
270.00	8.54	324.41	268.62	0.69	15.84 N	13.64W
271.00	8.52	324.49	269.61	0.78	15.96 N	13.72W
272.00	8.50	324.63	270.60	0.87	16.08 N	13.81W
273.00	8.48	324.77	271.58	0.93	16.20 N	13.89W
274.00	8.44	324.87	272.57	0.98	16.32 N	13.98W
275.00	8.40	324.96	273.56	1.02	16.44 N	14.06W
276.00	8.34	325.01	274.55	1.03	16.56 N	14.15W
277.00	8.28	325.06	275.54	1.03	16.68 N	14.23W
278.00	8.22	325.17	276.53	1.02	16.80 N	14.31W
279.00	8.16	325.32	277.52	1.00	16.92 N	14.39W
280.00	8.11	325.48	278.51	0.97	17.03 N	14.47W
281.00	8.07	325.63	279.50	0.94	17.15 N	14.55W

DNPM/AL  
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A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
282.00	8.04	325.72	280.49	0.91	17.26 N	14.63W
283.00	8.01	325.72	281.48	0.89	17.38 N	14.71W
284.00	7.99	325.72	282.47	0.86	17.49 N	14.79W
285.00	7.96	325.66	283.46	0.84	17.61 N	14.87W
286.00	7.94	325.64	284.45	0.83	17.72 N	14.94W
287.00	7.91	325.67	285.44	0.81	17.84 N	15.02W
288.00	7.88	325.68	286.43	0.78	17.95 N	15.10W
289.00	7.85	325.67	287.42	0.74	18.06 N	15.18W
290.00	7.81	325.73	288.42	0.69	18.18 N	15.25W
291.00	7.79	325.77	289.41	0.62	18.29 N	15.33W
292.00	7.76	325.75	290.40	0.55	18.40 N	15.41W
293.00	7.74	325.76	291.39	0.48	18.51 N	15.48W
294.00	7.73	325.80	292.38	0.42	18.62 N	15.56W
295.00	7.73	325.80	293.37	0.36	18.73 N	15.63W
296.00	7.73	325.82	294.36	0.32	18.85 N	15.71W
297.00	7.72	325.84	295.35	0.29	18.96 N	15.78W
298.00	7.72	325.86	296.34	0.26	19.07 N	15.86W
299.00	7.72	325.87	297.33	0.23	19.18 N	15.93W
300.00	7.72	325.87	298.32	0.20	19.29 N	16.01W
301.00	7.72	325.84	299.31	0.17	19.40 N	16.09W
302.00	7.71	325.81	300.31	0.14	19.51 N	16.16W
303.00	7.71	325.77	301.30	0.11	19.62 N	16.24W
304.00	7.71	325.70	302.29	0.07	19.73 N	16.31W
305.00	7.72	325.67	303.28	0.04	19.85 N	16.39W
306.00	7.73	325.66	304.27	0.03	19.96 N	16.46W
307.00	7.73	325.66	305.26	0.06	20.07 N	16.54W
308.00	7.74	325.67	306.25	0.10	20.18 N	16.61W
309.00	7.75	325.68	307.24	0.14	20.29 N	16.69W
310.00	7.75	325.71	308.23	0.17	20.40 N	16.77W
311.00	7.75	325.71	309.22	0.20	20.51 N	16.84W
312.00	7.75	325.67	310.21	0.23	20.62 N	16.92W
313.00	7.76	325.66	311.21	0.25	20.74 N	17.00W
314.00	7.76	325.64	312.20	0.28	20.85 N	17.07W
315.00	7.76	325.63	313.19	0.31	20.96 N	17.15W
316.00	7.76	325.66	314.18	0.35	21.07 N	17.22W
317.00	7.77	325.73	315.17	0.40	21.18 N	17.30W



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A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
318.00	7.77	325.79	316.16	0.46	21.29 N	17.38W
319.00	7.78	325.87	317.15	0.52	21.40 N	17.45W
320.00	7.79	325.93	318.14	0.59	21.52 N	17.53W
321.00	7.80	325.93	319.13	0.67	21.63 N	17.60W
322.00	7.82	325.84	320.12	0.75	21.74 N	17.68W
323.00	7.84	325.75	321.11	0.83	21.85 N	17.76W
324.00	7.87	325.63	322.10	0.92	21.97 N	17.83W
325.00	7.90	325.51	323.09	1.01	22.08 N	17.91W
326.00	7.92	325.44	324.09	1.10	22.19 N	17.99W
327.00	7.95	325.46	325.08	1.18	22.31 N	18.07W
328.00	7.97	325.49	326.07	1.27	22.42 N	18.15W
329.00	7.99	325.50	327.06	1.36	22.54 N	18.22W
330.00	8.02	325.52	328.05	1.45	22.65 N	18.30W
331.00	8.06	325.52	329.04	1.56	22.77 N	18.38W
332.00	8.11	325.50	330.03	1.72	22.88 N	18.46W
333.00	8.16	325.43	331.02	1.95	23.00 N	18.54W
334.00	8.23	325.33	332.01	2.24	23.12 N	18.62W
335.00	8.31	325.25	333.00	2.59	23.23 N	18.71W
336.00	8.39	325.13	333.99	2.94	23.35 N	18.79W
337.00	8.47	324.95	334.98	3.23	23.47 N	18.87W
338.00	8.56	324.77	335.96	3.40	23.59 N	18.96W
339.00	8.65	324.59	336.95	3.43	23.72 N	19.04W
340.00	8.74	324.35	337.94	3.34	23.84 N	19.13W
341.00	8.83	324.13	338.93	3.17	23.96 N	19.22W
342.00	8.91	323.91	339.92	3.01	24.09 N	19.31W
343.00	8.99	323.71	340.91	2.88	24.21 N	19.40W
344.00	9.08	323.51	341.89	2.81	24.34 N	19.50W
345.00	9.17	323.37	342.88	2.79	24.47 N	19.59W
346.00	9.28	323.24	343.87	2.81	24.60 N	19.69W
347.00	9.44	323.21	344.85	2.83	24.73 N	19.78W
348.00	9.68	323.15	345.84	2.84	24.86 N	19.88W
349.00	9.98	323.17	346.83	2.83	25.00 N	19.99W
350.00	10.34	323.18	347.81	2.80	25.14 N	20.09W
351.00	10.71	323.09	348.79	2.76	25.28 N	20.20W
352.00	11.01	322.94	349.78	2.69	25.43 N	20.31W
353.00	11.20	322.66	350.76	2.62	25.59 N	20.43W

