


DUPICAL
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A Gyrodata Directional Survey

BRASKEM
Well: Mina 17
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC034


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
563.00	0.30	129.93	562.99	0.69	0.16 S	1.33 E
564.00	0.29	132.08	563.99	0.41	0.16 S	1.33 E
565.00	0.28	132.14	564.99	0.12	0.16 S	1.34 E
566.00	0.29	129.77	565.99	0.37	0.17 S	1.34 E
567.00	0.30	125.34	566.99	0.73	0.17 S	1.34 E
568.00	0.31	119.92	567.99	1.00	0.17 S	1.35 E
569.00	0.34	113.62	568.99	1.26	0.17 S	1.35 E
570.00	0.36	106.97	569.99	1.39	0.18 S	1.36 E
571.00	0.38	100.00	570.99	1.55	0.18 S	1.36 E
572.00	0.41	93.49	571.99	1.56	0.18 S	1.37 E
573.00	0.43	87.45	572.99	1.51	0.18 S	1.38 E
574.00	0.46	81.91	573.99	1.53	0.18 S	1.39 E
575.00	0.48	77.07	574.99	1.37	0.18 S	1.39 E
576.00	0.50	73.69	575.99	1.02	0.17 S	1.40 E
577.00	0.51	71.79	576.99	0.60	0.17 S	1.41 E
578.00	0.52	70.32	577.99	0.42	0.17 S	1.42 E
579.00	0.51	68.99	578.99	0.38	0.17 S	1.43 E
580.00	0.50	68.19	579.99	0.39	0.16 S	1.44 E
581.00	0.49	67.38	580.99	0.55	0.16 S	1.44 E
582.00	0.47	67.06	581.99	0.58	0.16 S	1.45 E
583.00	0.45	66.44	582.99	0.65	0.15 S	1.46 E
584.00	0.43	66.03	583.99	0.55	0.15 S	1.47 E
585.00	0.40	65.97	584.99	0.69	0.15 S	1.47 E
586.00	0.39	65.80	585.99	0.54	0.14 S	1.48 E
587.00	0.37	65.10	586.99	0.53	0.14 S	1.49 E
588.00	0.36	64.32	587.99	0.42	0.14 S	1.49 E
589.00	0.34	63.83	588.99	0.43	0.14 S	1.50 E
590.00	0.33	63.58	589.99	0.27	0.13 S	1.50 E
591.00	0.33	63.02	590.99	0.26	0.13 S	1.51 E
592.00	0.32	62.19	591.99	0.15	0.13 S	1.51 E
593.00	0.32	61.13	592.99	0.19	0.13 S	1.52 E
594.00	0.32	60.98	593.99	0.07	0.12 S	1.52 E
595.00	0.32	59.94	594.99	0.18	0.12 S	1.53 E
596.00	0.33	58.76	595.99	0.27	0.12 S	1.53 E
597.00	0.33	58.19	596.99	0.10	0.11 S	1.54 E
598.00	0.33	57.90	597.99	0.13	0.11 S	1.54 E

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 17
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC034

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
599.00	0.34	57.33	598.99	0.16	0.11 S	1.55 E
600.00	0.34	57.47	599.99	0.09	0.11 S	1.55 E
601.00	0.34	57.59	600.99	0.15	0.10 S	1.56 E
602.00	0.35	57.41	601.99	0.21	0.10 S	1.56 E
603.00	0.35	58.14	602.99	0.15	0.10 S	1.57 E
604.00	0.36	58.97	603.99	0.18	0.09 S	1.57 E
605.00	0.36	58.63	604.99	0.11	0.09 S	1.58 E
606.00	0.36	59.35	605.99	0.14	0.09 S	1.58 E
607.00	0.36	60.10	606.99	0.14	0.08 S	1.59 E
608.00	0.37	60.19	607.99	0.18	0.08 S	1.59 E
609.00	0.37	60.69	608.99	0.10	0.08 S	1.60 E
610.00	0.37	61.75	609.99	0.21	0.07 S	1.60 E
611.00	0.37	61.87	610.99	0.12	0.07 S	1.61 E
612.00	0.37	61.69	611.99	0.05	0.07 S	1.62 E
613.00	0.37	62.42	612.99	0.14	0.06 S	1.62 E
614.00	0.37	62.48	613.99	0.09	0.06 S	1.63 E
615.00	0.38	62.34	614.99	0.21	0.06 S	1.63 E
616.00	0.38	63.09	615.99	0.18	0.05 S	1.64 E
617.00	0.39	63.48	616.99	0.25	0.05 S	1.65 E
618.00	0.40	63.53	617.99	0.33	0.05 S	1.65 E
619.00	0.41	64.36	618.99	0.23	0.05 S	1.66 E
620.00	0.42	65.07	619.99	0.34	0.04 S	1.66 E
621.00	0.43	64.93	620.99	0.21	0.04 S	1.67 E
622.00	0.43	65.33	621.99	0.28	0.04 S	1.68 E
623.00	0.45	66.31	622.99	0.40	0.03 S	1.69 E
624.00	0.46	66.85	623.99	0.33	0.03 S	1.69 E
625.00	0.46	67.47	624.99	0.23	0.03 S	1.70 E
626.00	0.46	68.24	625.99	0.21	0.02 S	1.71 E
627.00	0.47	68.72	626.99	0.24	0.02 S	1.71 E
628.00	0.47	69.28	627.99	0.14	0.02 S	1.72 E
629.00	0.47	70.08	628.99	0.21	0.02 S	1.73 E
630.00	0.47	70.24	629.99	0.07	0.01 S	1.74 E
631.00	0.47	70.89	630.99	0.16	0.01 S	1.75 E
632.00	0.47	71.16	631.99	0.19	0.01 S	1.75 E
633.00	0.46	71.78	632.99	0.31	0.00 S	1.76 E
634.00	0.45	71.23	633.99	0.25	0.00 S	1.77 E

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 17
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC034

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
635.00	0.44	72.24	634.99	0.32	0.00 N	1.78 E
636.00	0.43	70.12	635.99	0.59	0.00 N	1.78 E
637.00	0.41	69.61	636.99	0.55	0.01 N	1.79 E
638.00	0.39	68.54	637.99	0.61	0.01 N	1.80 E
639.00	0.38	68.44	638.99	0.42	0.01 N	1.80 E
640.00	0.36	70.81	639.99	0.80	0.01 N	1.81 E
641.11	0.36	71.40	641.10	0.11	0.01 N	1.82 E

Final Station Closure: Distance: 1.82 m Az: 89.53 deg.

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Parte 5
Controle de Qualidade

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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	0.009	0.009	0.009	0.00020	0.00001
Tolerance	0.033	0.033	0.087	0.00591	0.00720

CALIBRATION

Tool Number	FA088	Calibration Date	06 Jan 2016
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OPERATING TEMPERATURE

Calibration range	From	30.03	To	120.04	
Gyro operating range for Job	From	63.30	To	64.23	In-Spec if +/- 2.5 °C of Calibration

INCLINATION DIFFERENCE TEST

Chi-square test value	2.8
Tolerance	34.4
Number of overlapping survey stations used	15.0

CO-ORDINATE DIFFERENCE TEST

	North	East	Vertical
Chi-square test value	1.1	4.0	0.0
Tolerance	34.4	34.4	34.4
Number of overlapping survey stations used	15.0	15.0	15.0

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Parte 6
Relatório Cronológico
da Operação

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6.0 RELATÓRIO CRONOLÓGICO DA OPERAÇÃO

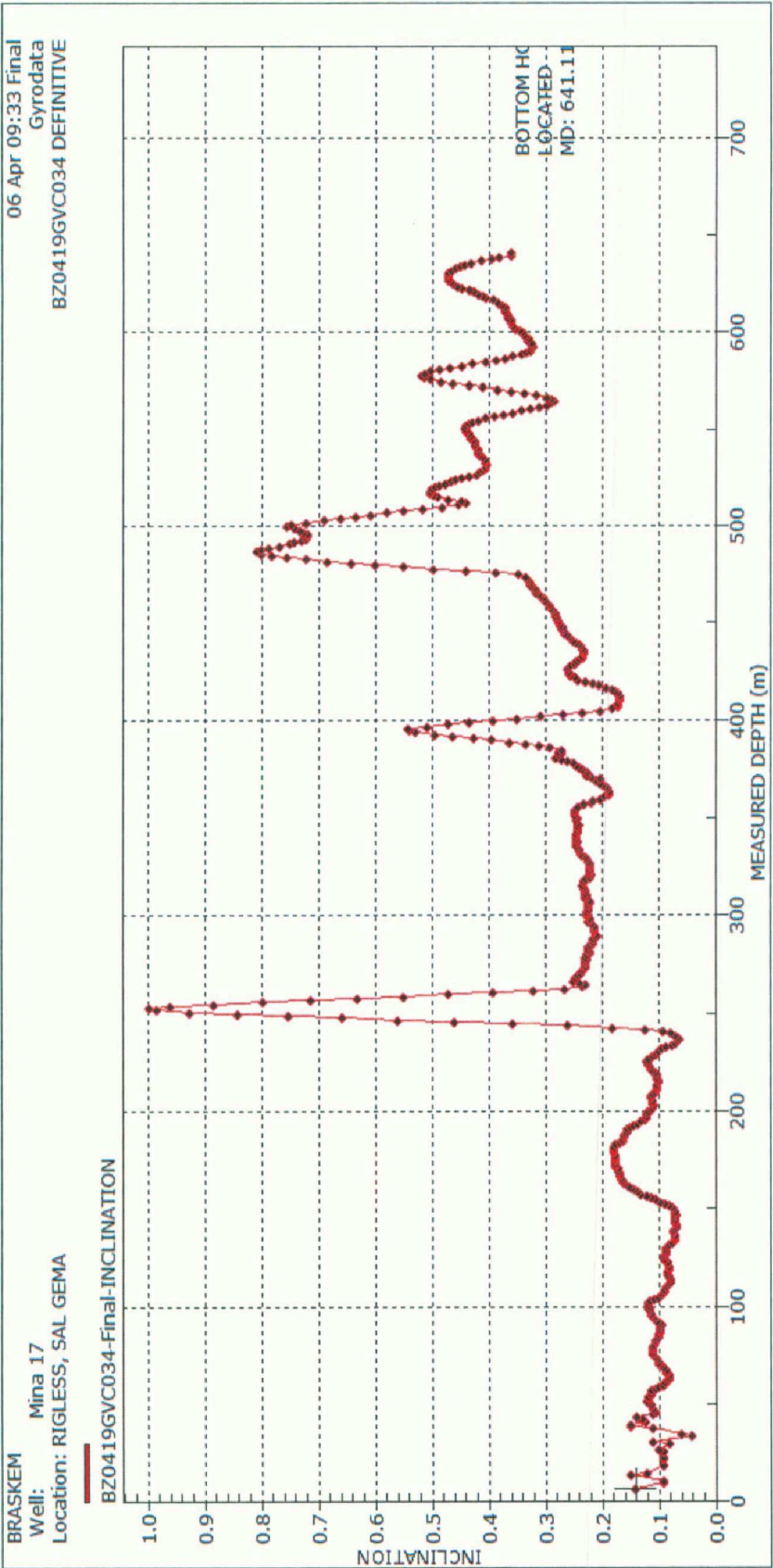
05 de abril de 2019


15:40 Chegada da equipe mina 17
15:50 Conexão gyrodata/flodim
16:10 Início de corrida mina 17
18:30 Desmontagem de equipamentos
19:30 Saída mina 17
20:00 Pós calibração

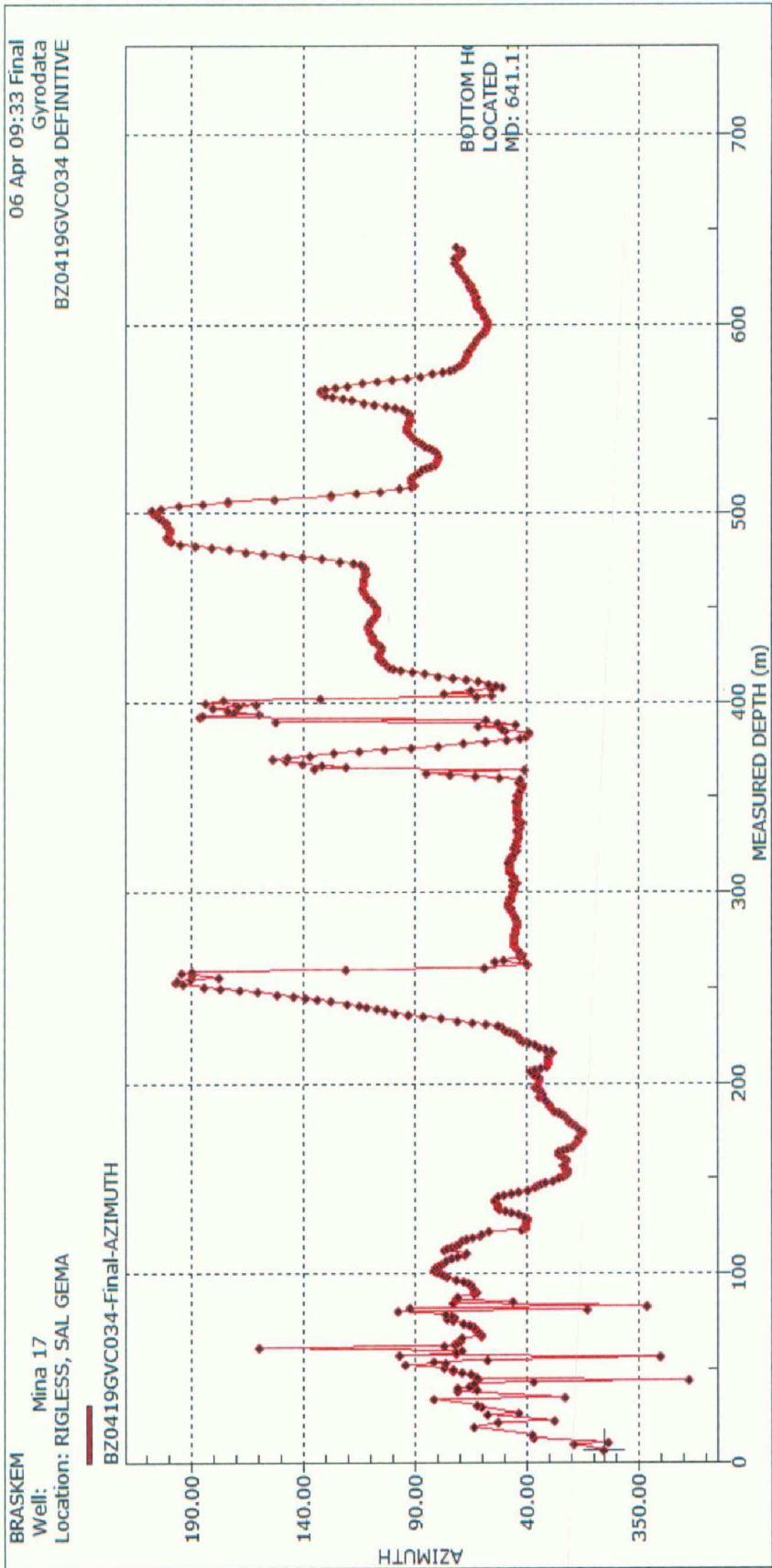
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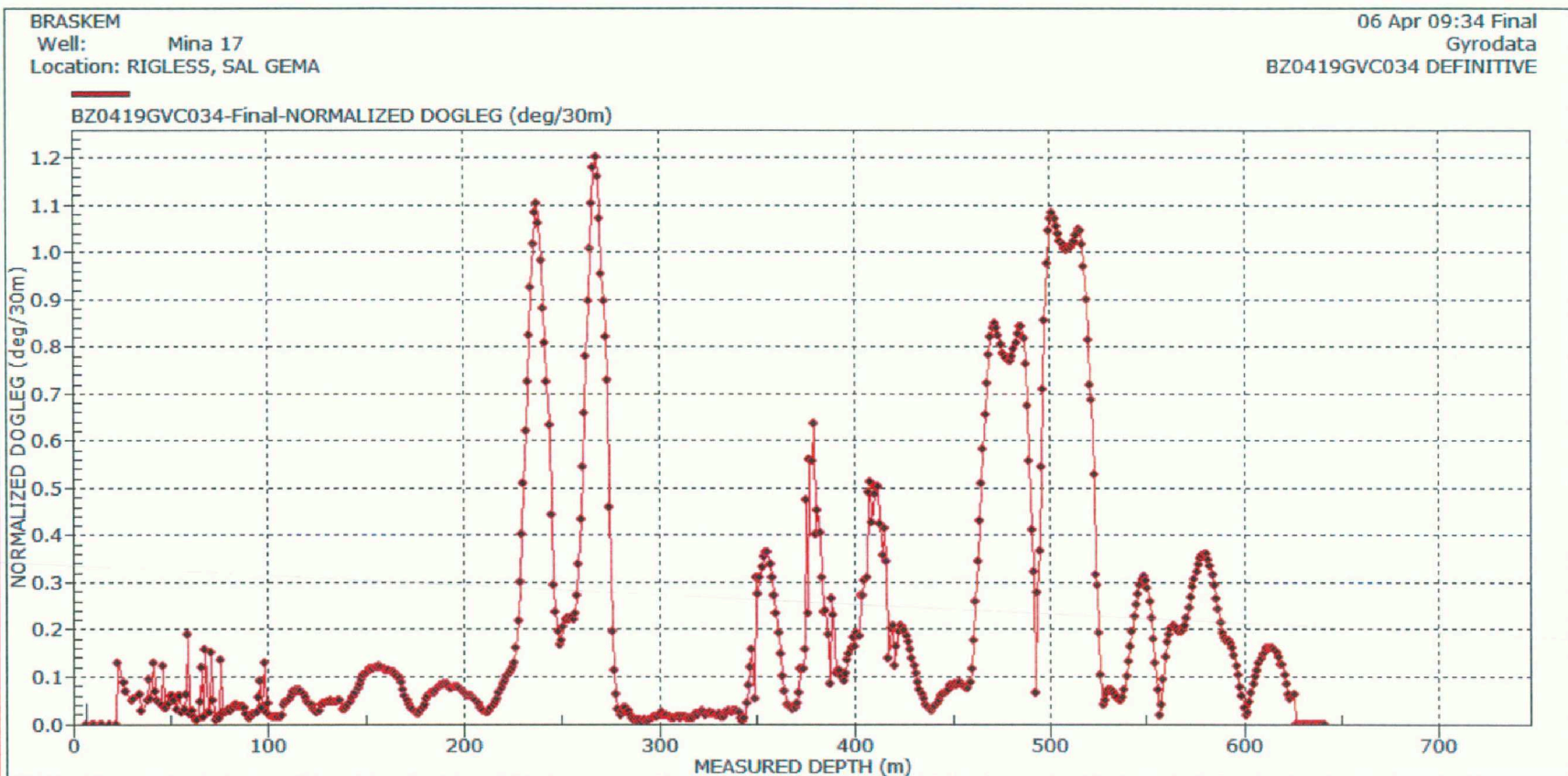
Parte 7
Gráficos