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
354.00	11.25	322.15	351.74	2.55	25.74 N	20.55W
355.00	11.17	321.54	352.72	2.47	25.89 N	20.67W
356.00	11.01	320.99	353.70	2.38	26.04 N	20.79W
357.00	10.84	320.39	354.68	2.30	26.19 N	20.91W
358.00	10.71	319.91	355.66	2.23	26.33 N	21.03W
359.00	10.63	319.51	356.65	2.14	26.48 N	21.15W
360.00	10.62	319.17	357.63	2.06	26.62 N	21.27W
361.00	10.65	318.84	358.61	1.96	26.76 N	21.39W
362.00	10.71	318.58	359.59	1.83	26.89 N	21.51W
363.00	10.76	318.39	360.58	1.65	27.03 N	21.64W
364.00	10.81	318.23	361.56	1.45	27.17 N	21.76W
365.00	10.85	318.11	362.54	1.25	27.31 N	21.89W
366.00	10.88	318.02	363.52	1.10	27.45 N	22.01W
367.00	10.90	317.95	364.51	1.04	27.59 N	22.14W
368.00	10.92	317.89	365.49	0.99	27.73 N	22.27W
369.00	10.93	317.80	366.47	0.95	27.88 N	22.39W
370.00	10.94	317.76	367.45	0.92	28.02 N	22.52W
371.00	10.95	317.74	368.43	1.45	28.16 N	22.65W
372.00	10.95	317.66	369.42	1.96	28.30 N	22.78W
373.00	10.96	317.62	370.40	2.40	28.44 N	22.90W
374.00	10.96	317.61	371.38	2.43	28.58 N	23.03W
375.00	10.97	317.61	372.36	2.01	28.72 N	23.16W
376.00	10.98	317.57	373.34	1.27	28.86 N	23.29W
377.00	10.99	317.62	374.32	0.71	29.00 N	23.42W
378.00	11.00	317.59	375.31	0.39	29.14 N	23.55W
379.00	11.01	317.57	376.29	0.18	29.28 N	23.67W
380.00	11.03	317.57	377.27	0.11	29.42 N	23.80W
381.00	11.07	317.61	378.25	0.09	29.56 N	23.93W
382.00	11.14	317.55	379.23	0.07	29.71 N	24.06W
383.00	11.27	317.58	380.21	0.08	29.85 N	24.19W
384.00	11.47	317.45	381.19	0.06	29.99 N	24.33W
385.00	11.69	317.68	382.17	0.04	30.14 N	24.46W
386.00	12.25	317.26	383.15	0.04	30.30 N	24.60W
387.00	12.68	317.06	384.13	0.03	30.45 N	24.75W
388.00	13.04	317.11	385.10	0.02	30.62 N	24.90W
389.00	13.02	317.22	386.08	0.02	30.78 N	25.05W




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A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
390.00	12.60	317.38	387.05	0.04	30.94 N	25.20W
391.00	11.90	317.60	388.03	0.05	31.10 N	25.35W
392.00	11.39	317.63	389.01	0.08	31.25 N	25.48W
393.00	11.12	317.65	389.99	0.08	31.39 N	25.62W
394.00	10.95	317.64	390.97	0.08	31.54 N	25.74W
395.00	10.88	317.57	391.95	0.12	31.68 N	25.87W
396.00	10.87	317.56	392.93	0.15	31.82 N	26.00W
397.00	10.87	317.62	393.92	0.22	31.95 N	26.13W
398.00	10.88	317.54	394.90	0.33	32.09 N	26.25W
399.00	10.89	317.58	395.88	0.50	32.23 N	26.38W
400.00	10.91	317.61	396.86	0.71	32.37 N	26.51W
401.00	10.92	317.60	397.84	1.26	32.51 N	26.64W
402.00	10.92	317.61	398.83	1.68	32.65 N	26.76W
403.00	10.94	317.57	399.81	2.07	32.79 N	26.89W
404.00	10.94	317.57	400.79	2.05	32.93 N	27.02W
405.00	10.93	317.57	401.77	1.63	33.07 N	27.15W
406.00	10.93	317.54	402.75	0.96	33.21 N	27.28W
407.00	10.91	317.48	403.74	0.45	33.35 N	27.40W
408.00	10.92	317.57	404.72	0.19	33.49 N	27.53W
409.00	10.93	317.55	405.70	0.04	33.63 N	27.66W
410.00	10.91	317.56	406.68	0.04	33.77 N	27.79W
411.00	10.92	317.64	407.66	0.04	33.91 N	27.92W
412.00	10.92	317.53	408.64	0.04	34.05 N	28.04W
413.00	10.94	317.53	409.63	0.01	34.19 N	28.17W
414.00	10.97	317.58	410.61	0.01	34.33 N	28.30W
415.00	10.98	317.57	411.59	0.04	34.47 N	28.43W
416.00	10.99	317.50	412.57	0.08	34.61 N	28.56W
417.00	11.00	317.40	413.55	0.10	34.75 N	28.69W
418.00	10.97	317.35	414.54	0.17	34.89 N	28.81W
419.00	10.97	317.31	415.52	0.20	35.03 N	28.94W
420.00	10.97	317.41	416.50	0.21	35.17 N	29.07W
421.00	10.94	317.50	417.48	0.24	35.31 N	29.20W
422.00	10.94	317.43	418.46	0.22	35.45 N	29.33W
423.00	10.93	317.49	419.44	0.25	35.59 N	29.46W
424.00	10.92	317.48	420.43	0.26	35.73 N	29.59W
425.00	10.92	317.49	421.41	0.26	35.87 N	29.71W

DNF P.W. AL  
#B. Z091  


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
426.00	10.91	317.53	422.39	0.26	36.01 N	29.84W
427.00	10.91	317.55	423.37	0.29	36.15 N	29.97W
428.00	10.89	317.55	424.35	0.36	36.29 N	30.10W
429.00	10.89	317.52	425.34	0.42	36.43 N	30.22W
430.00	10.87	317.56	426.32	0.49	36.57 N	30.35W
431.00	10.84	317.54	427.30	0.53	36.71 N	30.48W
432.00	10.82	317.49	428.28	0.57	36.85 N	30.61W
433.00	10.77	317.54	429.26	0.55	36.98 N	30.73W
434.00	10.74	317.46	430.25	0.56	37.12 N	30.86W
435.00	10.72	317.50	431.23	0.54	37.26 N	30.98W
436.00	10.69	317.54	432.21	0.50	37.40 N	31.11W
437.00	10.69	317.51	433.19	0.52	37.53 N	31.23W
438.00	10.67	317.50	434.18	0.53	37.67 N	31.36W
439.00	10.67	317.47	435.16	0.53	37.81 N	31.49W
440.00	10.65	317.42	436.14	0.58	37.94 N	31.61W
441.00	10.66	317.39	437.13	0.60	38.08 N	31.74W
442.00	10.63	317.35	438.11	0.63	38.21 N	31.86W
443.00	10.58	317.34	439.09	0.67	38.35 N	31.99W
444.00	10.55	317.38	440.07	0.71	38.49 N	32.11W
445.00	10.49	317.45	441.06	0.72	38.62 N	32.23W
446.00	10.46	317.60	442.04	0.71	38.75 N	32.36W
447.00	10.43	317.71	443.02	0.69	38.89 N	32.48W
448.00	10.42	317.70	444.01	0.62	39.02 N	32.60W
449.00	10.42	317.76	444.99	0.58	39.16 N	32.72W
450.00	10.43	317.78	445.97	0.55	39.29 N	32.84W
451.00	10.44	317.84	446.96	0.49	39.42 N	32.96W
452.00	10.43	317.93	447.94	0.48	39.56 N	33.09W
453.00	10.41	317.93	448.92	0.45	39.69 N	33.21W
454.00	10.40	318.00	449.91	0.45	39.83 N	33.33W
455.00	10.35	318.01	450.89	0.46	39.96 N	33.45W
456.00	10.32	318.02	451.88	0.47	40.09 N	33.57W
457.00	10.29	318.07	452.86	0.46	40.23 N	33.69W
458.00	10.23	318.08	453.84	0.43	40.36 N	33.81W
459.00	10.19	318.00	454.83	0.41	40.49 N	33.93W
460.00	10.16	318.09	455.81	0.35	40.62 N	34.04W
461.00	10.14	318.23	456.80	0.29	40.75 N	34.16W