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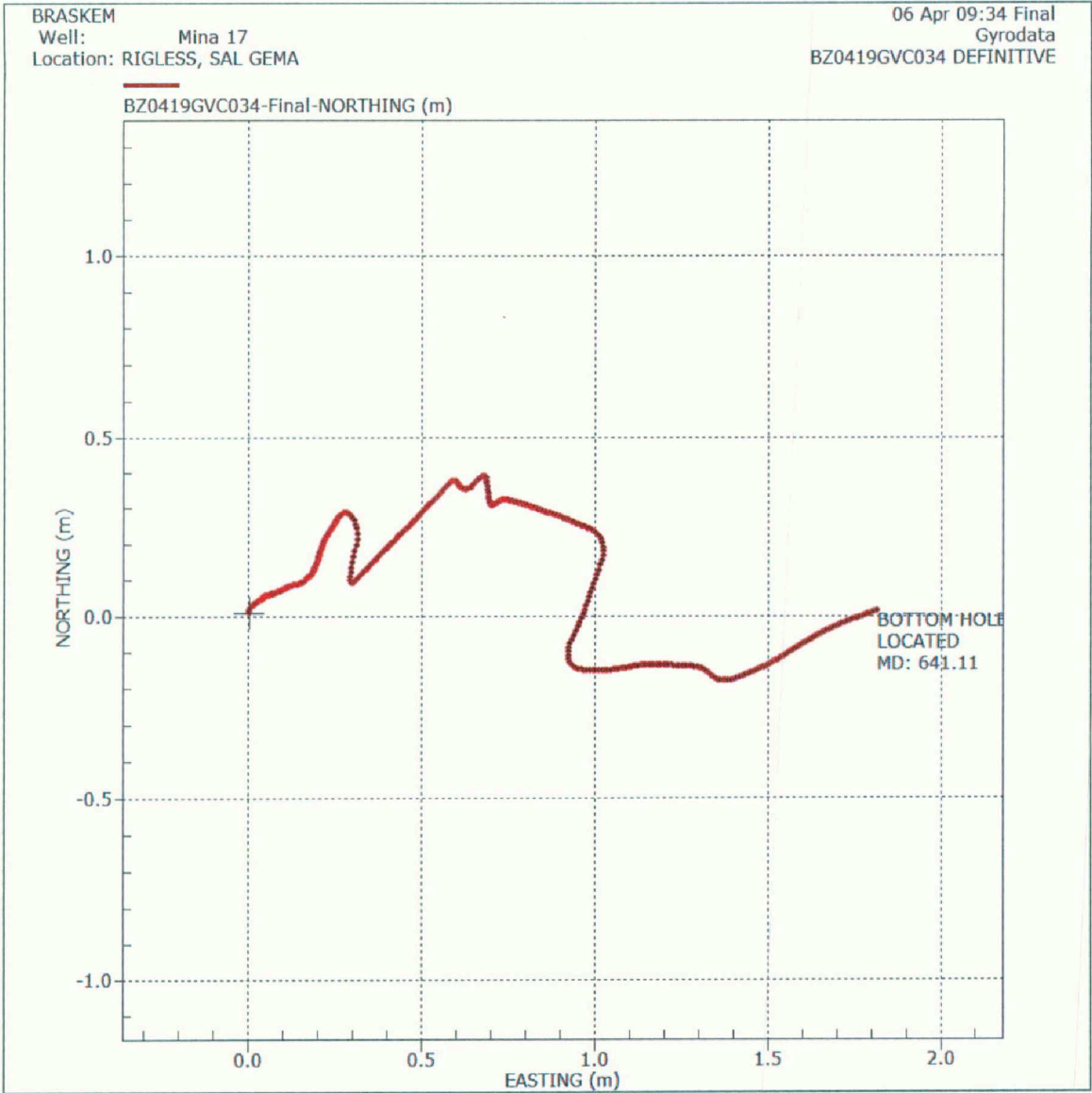


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ANEXO 8

- Resultados das avaliações com giroscópio
(Continuação 1)

ANEXO 8

- Resultados das avaliações com giroscópio
(Continuação)



Braskem

Campo: Sal Gema

Poço: Mina 27

Gyro Multshot Contínuo

Data da Amostragem: 6 de Abril de 2019

Número de Trabalho: BZ0419GVC035

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ÍNDICE

1.0	Discussão	3
2.0	Página de Certificado da Amostragem	5
3.0	Detalhes da Amostragem.....	7
4.0	Listagem Definitiva da Amostragem	9
5.0	Controle de Qualidade.....	36
6.0	Relatório Cronológico da Operação.....	38
7.0	Gráficos.....;	40

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[assinatura]

Parte 1
Discussão

1.0 DISCUSSÃO

O Giroscópio FA088 foi utilizado para fazer uma amostragem na Mina 27.

A amostragem foi coletada da superfície até 900.00m.

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.

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Parte 2
Página de Certificado da Amostragem

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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 / Leonardo Gomes

Data: 06 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: 06 de Abril de 2019

DIRETORIA
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Parte 3
Detalhes da Amostragem

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3.0 DETALHES DA AMOSTRAGEM

Cliente	:	Braskem
Sonda	:	N/A
Campo	:	Sal Gema
Poço	:	Mina 27
Latitude	:	9.634367 deg. S
Longitude	:	35.750159 deg. W
Data da amostragem	:	6 de Abril de 2019
Tipo de amostragem	:	Gyro Multishot Contínuo
Referência de profundidade	:	Ground
Max. Profundidade da amostragem	:	900.00 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 27**,
Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC035

Run Date: 06 Apr 2019

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 9.634367 deg. S

Longitude: 35.750159 deg. W


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 Well Head Location

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
0.00	0.00	0.00	0.00	0.00	0.00 N	0.00 E
10.00	0.87	350.07	10.00	0.00	0.07 N	0.01W
11.93	0.90	351.44	11.93	0.00	0.10 N	0.02W
14.00	0.95	351.42	14.00	0.00	0.14 N	0.02W
16.02	0.95	351.75	16.02	0.00	0.17 N	0.03W
20.00	0.93	349.99	20.00	0.00	0.23 N	0.04W
22.02	0.91	348.08	22.02	0.00	0.27 N	0.04W
24.04	0.92	346.26	24.04	0.00	0.30 N	0.05W
26.38	0.93	348.67	26.38	0.06	0.33 N	0.06W
28.30	0.89	347.85	28.30	0.09	0.36 N	0.07W
29.99	0.81	347.56	29.99	0.16	0.39 N	0.07W
32.33	0.82	351.06	32.33	0.16	0.42 N	0.08W
38.00	0.83	349.70	38.00	0.13	0.50 N	0.09W
39.00	0.83	349.50	39.00	0.13	0.52 N	0.09W
40.00	0.82	350.10	40.00	0.15	0.53 N	0.10W
41.00	0.82	351.42	41.00	0.15	0.55 N	0.10W
42.00	0.82	351.93	42.00	0.16	0.56 N	0.10W
43.00	0.81	350.54	43.00	0.16	0.57 N	0.10W
44.00	0.80	349.85	44.00	0.14	0.59 N	0.11W
45.00	0.79	350.43	45.00	0.07	0.60 N	0.11W
46.00	0.78	350.25	46.00	0.07	0.61 N	0.11W
47.00	0.78	350.20	47.00	0.08	0.63 N	0.11W
48.00	0.78	350.09	48.00	0.10	0.64 N	0.11W
49.00	0.78	350.08	49.00	0.10	0.65 N	0.12W
50.00	0.77	350.02	50.00	0.11	0.67 N	0.12W
51.00	0.77	349.78	50.99	0.12	0.68 N	0.12W
52.00	0.77	349.56	51.99	0.13	0.69 N	0.12W
53.00	0.77	349.70	52.99	0.18	0.71 N	0.13W
54.00	0.77	349.82	53.99	0.19	0.72 N	0.13W
55.00	0.77	349.78	54.99	0.20	0.73 N	0.13W
56.00	0.77	349.96	55.99	0.21	0.75 N	0.13W
57.00	0.77	350.26	56.99	0.22	0.76 N	0.14W
58.00	0.76	350.34	57.99	0.23	0.77 N	0.14W
59.00	0.76	350.10	58.99	0.24	0.79 N	0.14W
60.00	0.75	349.92	59.99	0.25	0.80 N	0.14W
61.00	0.74	350.11	60.99	0.26	0.81 N	0.14W