DWP/WAL  
File: Z091  


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
462.00	10.14	318.17	457.78	0.24	40.88 N	34.28W
463.00	10.17	318.29	458.77	0.23	41.02 N	34.40W
464.00	10.18	318.30	459.75	0.24	41.15 N	34.51W
465.00	10.18	318.08	460.73	0.25	41.28 N	34.63W
466.00	10.21	318.06	461.72	0.26	41.41 N	34.75W
467.00	10.23	318.21	462.70	0.25	41.54 N	34.87W
468.00	10.24	318.16	463.69	0.24	41.68 N	34.99W
469.00	10.25	318.37	464.67	0.24	41.81 N	35.11W
470.00	10.24	318.51	465.65	0.23	41.94 N	35.22W
471.00	10.22	318.31	466.64	0.23	42.07 N	35.34W
472.00	10.21	318.34	467.62	0.21	42.21 N	35.46W
473.00	10.19	318.28	468.61	0.17	42.34 N	35.58W
474.00	10.17	318.23	469.59	0.12	42.47 N	35.69W
475.00	10.17	318.26	470.58	0.08	42.60 N	35.81W
476.00	10.19	318.26	471.56	0.09	42.73 N	35.93W
477.00	10.21	318.30	472.54	0.10	42.87 N	36.05W
478.00	10.21	318.26	473.53	0.11	43.00 N	36.17W
479.00	10.21	318.38	474.51	0.14	43.13 N	36.28W
480.00	10.20	318.30	475.50	0.15	43.26 N	36.40W
481.00	10.19	318.28	476.48	0.16	43.40 N	36.52W
482.00	10.19	318.35	477.46	0.13	43.53 N	36.64W
483.00	10.18	318.25	478.45	0.11	43.66 N	36.75W
484.00	10.17	318.36	479.43	0.05	43.79 N	36.87W
485.00	10.13	318.38	480.42	0.04	43.92 N	36.99W
486.00	10.10	318.37	481.40	0.11	44.06 N	37.11W
487.00	10.09	318.47	482.39	0.17	44.19 N	37.22W
488.00	10.08	318.50	483.37	0.21	44.32 N	37.34W
489.00	10.12	318.55	484.36	0.25	44.45 N	37.45W
490.00	10.12	318.48	485.34	0.26	44.58 N	37.57W
491.00	10.14	318.72	486.32	0.21	44.71 N	37.69W
492.00	10.16	318.75	487.31	0.15	44.84 N	37.80W
493.00	10.13	318.87	488.29	0.12	44.98 N	37.92W
494.00	10.15	319.05	489.28	0.07	45.11 N	38.03W
495.00	10.12	318.84	490.26	0.06	45.24 N	38.15W
496.00	10.11	318.77	491.25	0.06	45.38 N	38.27W
497.00	10.12	318.58	492.23	0.04	45.51 N	38.38W



ONP M'AL  
No. 7.093  
011

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
498.00	10.14	318.47	493.22	0.06	45.64 N	38.50W
499.00	10.20	318.41	494.20	0.04	45.77 N	38.62W
500.00	10.27	318.33	495.18	0.06	45.90 N	38.73W
501.00	10.33	318.36	496.17	0.09	46.04 N	38.85W
502.00	10.38	318.45	497.15	0.09	46.17 N	38.97W
503.00	10.39	318.66	498.13	0.11	46.31 N	39.09W
504.00	10.40	318.83	499.12	0.09	46.44 N	39.21W
505.00	10.40	318.95	500.10	0.07	46.58 N	39.33W
506.00	10.36	318.98	501.09	0.08	46.71 N	39.45W
507.00	10.33	318.83	502.07	0.07	46.85 N	39.56W
508.00	10.29	318.75	503.05	0.09	46.98 N	39.68W
509.00	10.25	318.67	504.04	0.12	47.12 N	39.80W
510.00	10.24	318.58	505.02	0.11	47.25 N	39.92W
511.00	10.23	318.56	506.01	0.12	47.39 N	40.04W
512.00	10.22	318.51	506.99	0.13	47.52 N	40.15W
513.00	10.22	318.48	507.97	0.11	47.65 N	40.27W
514.00	10.20	318.47	508.96	0.04	47.78 N	40.39W
515.00	10.19	318.50	509.94	0.03	47.92 N	40.51W
516.00	10.19	318.33	510.93	0.09	48.05 N	40.62W
517.00	10.18	318.38	511.91	0.14	48.18 N	40.74W
518.00	10.19	318.35	512.89	0.15	48.31 N	40.86W
519.00	10.20	318.26	513.88	0.17	48.44 N	40.98W
520.00	10.19	318.46	514.86	0.18	48.58 N	41.09W
521.00	10.19	318.40	515.85	0.16	48.71 N	41.21W
522.00	10.20	318.43	516.83	0.12	48.84 N	41.33W
523.00	10.18	318.45	517.82	0.08	48.97 N	41.45W
524.00	10.19	318.39	518.80	0.07	49.11 N	41.56W
525.00	10.20	318.44	519.78	0.06	49.24 N	41.68W
526.00	10.21	318.43	520.77	0.07	49.37 N	41.80W
527.00	10.25	318.41	521.75	0.11	49.50 N	41.92W
528.00	10.25	318.39	522.74	0.14	49.64 N	42.03W
529.00	10.24	318.33	523.72	0.23	49.77 N	42.15W
530.00	10.24	318.35	524.70	0.33	49.90 N	42.27W
531.00	10.24	318.39	525.69	0.45	50.04 N	42.39W
532.00	10.24	318.36	526.67	0.65	50.17 N	42.51W
533.00	10.25	318.34	527.66	0.89	50.30 N	42.62W