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Fig. 7.342
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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
62.00	0.73	350.33	61.99	0.28	0.83 N	0.15W
63.00	0.72	350.24	62.99	0.29	0.84 N	0.15W
64.00	0.71	349.78	63.99	0.32	0.85 N	0.15W
65.00	0.70	349.50	64.99	0.33	0.86 N	0.15W
66.00	0.68	349.47	65.99	0.36	0.87 N	0.16W
67.00	0.67	349.06	66.99	0.38	0.89 N	0.16W
68.00	0.65	348.62	67.99	0.40	0.90 N	0.16W
69.00	0.64	348.39	68.99	0.43	0.91 N	0.16W
70.00	0.63	348.35	69.99	0.45	0.92 N	0.16W
71.00	0.62	348.06	70.99	0.46	0.93 N	0.17W
72.00	0.60	347.21	71.99	0.47	0.94 N	0.17W
73.00	0.59	346.10	72.99	0.49	0.95 N	0.17W
74.00	0.57	345.17	73.99	0.51	0.96 N	0.17W
75.00	0.55	344.15	74.99	0.53	0.97 N	0.18W
76.00	0.54	342.68	75.99	0.56	0.98 N	0.18W
77.00	0.52	340.82	76.99	0.59	0.99 N	0.18W
78.00	0.51	339.06	77.99	0.63	1.00 N	0.19W
79.00	0.50	336.64	78.99	0.68	1.00 N	0.19W
80.00	0.49	334.11	79.99	0.73	1.01 N	0.19W
81.00	0.47	331.38	80.99	0.79	1.02 N	0.20W
82.00	0.46	328.29	81.99	0.85	1.03 N	0.20W
83.00	0.46	325.23	82.99	0.92	1.03 N	0.20W
84.00	0.46	321.92	83.99	0.99	1.04 N	0.21W
85.00	0.46	318.48	84.99	1.06	1.05 N	0.21W
86.00	0.47	315.87	85.99	1.14	1.05 N	0.22W
87.00	0.48	314.15	86.99	1.21	1.06 N	0.23W
88.00	0.50	311.66	87.99	1.29	1.06 N	0.23W
89.00	0.53	308.24	88.99	1.36	1.07 N	0.24W
90.00	0.56	305.14	89.99	1.44	1.07 N	0.25W
91.00	0.60	302.51	90.99	1.51	1.08 N	0.25W
92.00	0.65	299.89	91.99	1.59	1.09 N	0.26W
93.00	0.71	297.62	92.99	1.66	1.09 N	0.27W
94.00	0.77	295.67	93.99	1.74	1.10 N	0.29W
95.00	0.85	294.25	94.99	1.81	1.10 N	0.30W
96.00	0.92	293.15	95.99	1.85	1.11 N	0.31W
97.00	1.01	292.23	96.99	1.89	1.12 N	0.33W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
98.00	1.09	291.64	97.99	1.97	1.12 N	0.35 W
99.00	1.17	291.21	98.99	2.04	1.13 N	0.36 W
100.00	1.26	290.99	99.99	2.12	1.14 N	0.38 W
101.00	1.35	290.72	100.99	2.20	1.15 N	0.40 W
102.00	1.44	290.46	101.99	2.29	1.15 N	0.43 W
103.00	1.52	290.23	102.99	2.36	1.16 N	0.45 W
104.00	1.60	290.01	103.99	2.42	1.17 N	0.48 W
105.00	1.69	289.78	104.99	2.48	1.18 N	0.50 W
106.00	1.77	289.33	105.99	2.53	1.19 N	0.53 W
107.00	1.85	288.92	106.99	2.57	1.20 N	0.56 W
108.00	1.94	288.36	107.99	2.60	1.21 N	0.59 W
109.00	2.02	287.71	108.99	2.61	1.22 N	0.63 W
110.00	2.11	287.11	109.99	2.58	1.23 N	0.66 W
111.00	2.15	286.81	110.99	2.57	1.25 N	0.70 W
112.00	2.21	286.47	111.99	2.57	1.26 N	0.73 W
113.00	2.30	285.92	112.98	2.58	1.27 N	0.77 W
114.00	2.40	285.39	113.98	2.58	1.28 N	0.81 W
115.00	2.49	284.91	114.98	2.58	1.29 N	0.85 W
116.00	2.59	284.56	115.98	2.58	1.30 N	0.89 W
117.00	2.69	284.32	116.98	2.58	1.31 N	0.94 W
118.00	2.79	284.31	117.98	2.58	1.32 N	0.99 W
119.00	2.90	284.53	118.98	2.58	1.34 N	1.03 W
120.00	3.00	284.97	119.98	2.59	1.35 N	1.08 W
121.00	3.10	285.59	120.98	2.60	1.36 N	1.13 W
122.00	3.20	286.38	121.97	2.62	1.38 N	1.19 W
123.00	3.30	287.27	122.97	2.64	1.39 N	1.24 W
124.00	3.37	288.04	123.97	2.66	1.41 N	1.30 W
125.00	3.42	288.58	124.97	2.69	1.43 N	1.35 W
126.00	3.49	289.43	125.97	2.75	1.45 N	1.41 W
127.00	3.58	290.59	126.97	2.80	1.47 N	1.47 W
128.00	3.67	291.74	127.96	2.82	1.49 N	1.53 W
129.00	3.75	292.90	128.96	2.85	1.52 N	1.59 W
130.00	3.84	294.01	129.96	2.87	1.55 N	1.65 W
131.00	3.92	295.02	130.96	2.88	1.57 N	1.71 W
132.00	4.00	295.98	131.95	2.89	1.60 N	1.77 W
133.00	4.08	296.89	132.95	2.88	1.63 N	1.83 W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
134.00	4.16	297.78	133.95	2.86	1.67 N	1.90W
135.00	4.24	298.62	134.95	2.82	1.70 N	1.96W
136.00	4.33	299.44	135.94	2.78	1.74 N	2.03W
137.00	4.41	300.22	136.94	2.74	1.78 N	2.09W
138.00	4.49	300.98	137.94	2.68	1.82 N	2.16W
139.00	4.58	301.74	138.94	2.66	1.86 N	2.23W
140.00	4.66	302.40	139.93	2.65	1.90 N	2.30W
141.00	4.75	303.01	140.93	2.62	1.94 N	2.37W
142.00	4.83	303.54	141.92	2.57	1.99 N	2.44W
143.00	4.92	303.99	142.92	2.53	2.04 N	2.51W
144.00	5.01	304.33	143.92	2.50	2.09 N	2.58W
145.00	5.09	304.52	144.91	2.49	2.14 N	2.65W
146.00	5.18	304.60	145.91	2.50	2.19 N	2.72W
147.00	5.26	304.59	146.91	2.49	2.24 N	2.80W
148.00	5.34	304.48	147.90	2.46	2.29 N	2.88W
149.00	5.41	304.25	148.90	2.46	2.34 N	2.95W
150.00	5.48	303.94	149.89	2.50	2.40 N	3.03W
151.00	5.56	303.61	150.89	2.55	2.45 N	3.11W
152.00	5.63	303.28	151.88	2.60	2.50 N	3.19W
153.00	5.71	302.91	152.88	2.66	2.56 N	3.28W
154.00	5.78	302.47	153.87	2.72	2.61 N	3.36W
155.00	5.86	301.96	154.87	2.77	2.67 N	3.45W
156.00	5.94	301.35	155.86	2.83	2.72 N	3.53W
157.00	6.02	300.65	156.86	2.88	2.77 N	3.62W
158.00	6.11	299.88	157.85	2.93	2.83 N	3.71W
159.00	6.20	299.08	158.85	2.98	2.88 N	3.81W
160.00	6.30	298.25	159.84	3.04	2.93 N	3.90W
161.00	6.41	297.38	160.83	3.09	2.98 N	4.00W
162.00	6.49	296.68	161.83	3.14	3.03 N	4.10W
163.00	6.54	296.20	162.82	3.19	3.08 N	4.20W
164.00	6.62	295.47	163.81	3.19	3.13 N	4.30W
165.00	6.72	294.53	164.81	3.18	3.18 N	4.41W
166.00	6.81	293.63	165.80	3.22	3.23 N	4.52W
167.00	6.91	292.79	166.79	3.26	3.28 N	4.63W
168.00	7.00	292.04	167.79	3.31	3.32 N	4.74W
169.00	7.09	291.36	168.78	3.35	3.37 N	4.85W