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
534.00	10.26	318.34	528.64	1.27	50.43 N	42.74W
535.00	10.26	318.31	529.63	1.90	50.57 N	42.86W
536.00	10.26	318.27	530.61	2.53	50.70 N	42.98W
537.00	10.27	318.26	531.59	2.84	50.83 N	43.10W
538.00	10.27	318.30	532.58	2.80	50.97 N	43.22W
539.00	10.29	318.38	533.56	2.43	51.10 N	43.34W
540.00	10.26	318.28	534.54	1.85	51.23 N	43.45W
541.00	10.27	318.21	535.53	1.55	51.37 N	43.57W
542.00	10.30	318.11	536.51	1.45	51.50 N	43.69W
543.00	10.33	317.96	537.50	1.52	51.63 N	43.81W
544.00	10.41	317.92	538.48	1.65	51.77 N	43.93W
545.00	10.50	317.82	539.46	1.77	51.90 N	44.05W
546.00	10.63	317.81	540.45	1.89	52.04 N	44.18W
547.00	10.82	317.87	541.43	1.97	52.17 N	44.30W
548.00	11.08	318.06	542.41	2.01	52.32 N	44.43W
549.00	11.47	318.36	543.39	2.07	52.46 N	44.56W
550.00	12.09	318.73	544.37	2.19	52.61 N	44.69W
551.00	12.72	319.03	545.35	2.33	52.78 N	44.84W
552.00	13.04	319.10	546.32	2.46	52.94 N	44.98W
553.00	12.98	318.91	547.30	2.62	53.11 N	45.13W
554.00	12.62	318.67	548.27	2.75	53.28 N	45.28W
555.00	12.05	318.02	549.25	2.89	53.44 N	45.42W
556.00	11.75	317.44	550.23	2.98	53.59 N	45.56W
557.00	11.68	317.10	551.21	3.05	53.74 N	45.69W
558.00	11.74	316.74	552.19	3.07	53.89 N	45.83W
559.00	11.85	316.34	553.16	3.05	54.04 N	45.97W
560.00	11.96	316.10	554.14	3.02	54.19 N	46.12W
561.00	12.06	315.79	555.12	3.01	54.34 N	46.26W
562.00	12.13	315.54	556.10	2.96	54.49 N	46.41W
563.00	12.18	315.36	557.08	2.93	54.64 N	46.55W
564.00	12.24	315.19	558.05	2.89	54.79 N	46.70W
565.00	12.34	314.79	559.03	2.87	54.94 N	46.85W
566.00	12.45	314.28	560.01	3.02	55.09 N	47.01W
567.00	12.56	313.72	560.98	3.20	55.24 N	47.16W
568.00	12.67	312.93	561.96	3.27	55.39 N	47.32W
569.00	12.77	312.34	562.94	3.27	55.54 N	47.48W



DNP/AL  
No. 7.095  


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
570.00	12.85	311.78	563.91	3.23	55.69 N	47.65W
571.00	12.91	311.24	564.89	3.21	55.83 N	47.82W
572.00	12.96	310.69	565.86	3.21	55.98 N	47.98W
573.00	12.98	310.21	566.83	3.20	56.13 N	48.16W
574.00	12.98	309.72	567.81	3.14	56.27 N	48.33W
575.00	12.96	309.19	568.78	3.12	56.41 N	48.50W
576.00	12.98	308.54	569.76	3.06	56.55 N	48.68W
577.00	12.97	307.94	570.73	3.00	56.69 N	48.85W
578.00	12.97	307.25	571.71	2.96	56.83 N	49.03W
579.00	12.97	306.63	572.68	2.94	56.97 N	49.21W
580.00	12.94	306.03	573.66	2.87	57.10 N	49.39W
581.00	12.91	305.39	574.63	2.77	57.23 N	49.57W
582.00	12.87	304.82	575.61	2.67	57.36 N	49.75W
583.00	12.83	304.23	576.58	2.52	57.48 N	49.94W
584.00	12.79	303.76	577.56	2.41	57.61 N	50.12W
585.00	12.75	303.29	578.53	2.31	57.73 N	50.31W
586.00	12.69	302.89	579.51	2.22	57.85 N	50.49W
587.00	12.66	302.53	580.48	2.11	57.97 N	50.67W
588.00	12.65	302.17	581.46	1.99	58.09 N	50.86W
589.00	12.68	302.04	582.43	1.85	58.20 N	51.04W
590.00	12.70	301.87	583.41	1.73	58.32 N	51.23W
591.00	12.72	301.82	584.38	1.58	58.43 N	51.42W
592.00	12.74	301.85	585.36	1.45	58.55 N	51.61W
593.00	12.73	301.84	586.33	1.30	58.67 N	51.79W
594.00	12.73	301.77	587.31	1.14	58.78 N	51.98W
595.00	12.74	301.68	588.29	0.99	58.90 N	52.17W
596.00	12.74	301.60	589.26	0.85	59.01 N	52.36W
597.00	12.74	301.53	590.24	0.72	59.13 N	52.54W
598.00	12.76	301.49	591.21	0.60	59.25 N	52.73W
599.00	12.76	301.43	592.19	0.49	59.36 N	52.92W
600.00	12.73	301.36	593.16	0.36	59.48 N	53.11W
601.00	12.72	301.27	594.14	0.25	59.59 N	53.30W
602.00	12.70	301.27	595.11	0.16	59.70 N	53.48W
603.00	12.72	301.33	596.09	0.14	59.82 N	53.67W
604.00	12.74	301.46	597.06	0.12	59.93 N	53.86W
605.00	12.74	301.46	598.04	0.15	60.05 N	54.05W



BPM 11  
No. 7.096  
DJ

## A Gyrodata Directional Survey

BRASKEM

Well: Mina 25

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
606.00	12.74	301.53	599.01	0.17	60.16 N	54.24W
607.00	12.71	301.50	599.99	0.15	60.28 N	54.42W
608.00	12.70	301.52	600.97	0.15	60.39 N	54.61W
609.00	12.71	301.63	601.94	0.17	60.51 N	54.80W
610.00	12.73	301.66	602.92	0.21	60.62 N	54.99W
611.00	12.75	301.64	603.89	0.23	60.74 N	55.17W
612.00	12.74	301.61	604.87	0.27	60.86 N	55.36W
613.00	12.76	301.55	605.84	0.29	60.97 N	55.55W
614.00	12.75	301.57	606.82	0.31	61.09 N	55.74W
615.00	12.77	301.67	607.79	0.39	61.20 N	55.93W
616.00	12.79	301.85	608.77	0.44	61.32 N	56.11W
617.00	12.78	302.02	609.74	0.49	61.44 N	56.30W
618.00	12.79	302.20	610.72	0.51	61.55 N	56.49W
619.00	12.79	302.30	611.69	0.51	61.67 N	56.68W
620.00	12.80	302.40	612.67	0.53	61.79 N	56.86W
621.00	12.81	302.46	613.64	0.53	61.91 N	57.05W
622.00	12.81	302.47	614.62	0.57	62.03 N	57.24W
623.00	12.80	302.45	615.59	0.57	62.15 N	57.43W
624.00	12.81	302.46	616.57	0.57	62.27 N	57.61W
625.00	12.83	302.53	617.55	0.58	62.39 N	57.80W
626.00	12.84	302.52	618.52	0.61	62.50 N	57.99W
627.00	12.88	302.59	619.50	0.65	62.62 N	58.17W
628.00	12.89	302.67	620.47	0.67	62.74 N	58.36W
629.00	12.90	302.67	621.44	0.68	62.87 N	58.55W
630.00	12.93	302.85	622.42	0.69	62.99 N	58.74W
631.00	12.93	303.03	623.39	0.69	63.11 N	58.93W
632.00	12.95	303.17	624.37	0.74	63.23 N	59.11W
633.00	12.94	303.40	625.34	0.97	63.35 N	59.30W
634.00	12.94	303.57	626.32	2.06	63.48 N	59.49W
635.00	12.91	303.71	627.29	3.17	63.60 N	59.67W
636.00	12.89	303.84	628.27	3.28	63.72 N	59.86W
637.00	12.90	303.91	629.24	3.05	63.85 N	60.04W
638.00	12.87	303.98	630.22	2.17	63.97 N	60.23W
639.00	12.84	304.14	631.19	1.15	64.10 N	60.41W
640.00	12.83	304.22	632.17	0.85	64.22 N	60.60W
641.00	12.81	304.39	633.14	0.81	64.35 N	60.78W