ORIGINAL
Fig. 7.345
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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
170.00	7.18	290.72	169.77	3.39	3.41 N	4.97W
171.00	7.25	290.11	170.76	3.41	3.46 N	5.09W
172.00	7.32	289.52	171.75	3.43	3.50 N	5.21W
173.00	7.39	288.96	172.75	3.43	3.54 N	5.33W
174.00	7.46	288.35	173.74	3.43	3.59 N	5.45W
175.00	7.53	287.73	174.73	3.41	3.63 N	5.57W
176.00	7.61	287.11	175.72	3.40	3.67 N	5.70W
177.00	7.68	286.51	176.71	3.41	3.70 N	5.83W
178.00	7.76	285.92	177.70	3.46	3.74 N	5.96W
179.00	7.81	285.60	178.69	3.46	3.78 N	6.09W
180.00	7.85	285.31	179.68	3.43	3.81 N	6.22W
181.00	7.93	284.77	180.67	3.39	3.85 N	6.35W
182.00	8.02	284.24	181.67	3.36	3.88 N	6.48W
183.00	8.12	283.74	182.66	3.33	3.92 N	6.62W
184.00	8.22	283.27	183.65	3.31	3.95 N	6.76W
185.00	8.33	282.85	184.63	3.27	3.98 N	6.90W
186.00	8.44	282.49	185.62	3.22	4.02 N	7.04W
187.00	8.56	282.18	186.61	3.19	4.05 N	7.19W
188.00	8.68	281.90	187.60	3.18	4.08 N	7.33W
189.00	8.80	281.65	188.59	3.16	4.11 N	7.48W
190.00	8.93	281.43	189.58	3.13	4.14 N	7.63W
191.00	9.05	281.25	190.57	3.07	4.17 N	7.78W
192.00	9.18	281.08	191.55	2.95	4.20 N	7.94W
193.00	9.31	280.95	192.54	2.88	4.23 N	8.10W
194.00	9.44	280.85	193.53	2.99	4.26 N	8.26W
195.00	9.56	280.79	194.51	3.25	4.29 N	8.42W
196.00	9.69	280.79	195.50	3.37	4.33 N	8.58W
197.00	9.80	280.82	196.48	3.37	4.36 N	8.75W
198.00	9.92	280.87	197.47	3.33	4.39 N	8.92W
199.00	10.03	280.96	198.45	3.25	4.42 N	9.09W
200.00	10.11	281.03	199.44	2.93	4.46 N	9.26W
201.00	10.17	281.09	200.42	2.11	4.49 N	9.43W
202.00	10.25	281.18	201.41	1.71	4.52 N	9.61W
203.00	10.35	281.32	202.39	1.54	4.56 N	9.78W
204.00	10.44	281.47	203.38	1.68	4.59 N	9.96W
205.00	10.52	281.72	204.36	2.30	4.63 N	10.14W

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A Gyrodata Directional Survey


BRASKEM

Well: Mina 27

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
206.00	10.57	281.81	205.34	2.51	4.67 N	10.32 W
206.00	10.57	282.04	205.34	2.51	4.67 N	10.32 W
207.00	10.54	281.92	206.32	2.43	4.71 N	10.50 W
208.00	10.58	282.11	207.31	2.31	4.74 N	10.68 W
209.00	10.75	282.22	208.29	2.19	4.78 N	10.86 W
210.00	11.07	282.60	209.27	2.07	4.82 N	11.04 W
211.00	11.29	282.95	210.25	1.96	4.87 N	11.23 W
212.00	11.39	283.09	211.23	1.84	4.91 N	11.42 W
213.00	11.45	283.20	212.21	1.71	4.96 N	11.61 W
214.00	11.47	283.30	213.19	1.60	5.00 N	11.81 W
215.00	11.26	283.09	214.17	1.52	5.05 N	12.00 W
216.00	10.55	282.10	215.16	1.47	5.09 N	12.18 W
217.00	10.27	281.76	216.14	1.42	5.13 N	12.36 W
218.00	10.22	281.90	217.12	1.35	5.16 N	12.54 W
219.00	10.47	282.45	218.11	1.28	5.20 N	12.71 W
220.00	11.19	283.68	219.09	1.21	5.24 N	12.89 W
221.00	11.51	284.25	220.07	1.15	5.29 N	13.08 W
222.00	11.54	284.34	221.05	1.19	5.34 N	13.28 W
223.00	11.54	284.43	222.03	1.15	5.39 N	13.47 W
224.00	11.52	284.54	223.01	1.10	5.44 N	13.67 W
225.00	11.51	284.70	223.99	1.08	5.49 N	13.86 W
226.00	11.50	284.87	224.97	1.12	5.54 N	14.05 W
227.00	11.47	285.11	225.95	1.19	5.59 N	14.24 W
228.00	11.42	285.34	226.93	1.26	5.64 N	14.44 W
229.00	11.37	285.66	227.91	1.31	5.70 N	14.63 W
230.00	11.32	286.00	228.89	1.27	5.75 N	14.82 W
231.00	11.27	286.33	229.87	1.18	5.81 N	15.00 W
232.00	11.23	286.70	230.85	1.23	5.86 N	15.19 W
233.00	11.19	286.98	231.83	1.21	5.92 N	15.38 W
234.00	11.14	287.21	232.81	1.15	5.97 N	15.56 W
235.00	11.10	287.42	233.80	1.33	6.03 N	15.75 W
236.00	11.07	287.56	234.78	1.55	6.09 N	15.93 W
237.00	11.04	287.69	235.76	1.63	6.15 N	16.11 W
238.00	10.98	287.85	236.74	1.73	6.21 N	16.29 W
239.00	10.91	288.03	237.72	1.86	6.26 N	16.47 W
240.00	10.84	288.13	238.70	1.92	6.32 N	16.65 W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
241.00	10.77	288.16	239.69	1.89	6.38 N	16.83 W
242.00	10.71	288.16	240.67	1.77	6.44 N	17.01 W
243.00	10.64	288.23	241.65	1.57	6.50 N	17.18 W
244.00	10.57	288.27	242.63	1.46	6.55 N	17.36 W
245.00	10.49	288.43	243.62	1.44	6.61 N	17.53 W
246.00	10.43	288.55	244.60	1.42	6.67 N	17.71 W
247.00	10.38	288.59	245.58	1.42	6.73 N	17.88 W
248.00	10.33	288.66	246.57	1.42	6.78 N	18.05 W
249.00	10.30	288.75	247.55	1.43	6.84 N	18.22 W
250.00	10.27	288.85	248.54	1.43	6.90 N	18.39 W
251.00	10.23	288.94	249.52	1.45	6.96 N	18.55 W
252.00	10.17	289.01	250.50	1.46	7.01 N	18.72 W
253.00	10.04	289.05	251.49	1.47	7.07 N	18.89 W
254.00	9.86	289.13	252.47	1.52	7.13 N	19.05 W
255.00	9.77	289.12	253.46	1.60	7.18 N	19.21 W
256.00	9.77	289.05	254.44	1.67	7.24 N	19.37 W
257.00	9.86	289.06	255.43	1.67	7.30 N	19.53 W
258.00	10.00	289.00	256.41	1.58	7.35 N	19.70 W
259.00	10.05	289.08	257.40	1.47	7.41 N	19.86 W
260.00	10.01	289.22	258.38	1.33	7.47 N	20.03 W
261.00	9.96	289.26	259.37	1.26	7.52 N	20.19 W
262.00	9.90	289.36	260.35	1.23	7.58 N	20.35 W
263.00	9.84	289.42	261.34	1.19	7.64 N	20.51 W
264.00	9.78	289.57	262.32	1.15	7.69 N	20.67 W
265.00	9.74	289.88	263.31	1.10	7.75 N	20.83 W
266.00	9.69	290.10	264.30	1.03	7.81 N	20.99 W
267.00	9.66	290.29	265.28	0.91	7.87 N	21.15 W
268.00	9.59	290.50	266.27	0.77	7.92 N	21.31 W
269.00	9.45	290.49	267.25	0.56	7.98 N	21.46 W
270.00	9.30	290.61	268.24	0.47	8.04 N	21.61 W
271.00	9.17	290.98	269.23	0.45	8.10 N	21.76 W
272.00	9.13	291.28	270.21	0.46	8.15 N	21.91 W
273.00	9.17	291.64	271.20	0.52	8.21 N	22.06 W
274.00	9.23	291.74	272.19	0.48	8.27 N	22.21 W
275.00	9.27	291.59	273.18	0.33	8.33 N	22.36 W
276.00	9.28	291.57	274.16	0.16	8.39 N	22.51 W

A Gyrodata Directional Survey

BRASKEM

Well: Mina 27

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
277.00	9.26	291.51	275.15	0.04	8.45 N	22.66W
278.00	9.24	291.48	276.14	0.22	8.51 N	22.81W
279.00	9.24	291.44	277.12	0.44	8.57 N	22.96W
280.00	9.26	291.38	278.11	0.66	8.63 N	23.11W
281.00	9.29	291.36	279.10	0.87	8.68 N	23.26W
282.00	9.35	291.31	280.08	1.05	8.74 N	23.41W
283.00	9.38	291.35	281.07	1.25	8.80 N	23.56W
284.00	9.42	291.24	282.06	1.49	8.86 N	23.71W
285.00	9.44	291.12	283.04	1.72	8.92 N	23.86W
286.00	9.45	290.92	284.03	1.99	8.98 N	24.02W
287.00	9.49	290.69	285.02	2.17	9.04 N	24.17W
288.00	9.54	290.42	286.00	2.30	9.10 N	24.33W
289.00	9.61	290.15	286.99	2.40	9.15 N	24.48W
290.00	9.70	289.85	287.98	2.47	9.21 N	24.64W
291.00	9.80	289.47	288.96	2.62	9.27 N	24.80W
292.00	9.90	289.15	289.95	2.75	9.32 N	24.96W
293.00	10.02	288.70	290.93	2.90	9.38 N	25.12W
294.00	10.15	288.21	291.92	3.04	9.44 N	25.29W
295.00	10.28	287.74	292.90	3.14	9.49 N	25.46W
296.00	10.40	287.23	293.88	3.25	9.54 N	25.63W
297.00	10.51	286.75	294.87	3.32	9.60 N	25.80W
298.00	10.61	286.36	295.85	3.42	9.65 N	25.98W
299.00	10.71	285.98	296.83	3.50	9.70 N	26.16W
300.00	10.78	285.57	297.82	3.60	9.75 N	26.34W
301.00	10.88	285.14	298.80	3.70	9.80 N	26.52W
302.00	10.97	284.65	299.78	3.76	9.85 N	26.70W
303.00	11.06	284.09	300.76	3.80	9.90 N	26.89W
304.00	11.16	283.60	301.74	3.84	9.94 N	27.07W
305.00	11.23	283.07	302.72	3.85	9.99 N	27.26W
306.00	11.33	282.44	303.70	3.87	10.03 N	27.45W
307.00	11.40	281.86	304.68	3.88	10.07 N	27.64W
308.00	11.48	281.13	305.66	3.86	10.11 N	27.84W
309.00	11.57	280.55	306.64	3.83	10.15 N	28.04W
310.00	11.65	280.07	307.62	3.78	10.19 N	28.23W
311.00	11.76	279.66	308.60	3.74	10.22 N	28.43W
312.00	11.86	279.42	309.58	3.73	10.26 N	28.64W

A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
313.00	11.96	279.10	310.56	3.74	10.29 N	28.84 W
314.00	12.09	278.97	311.54	3.79	10.32 N	29.04 W
315.00	12.22	278.82	312.52	3.81	10.35 N	29.25 W
316.00	12.36	278.70	313.49	3.73	10.39 N	29.46 W
317.00	12.50	278.77	314.47	3.77	10.42 N	29.68 W
318.00	12.63	278.74	315.45	3.82	10.45 N	29.89 W
319.00	12.76	278.74	316.42	3.94	10.49 N	30.11 W
320.00	12.89	278.75	317.40	4.19	10.52 N	30.33 W
321.00	13.03	278.61	318.37	4.25	10.55 N	30.55 W
322.00	13.17	278.58	319.34	4.35	10.59 N	30.77 W
323.00	13.31	278.59	320.32	4.40	10.62 N	31.00 W
324.00	13.44	278.54	321.29	4.47	10.66 N	31.23 W
325.00	13.56	278.52	322.26	4.53	10.69 N	31.46 W
326.00	13.68	278.52	323.24	4.56	10.72 N	31.69 W
327.00	13.82	278.54	324.21	4.58	10.76 N	31.93 W
328.00	13.97	278.55	325.18	4.62	10.80 N	32.16 W
329.00	14.16	278.58	326.15	4.62	10.83 N	32.41 W
330.00	14.27	278.47	327.12	4.63	10.87 N	32.65 W
331.00	14.28	278.07	328.09	4.63	10.90 N	32.89 W
332.00	14.44	277.88	329.05	4.63	10.94 N	33.14 W
333.00	14.62	277.76	330.02	4.66	10.97 N	33.39 W
334.00	14.87	277.59	330.99	4.66	11.01 N	33.64 W
335.00	15.24	277.72	331.96	4.68	11.04 N	33.90 W
336.00	15.43	277.51	332.92	4.68	11.08 N	34.16 W
337.00	15.61	277.14	333.88	4.70	11.11 N	34.42 W
338.00	15.77	276.85	334.85	4.72	11.14 N	34.69 W
339.00	15.94	276.54	335.81	4.75	11.18 N	34.96 W
340.00	16.09	276.25	336.77	4.80	11.21 N	35.24 W
341.00	16.24	276.04	337.73	4.83	11.24 N	35.51 W
342.00	16.36	275.77	338.69	4.82	11.26 N	35.79 W
343.00	16.50	275.53	339.65	4.81	11.29 N	36.07 W
344.00	16.62	275.24	340.61	4.76	11.32 N	36.36 W
345.00	16.75	274.87	341.56	4.78	11.34 N	36.64 W
346.00	16.88	274.60	342.52	4.90	11.37 N	36.93 W
347.00	16.99	274.33	343.48	4.88	11.39 N	37.22 W
348.00	17.14	274.10	344.43	4.85	11.41 N	37.52 W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
349.00	17.26	273.98	345.39	4.75	11.43 N	37.81W
350.00	17.40	273.84	346.34	4.55	11.45 N	38.11W
351.00	17.54	273.78	347.30	4.50	11.47 N	38.41W
352.00	17.69	273.63	348.25	4.47	11.49 N	38.71W
353.00	17.84	273.56	349.20	4.46	11.51 N	39.01W
354.00	18.00	273.54	350.16	4.44	11.53 N	39.32W
355.00	18.16	273.49	351.11	4.43	11.55 N	39.63W
356.00	18.32	273.60	352.06	4.42	11.57 N	39.94W
357.00	18.45	273.68	353.00	4.43	11.59 N	40.26W
358.00	18.59	273.68	353.95	4.42	11.61 N	40.58W
359.00	18.73	273.79	354.90	4.20	11.63 N	40.89W
360.00	18.87	273.83	355.85	3.86	11.65 N	41.22W
361.00	19.04	273.91	356.79	3.84	11.67 N	41.54W
362.00	19.20	274.09	357.74	3.84	11.70 N	41.87W
363.00	19.36	274.24	358.68	3.95	11.72 N	42.20W
364.00	19.53	274.43	359.62	4.27	11.75 N	42.53W
365.00	19.70	274.63	360.57	4.19	11.77 N	42.86W