A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
642.00	12.82	304.51	634.12	0.80	64.47 N	60.96W
643.00	12.85	304.56	635.09	0.81	64.60 N	61.15W
644.00	12.88	304.59	636.07	0.82	64.73 N	61.33W
645.00	12.94	304.67	637.04	0.75	64.85 N	61.51W
646.00	13.02	304.74	638.02	0.73	64.98 N	61.70W
647.00	13.14	304.91	638.99	0.71	65.11 N	61.88W
648.00	13.46	305.30	639.96	0.70	65.24 N	62.07W
649.00	14.57	306.66	640.93	0.71	65.38 N	62.27W
650.00	15.69	307.69	641.90	0.73	65.54 N	62.48W
651.00	15.81	307.84	642.86	0.74	65.71 N	62.69W
652.00	15.58	307.71	643.82	0.75	65.87 N	62.90W
653.00	14.73	306.65	644.79	0.78	66.03 N	63.11W
654.00	13.71	305.58	645.76	0.82	66.18 N	63.31W
655.00	13.40	305.29	646.73	0.83	66.31 N	63.50W
656.00	13.34	305.36	647.70	0.86	66.45 N	63.69W
657.00	13.35	305.43	648.68	0.85	66.58 N	63.88W
658.00	13.38	305.49	649.65	0.84	66.71 N	64.07W
659.00	13.41	305.48	650.62	0.83	66.85 N	64.26W
660.00	13.42	305.36	651.60	0.78	66.98 N	64.45W
661.00	13.45	305.27	652.57	0.71	67.12 N	64.63W
662.00	13.49	305.19	653.54	0.59	67.25 N	64.82W
663.00	13.51	305.18	654.51	0.27	67.39 N	65.02W
664.00	13.54	305.20	655.48	0.86	67.52 N	65.21W
665.00	13.55	305.24	656.46	2.01	67.66 N	65.40W
666.00	13.55	305.34	657.43	2.11	67.79 N	65.59W
667.00	13.57	305.36	658.40	1.85	67.93 N	65.78W
668.00	13.58	305.41	659.37	0.95	68.06 N	65.97W
669.00	13.60	305.43	660.35	0.16	68.20 N	66.16W
670.00	13.61	305.44	661.32	0.53	68.34 N	66.36W
671.00	13.63	305.48	662.29	0.65	68.47 N	66.55W
672.00	13.64	305.50	663.26	0.71	68.61 N	66.74W
673.00	13.66	305.58	664.23	0.73	68.75 N	66.93W
674.00	13.68	305.60	665.20	0.72	68.88 N	67.12W
675.00	13.69	305.52	666.18	0.75	69.02 N	67.32W
676.00	13.71	305.46	667.15	0.74	69.16 N	67.51W
677.00	13.72	305.39	668.12	0.73	69.30 N	67.70W



A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
678.00	13.73	305.40	669.09	0.73	69.43 N	67.89W
679.00	13.75	305.62	670.06	0.71	69.57 N	68.09W
680.00	13.74	305.82	671.03	0.71	69.71 N	68.28W
681.00	13.76	305.87	672.00	0.70	69.85 N	68.47W
682.00	13.78	305.96	672.98	0.70	69.99 N	68.67W
683.00	13.80	305.91	673.95	0.70	70.13 N	68.86W
684.00	13.85	305.91	674.92	0.69	70.27 N	69.05W
685.00	13.91	305.89	675.89	0.69	70.41 N	69.25W
686.00	13.98	305.89	676.86	0.68	70.55 N	69.44W
687.00	14.05	305.92	677.83	0.67	70.69 N	69.64W
688.00	14.10	305.95	678.80	0.65	70.84 N	69.84W
689.00	14.12	306.04	679.77	0.64	70.98 N	70.03W
690.00	14.15	306.06	680.74	0.62	71.12 N	70.23W
691.00	14.17	306.07	681.71	0.61	71.27 N	70.43W
692.00	14.19	306.05	682.68	0.60	71.41 N	70.63W
693.00	14.21	306.05	683.65	0.61	71.56 N	70.82W
694.00	14.22	306.03	684.62	0.55	71.70 N	71.02W
695.00	14.23	306.03	685.59	0.49	71.84 N	71.22W
696.00	14.23	306.08	686.56	0.45	71.99 N	71.42W
697.00	14.25	306.13	687.53	0.49	72.13 N	71.62W
698.00	14.25	306.18	688.49	0.62	72.28 N	71.82W
699.00	14.27	306.14	689.46	0.75	72.43 N	72.02W
700.00	14.28	306.12	690.43	0.83	72.57 N	72.22W
701.00	14.29	306.08	691.40	0.81	72.72 N	72.42W
702.00	14.30	305.99	692.37	0.77	72.86 N	72.62W
703.00	14.30	306.03	693.34	0.75	73.01 N	72.82W
704.00	14.31	305.98	694.31	0.71	73.15 N	73.01W
705.00	14.30	305.97	695.28	0.70	73.30 N	73.21W
706.00	14.31	305.99	696.25	0.74	73.44 N	73.41W
707.00	14.30	305.99	697.22	0.79	73.59 N	73.61W
708.00	14.31	306.14	698.18	0.83	73.73 N	73.81W
709.00	14.27	306.37	699.15	0.91	73.88 N	74.01W
710.00	14.18	306.70	700.12	0.97	74.02 N	74.21W
711.00	14.08	307.19	701.09	1.03	74.17 N	74.41W
712.00	13.95	307.88	702.06	1.12	74.32 N	74.60W
713.00	13.85	308.50	703.03	1.18	74.47 N	74.79W

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 25  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC028