366.00	19.85	274.77	361.51	4.05	11.80 N	43.20W
367.00	20.03	274.87	362.45	4.04	11.83 N	43.54W
368.00	20.19	274.88	363.39	4.02	11.86 N	43.88W
369.00	20.35	274.86	364.32	4.03	11.89 N	44.23W
370.00	20.50	274.81	365.26	4.12	11.92 N	44.58W
371.00	20.64	274.70	366.20	4.14	11.95 N	44.93W
372.00	20.77	274.56	367.13	4.18	11.97 N	45.28W
373.00	20.90	274.30	368.07	4.18	12.00 N	45.63W
374.00	20.78	273.37	369.00	4.18	12.03 N	45.99W
375.00	20.47	271.68	369.94	4.15	12.04 N	46.34W
376.00	20.57	271.28	370.88	4.09	12.05 N	46.69W
377.00	20.67	270.89	371.81	4.06	12.06 N	47.04W
378.00	20.97	271.07	372.75	4.00	12.06 N	47.40W
379.00	21.48	271.99	373.68	3.90	12.07 N	47.76W
380.00	21.51	271.40	374.61	3.77	12.08 N	48.13W
381.00	21.45	270.61	375.54	3.65	12.09 N	48.49W
382.00	21.56	270.17	376.47	3.50	12.09 N	48.86W
383.00	21.65	269.79	377.40	3.34	12.09 N	49.23W
384.00	21.81	269.62	378.33	3.17	12.09 N	49.60W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
385.00	22.07	269.67	379.26	3.00	12.09 N	49.97W
386.00	22.20	269.42	380.18	2.81	12.09 N	50.35W
387.00	22.33	269.16	381.11	2.62	12.08 N	50.73W
388.00	22.44	269.02	382.03	2.44	12.07 N	51.11W
389.00	22.55	268.93	382.96	2.48	12.07 N	51.49W
390.00	22.64	268.91	383.88	2.87	12.06 N	51.87W
391.00	22.74	268.97	384.80	2.83	12.05 N	52.26W
392.00	22.84	269.07	385.72	2.84	12.05 N	52.65W
393.00	22.94	269.29	386.64	2.63	12.04 N	53.03W
394.00	23.02	269.62	387.57	2.14	12.04 N	53.43W
395.00	23.08	270.02	388.49	2.46	12.04 N	53.82W
396.00	23.14	270.43	389.41	2.93	12.04 N	54.21W
397.00	23.20	270.86	390.32	3.24	12.04 N	54.60W
398.00	23.25	271.26	391.24	3.53	12.05 N	55.00W
399.00	23.29	271.63	392.16	3.73	12.06 N	55.39W
400.00	23.31	272.02	393.08	3.86	12.07 N	55.79W
401.00	23.32	272.40	394.00	4.10	12.09 N	56.18W
402.00	23.31	272.80	394.92	4.32	12.11 N	56.58W
403.00	23.30	273.20	395.84	4.48	12.13 N	56.97W
404.00	23.26	273.68	396.75	4.60	12.15 N	57.37W
405.00	23.18	274.20	397.67	4.68	12.18 N	57.76W
406.00	23.08	274.79	398.59	4.74	12.21 N	58.15W
407.00	22.96	275.40	399.51	4.78	12.24 N	58.54W
408.00	22.82	276.07	400.43	4.79	12.28 N	58.93W
409.00	22.67	276.74	401.36	4.73	12.32 N	59.31W
410.00	22.51	277.41	402.28	4.64	12.37 N	59.69W
411.00	22.38	278.06	403.20	4.55	12.42 N	60.07W
412.00	22.27	278.66	404.13	4.44	12.48 N	60.45W
413.00	22.18	279.16	405.06	4.35	12.54 N	60.82W
414.00	22.10	279.59	405.98	4.25	12.60 N	61.19W
415.00	22.05	279.96	406.91	4.14	12.66 N	61.56W
416.00	22.01	280.31	407.84	4.05	12.73 N	61.93W
417.00	22.00	280.59	408.76	3.93	12.80 N	62.30W
418.00	21.97	280.84	409.69	3.81	12.87 N	62.67W
419.00	21.95	281.00	410.62	3.64	12.94 N	63.04W
420.00	21.94	281.14	411.54	3.43	13.01 N	63.40W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
421.00	21.94	281.29	412.47	3.07	13.08 N	63.77 W
422.00	21.94	281.41	413.40	2.70	13.15 N	64.14 W
423.00	21.95	281.58	414.33	2.43	13.23 N	64.50 W
424.00	21.95	281.69	415.25	2.15	13.30 N	64.87 W
425.00	21.94	281.80	416.18	1.98	13.38 N	65.24 W
426.00	21.93	281.89	417.11	1.85	13.46 N	65.60 W
427.00	21.92	281.96	418.04	1.61	13.53 N	65.97 W
428.00	21.92	282.05	418.97	1.43	13.61 N	66.33 W
429.00	21.92	282.12	419.89	1.29	13.69 N	66.70 W
430.00	21.92	282.19	420.82	1.15	13.77 N	67.06 W
431.00	21.89	282.28	421.75	1.03	13.85 N	67.43 W
432.00	21.88	282.35	422.68	0.93	13.93 N	67.79 W
433.00	21.86	282.39	423.60	0.83	14.01 N	68.15 W
434.00	21.85	282.43	424.53	0.78	14.09 N	68.52 W
435.00	21.86	282.47	425.46	0.73	14.17 N	68.88 W
436.00	21.88	282.18	426.39	0.61	14.25 N	69.24 W
437.00	21.91	281.91	427.32	0.52	14.32 N	69.61 W
438.00	21.90	281.98	428.24	0.39	14.40 N	69.97 W
439.00	21.90	282.03	429.17	0.41	14.48 N	70.34 W
440.00	21.89	282.40	430.10	0.45	14.56 N	70.70 W
441.00	21.84	282.75	431.03	0.48	14.64 N	71.07 W
442.00	21.85	282.79	431.96	0.51	14.72 N	71.43 W
443.00	21.85	282.87	432.88	0.47	14.80 N	71.79 W
444.00	21.83	282.95	433.81	0.43	14.89 N	72.16 W
445.00	21.81	282.98	434.74	0.42	14.97 N	72.52 W
446.00	21.79	283.01	435.67	0.42	15.05 N	72.88 W
447.00	21.79	283.02	436.60	0.43	15.14 N	73.24 W
448.00	21.80	283.02	437.53	0.45	15.22 N	73.60 W
449.00	21.81	283.07	438.46	0.46	15.31 N	73.97 W
450.00	21.82	283.07	439.38	0.46	15.39 N	74.33 W
451.00	21.85	282.92	440.31	0.57	15.47 N	74.69 W
452.00	21.89	282.80	441.24	0.66	15.56 N	75.05 W
453.00	21.94	282.62	442.17	0.67	15.64 N	75.42 W
454.00	21.94	282.80	443.10	0.68	15.72 N	75.78 W
455.00	21.94	283.01	444.02	0.62	15.80 N	76.15 W
456.00	21.94	283.18	444.95	0.61	15.89 N	76.51 W