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
714.00	13.76	309.02	704.00	0.00	74.62 N	74.97W
715.00	13.72	309.28	704.98	0.00	74.77 N	75.16W
716.00	13.69	309.07	705.95	0.00	74.92 N	75.34W
717.00	13.71	308.82	706.92	0.00	75.07 N	75.53W
718.00	13.72	308.65	707.89	0.00	75.21 N	75.71W
719.00	13.70	308.42	708.86	0.00	75.36 N	75.90W
720.00	13.67	308.19	709.83	0.00	75.51 N	76.08W
721.00	13.60	308.02	710.81	0.00	75.65 N	76.27W
722.00	13.51	307.75	711.78	0.00	75.80 N	76.45W
723.00	13.46	307.50	712.75	0.00	75.94 N	76.64W
724.00	13.38	307.47	713.72	0.00	76.08 N	76.82W
725.00	13.31	307.37	714.70	0.00	76.22 N	77.00W
726.00	13.24	307.32	715.67	0.00	76.36 N	77.19W
727.00	13.16	307.29	716.64	0.00	76.50 N	77.37W
728.00	13.10	307.21	717.62	0.00	76.64 N	77.55W

Final Station Closure: Distance: 109.03 m Az: 314.66 deg.

DNP/AL  
Fls. 7-100  


**Parte 5**  
**Controle de Qualidade**



DNPM/AL  
No. 7.101  
[Signature]

Survey QC – Vertical Continuous Analysis Sheet

gyrodata

SURVEY QUALITY CONTROL – SPECIFICATION DATA

PRE-JOB CALIBRATION VERIFICATION (ROLL TEST)

System Parameter	dGx	dGy	dmbo	Mean Gravity Error	Stdev Gravity Error
Standard Deviation	0.012	0.012	0.012	0.00024	0.00001
Tolerance	0.033	0.033	0.087	0.00591	0.00720

CALIBRATION

Tool Number	FA088	Calibration Date	06 Jan 2016
-------------	-------	------------------	-------------

OPERATING TEMPERATURE

Calibration range	From	30.03	To	120.04	
Gyro operating range for Job	From	62.96	To	64.24	In-Spec if +/- 2.5 °C of Calibration

INCLINATION DIFFERENCE TEST

Chi-square test value	7.5
Tolerance	34.4
Number of overlapping survey stations used	15

CO-ORDINATE DIFFERENCE TEST

	North	East	Vertical
Chi-square test value	1.5	9.6	5.6
Tolerance	34.4	34.4	34.4
Number of overlapping survey stations used	15	15	15

DNPV/AL  
Fls. I-102  
G

**Parte 6**  
**Relatório Cronológico**  
**da Operação**


DNP/AL  
Fls. 7.103  
*[assinatura]*

## 6.0 RELATÓRIO CRONOLÓGICO DA OPERAÇÃO

### 02 de abril de 2019


09:00 Chegada da equipe na mina 25  
09:30 Conexão Gyrodata/Flodim  
12:05 Início de corrida mina 25  
15:20 Demontagem de equipamentos da mina 25

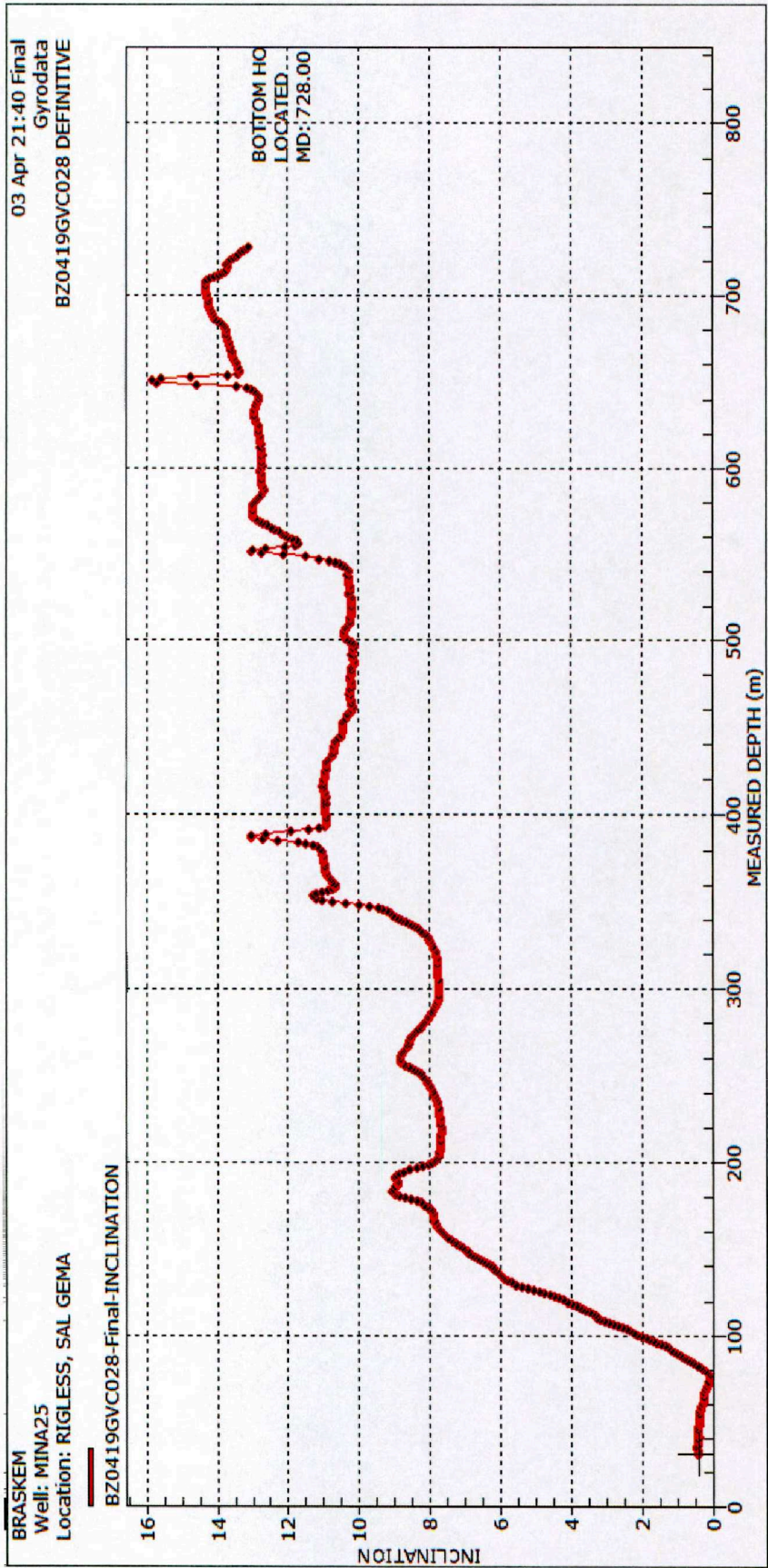


DNP/AL  
Fol. 7.104  


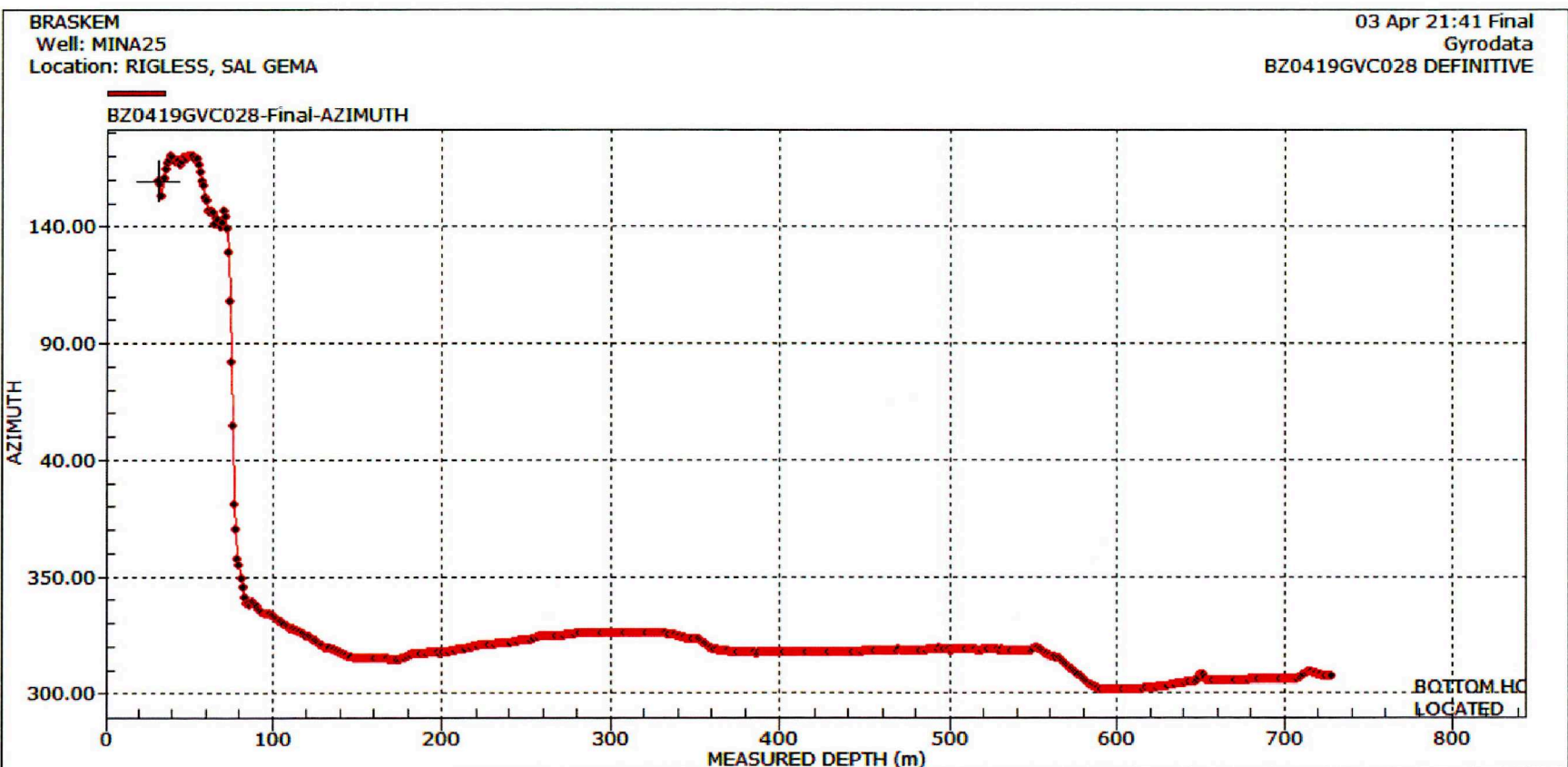
**Parte 7**  
**Gráficos**



DNPV/AL  
Fig. 2.105  


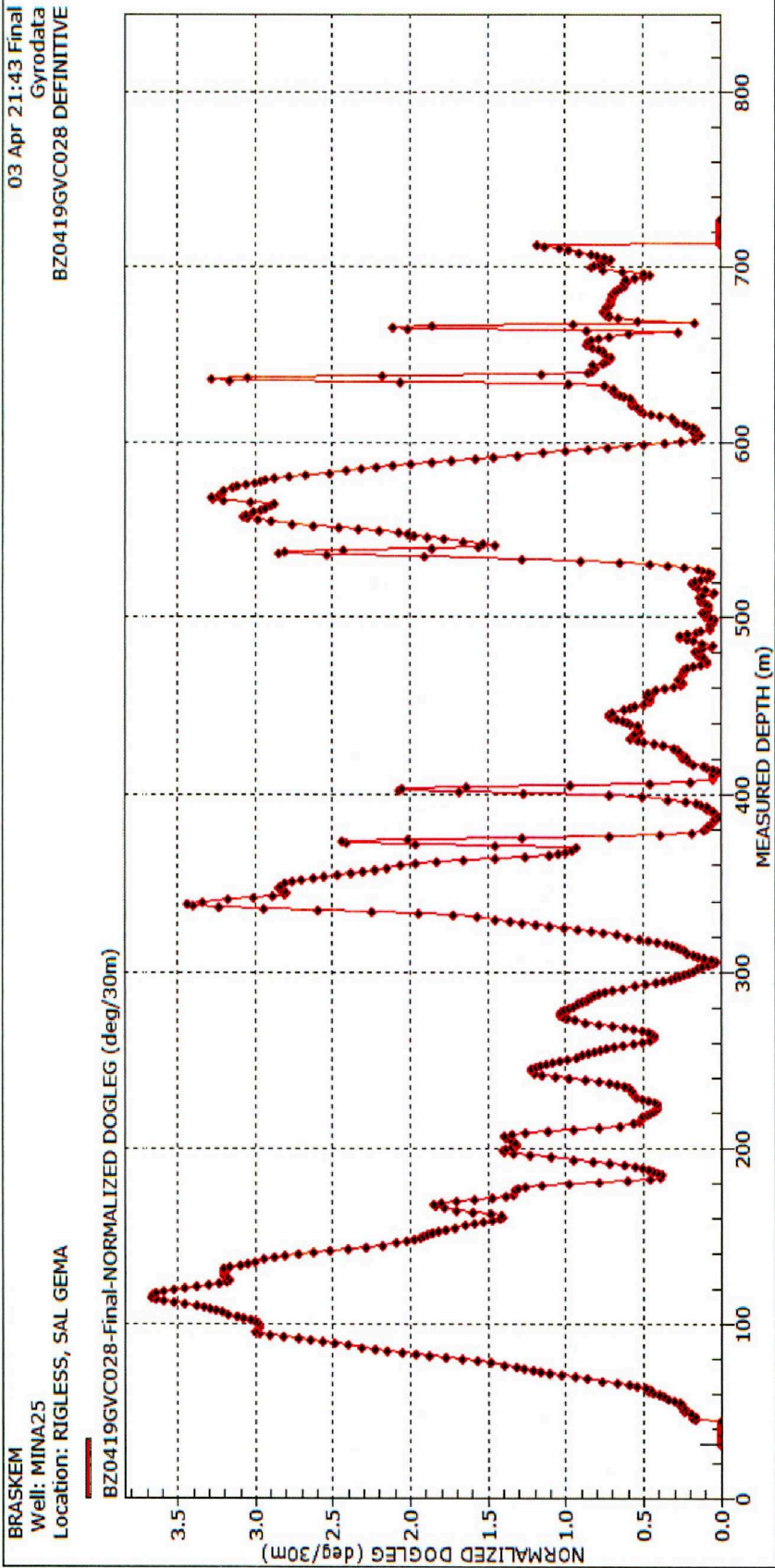


DMF VIAL  
no. 7.106  
[Signature]

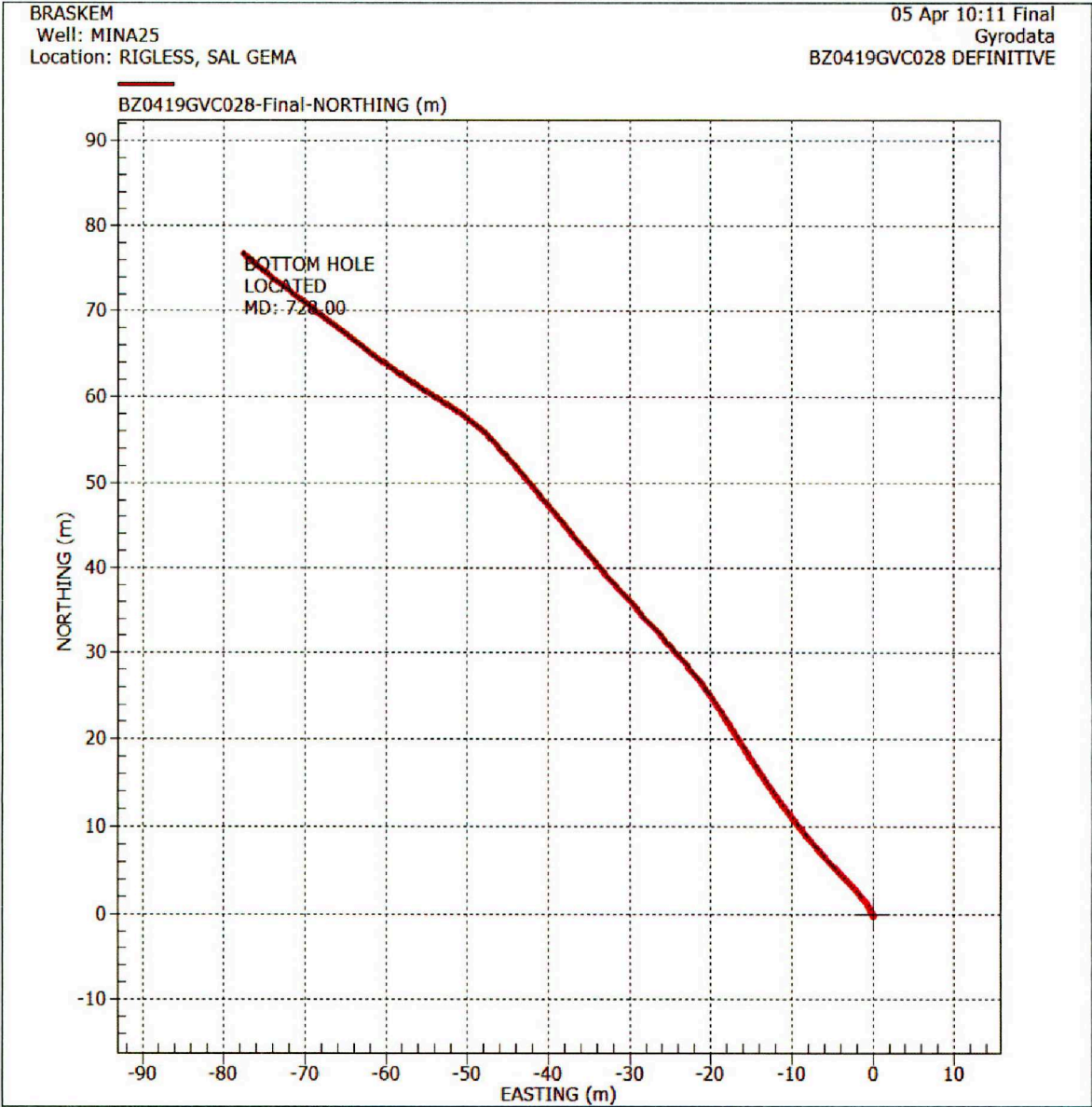




ORIGINAL  
Fig. Z-107  
*[Signature]*



BNP VIAL  
# 408  
*[Signature]*



DNPA/AL  
Fls. 2109  
[assinatura]



**Braskem**

Campo: Sal Gema

Poço: Mina 04

Gyro Multshot Contínuo

Data da Amostragem: 2 de Abril de 2019

**Número de Trabalho: BZ0419GVC029**



DNP/AL  
Fls. 110  
[assinatura]

**ÍNDICE**

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DNP/AL  
Fis. 7.111  


**Parte 1**  
**Discussão**

DNP M'AL  
Fis. 2.112  
Q

## 1.0 DISCUSSÃO

O Giroscópio FA088 foi utilizado para fazer uma amostragem na Mina 04.

A amostragem foi coletada da superfície até 536.00m.

Todas as Profundidades estão referenciadas à cabeça do poço.

A referência ao norte é Norte Verdadeiro.

Todas as Profundidades foram tomadas do cabo de perfilagem da unidade Flodim.



DNPV/AL  
Fts. 7113  


**Parte 2**  
**Página de Certificado da Amostragem**

DNV AL  
No. 7111  
[Signature]

**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 / Leonardo Gomes

**Data: 02 de Abril 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: 02 de Abril de 2019**

DNPM/AL  
Fls. 7115  


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



3.0    DETALHES DA AMOSTRAGEM

Cliente	:	Braskem
Sonda	:	N/A
Campo	:	Sal Gema
Poço	:	Mina 04
Latitude	:	9.633980 deg. S
Longitude	:	35.749201 deg. W
Data da amostragem	:	3 de Abril de 2019
Tipo de amostragem	:	Gyro Multishot Contínuo
Referência de profundidade	:	Ground
Max. Profundidade da amostragem	:	536 metros
Origem da seção vertical	:	-
Azimute da seção vertical	:	-
Referência Norte	:	Norte Verdadeiro
Grid Correction	:	-
Método de cálculo	:	Mínima Curvatura
Surveyors	:	Lúcio Oliveira / Leonardo Gomes