A Gyrodata Directional Survey


BRASKEM

Well: Mina 27

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC035


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
457.00	21.95	283.33	445.88	0.62	15.97 N	76.87W
458.00	21.96	283.29	446.81	0.65	16.06 N	77.24W
459.00	21.98	283.27	447.73	0.67	16.15 N	77.60W
460.00	21.98	283.31	448.66	0.71	16.23 N	77.97W
461.00	22.00	283.36	449.59	0.75	16.32 N	78.33W
462.00	22.04	283.41	450.51	0.79	16.41 N	78.69W
463.00	22.07	283.44	451.44	0.81	16.49 N	79.06W
464.00	22.10	283.47	452.37	0.83	16.58 N	79.43W
465.00	22.13	283.48	453.29	0.85	16.67 N	79.79W
466.00	22.16	283.50	454.22	0.87	16.76 N	80.16W
467.00	22.20	283.50	455.15	0.86	16.84 N	80.52W
468.00	22.23	283.52	456.07	0.87	16.93 N	80.89W
469.00	22.27	283.56	457.00	0.85	17.02 N	81.26W
470.00	22.32	283.59	457.92	0.85	17.11 N	81.63W
471.00	22.36	283.60	458.85	0.86	17.20 N	82.00W
472.00	22.39	283.62	459.77	0.86	17.29 N	82.37W
473.00	22.43	283.63	460.70	0.89	17.38 N	82.74W
474.00	22.45	283.65	461.62	0.89	17.47 N	83.11W
475.00	22.48	283.64	462.55	0.91	17.56 N	83.48W
476.00	22.50	283.65	463.47	0.90	17.65 N	83.85W
477.00	22.54	283.65	464.39	0.89	17.74 N	84.23W
478.00	22.57	283.67	465.32	0.91	17.83 N	84.60W
479.00	22.60	283.73	466.24	0.91	17.92 N	84.97W
480.00	22.63	283.79	467.16	0.92	18.01 N	85.34W
481.00	22.65	283.79	468.09	0.92	18.10 N	85.72W
482.00	22.66	283.81	469.01	0.91	18.20 N	86.09W
483.00	22.69	283.80	469.93	0.90	18.29 N	86.47W
484.00	22.71	283.77	470.85	0.90	18.38 N	86.84W
485.00	22.74	283.79	471.78	0.88	18.47 N	87.22W
486.00	22.77	283.80	472.70	0.86	18.56 N	87.59W
487.00	22.79	283.83	473.62	0.86	18.66 N	87.97W
488.00	22.82	283.85	474.54	0.83	18.75 N	88.35W
489.00	22.84	283.86	475.46	0.83	18.84 N	88.72W
490.00	22.86	283.88	476.39	0.80	18.94 N	89.10W
491.00	22.88	283.87	477.31	0.76	19.03 N	89.48W
492.00	22.91	283.89	478.23	0.73	19.12 N	89.85W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
493.00	22.96	283.90	479.15	0.69	19.22 N	90.23 W
494.00	23.00	283.89	480.07	0.66	19.31 N	90.61 W
495.00	23.04	283.88	480.99	0.64	19.40 N	90.99 W
496.00	23.07	283.86	481.91	0.63	19.50 N	91.37 W
497.00	23.10	283.82	482.83	0.63	19.59 N	91.75 W
498.00	23.12	283.82	483.75	0.61	19.68 N	92.13 W
499.00	23.16	283.83	484.67	0.60	19.78 N	92.51 W
500.00	23.19	283.86	485.59	0.56	19.87 N	92.90 W
501.00	23.21	283.87	486.51	0.54	19.97 N	93.28 W
502.00	23.24	283.90	487.43	0.54	20.06 N	93.66 W
503.00	23.25	283.90	488.35	0.51	20.16 N	94.04 W
504.00	23.27	283.92	489.26	0.50	20.25 N	94.43 W
505.00	23.27	283.99	490.18	0.48	20.35 N	94.81 W
506.00	23.25	284.02	491.10	0.46	20.44 N	95.19 W
507.00	23.25	284.05	492.02	0.44	20.54 N	95.58 W
508.00	23.24	284.08	492.94	0.39	20.63 N	95.96 W
509.00	23.25	284.06	493.86	0.31	20.73 N	96.34 W
510.00	23.26	284.06	494.78	0.24	20.83 N	96.73 W
511.00	23.27	284.05	495.70	0.20	20.92 N	97.11 W
512.00	23.28	284.08	496.61	0.19	21.02 N	97.49 W
513.00	23.29	284.09	497.53	0.25	21.11 N	97.88 W
514.00	23.30	284.05	498.45	0.29	21.21 N	98.26 W
515.00	23.29	284.05	499.37	0.33	21.31 N	98.64 W
516.00	23.30	284.03	500.29	0.32	21.40 N	99.03 W
517.00	23.32	284.02	501.21	0.29	21.50 N	99.41 W
518.00	23.32	284.07	502.13	0.28	21.59 N	99.80 W
519.00	23.33	284.10	503.04	0.25	21.69 N	100.18 W
520.00	23.33	284.10	503.96	0.26	21.79 N	100.56 W
521.00	23.33	284.12	504.88	0.29	21.88 N	100.95 W
522.00	23.34	284.13	505.80	0.31	21.98 N	101.33 W
523.00	23.34	284.11	506.72	0.34	22.08 N	101.72 W
524.00	23.31	284.01	507.63	0.35	22.17 N	102.10 W
525.00	23.28	283.94	508.55	0.35	22.27 N	102.48 W
526.00	23.27	283.83	509.47	0.36	22.36 N	102.87 W
527.00	23.29	283.82	510.39	0.35	22.46 N	103.25 W
528.00	23.37	283.94	511.31	0.32	22.55 N	103.64 W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLÉG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
529.00	23.44	284.03	512.23	0.29	22.65 N	104.02 W
530.00	23.50	284.12	513.14	0.27	22.75 N	104.41 W
531.00	23.51	284.14	514.06	0.22	22.84 N	104.79 W
532.00	23.51	284.15	514.98	0.18	22.94 N	105.18 W
533.00	23.51	284.14	515.89	0.15	23.04 N	105.57 W
534.00	23.50	284.19	516.81	0.12	23.14 N	105.95 W
535.00	23.51	284.21	517.73	0.11	23.23 N	106.34 W
536.00	23.53	284.23	518.65	0.10	23.33 N	106.73 W
537.00	23.55	284.26	519.56	0.08	23.43 N	107.11 W
538.00	23.57	284.25	520.48	0.08	23.53 N	107.50 W
539.00	23.59	284.30	521.40	0.12	23.63 N	107.89 W
540.00	23.59	284.34	522.31	0.16	23.73 N	108.28 W
541.00	23.60	284.39	523.23	0.18	23.82 N	108.67 W
542.00	23.60	284.45	524.14	0.15	23.92 N	109.05 W
543.00	23.58	284.43	525.06	0.06	24.02 N	109.44 W
544.00	23.56	284.36	525.98	0.07	24.12 N	109.83 W
545.00	23.54	284.32	526.89	0.13	24.22 N	110.22 W
546.00	23.50	284.23	527.81	0.15	24.32 N	110.60 W
547.00	23.48	284.21	528.73	0.15	24.42 N	110.99 W
548.00	23.46	284.21	529.65	0.15	24.52 N	111.37 W
549.00	23.44	284.22	530.56	0.16	24.61 N	111.76 W
550.00	23.43	284.22	531.48	0.20	24.71 N	112.15 W
551.00	23.42	284.22	532.40	0.24	24.81 N	112.53 W
552.00	23.41	284.22	533.32	0.27	24.91 N	112.92 W
553.00	23.41	284.23	534.23	0.32	25.01 N	113.30 W
554.00	23.40	284.22	535.15	0.36	25.10 N	113.69 W
555.00	23.39	284.22	536.07	0.40	25.20 N	114.07 W
556.00	23.38	284.19	536.99	0.46	25.30 N	114.46 W
557.00	23.37	284.14	537.90	0.51	25.39 N	114.84 W
558.00	23.37	284.09	538.82	0.58	25.49 N	115.23 W
559.00	23.37	284.04	539.74	0.66	25.59 N	115.61 W
560.00	23.37	284.03	540.66	0.77	25.68 N	116.00 W
561.00	23.37	284.04	541.58	0.87	25.78 N	116.38 W
562.00	23.36	284.06	542.49	1.00	25.88 N	116.76 W
563.00	23.36	284.11	543.41	1.17	25.97 N	117.15 W
564.00	23.34	284.12	544.33	1.37	26.07 N	117.53 W

DUPICAL
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A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
565.00	23.31	284.15	545.25	1.64	26.17 N	117.92W
566.00	23.29	284.19	546.17	1.93	26.26 N	118.30W
567.00	23.28	284.24	547.09	2.23	26.36 N	118.68W
568.00	23.25	284.30	548.00	2.54	26.46 N	119.07W
569.00	23.23	284.36	548.92	2.82	26.56 N	119.45W
570.00	23.19	284.42	549.84	3.08	26.65 N	119.83W
571.00	23.14	284.47	550.76	3.30	26.75 N	120.21W
572.00	23.09	284.52	551.68	3.51	26.85 N	120.59W
573.00	23.00	284.58	552.60	3.69	26.95 N	120.97W
574.00	22.91	284.66	553.52	3.87	27.05 N	121.35W
575.00	22.79	284.77	554.44	4.04	27.15 N	121.72W
576.00	22.67	284.91	555.37	4.21	27.24 N	122.10W
577.00	22.54	285.06	556.29	4.38	27.34 N	122.47W
578.00	22.36	285.27	557.21	4.56	27.44 N	122.84W
579.00	22.16	285.51	558.14	4.75	27.54 N	123.20W
580.00	21.91	285.82	559.07	4.94	27.65 N	123.56W
581.00	21.64	286.14	560.00	5.14	27.75 N	123.92W
582.00	21.36	286.52	560.93	5.38	27.85 N	124.27W
583.00	21.08	286.89	561.86	5.65	27.95 N	124.62W
584.00	20.82	287.25	562.79	5.93	28.06 N	124.96W
585.00	20.59	287.63	563.73	6.22	28.17 N	125.30W
586.00	20.39	287.95	564.66	6.45	28.27 N	125.63W
587.00	20.21	288.24	565.60	6.64	28.38 N	125.96W
588.00	20.06	288.52	566.54	6.75	28.49 N	126.29W
589.00	19.91	288.78	567.48	6.83	28.60 N	126.61W
590.00	19.77	289.04	568.42	6.85	28.71 N	126.93W
591.00	19.63	289.34	569.36	6.84	28.82 N	127.25W
592.00	19.48	289.65	570.30	6.83	28.93 N	127.57W
593.00	19.32	289.94	571.25	6.75	29.04 N	127.88W
594.00	19.14	290.26	572.19	6.62	29.16 N	128.19W
595.00	18.94	290.55	573.14	6.46	29.27 N	128.49W
596.00	18.72	290.79	574.08	6.26	29.38 N	128.80W
597.00	18.47	291.08	575.03	6.04	29.50 N	129.09W
598.00	18.16	291.26	575.98	5.82	29.61 N	129.39W
599.00	17.82	291.38	576.93	5.59	29.72 N	129.67W
600.00	17.47	291.50	577.89	5.37	29.83 N	129.96W

DISP. 12/AL
Fb. 7.357


A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
601.00	17.16	291.56	578.84	5.17	29.94 N	130.23W
602.00	16.90	291.64	579.80	4.99	30.05 N	130.51W
603.00	16.69	291.71	580.75	4.83	30.16 N	130.77W
604.00	16.50	291.74	581.71	4.64	30.26 N	131.04W
605.00	16.34	291.75	582.67	4.46	30.37 N	131.30W
606.00	16.21	291.75	583.63	4.28	30.47 N	131.56W
607.00	16.08	291.82	584.59	4.14	30.58 N	131.82W
608.00	15.95	291.79	585.55	4.04	30.68 N	132.08W
609.00	15.85	291.79	586.51	3.93	30.78 N	132.33W
610.00	15.74	291.81	587.48	3.80	30.88 N	132.58W
611.00	15.63	291.73	588.44	3.63	30.98 N	132.84W
612.00	15.55	291.79	589.40	3.42	31.08 N	133.08W
613.00	15.46	291.81	590.37	3.13	31.18 N	133.33W
614.00	15.41	291.79	591.33	2.81	31.28 N	133.58W
615.00	15.37	291.78	592.29	2.48	31.38 N	133.83W
616.00	15.35	291.74	593.26	2.20	31.48 N	134.07W
617.00	15.33	291.74	594.22	1.97	31.57 N	134.32W
618.00	15.33	291.76	595.19	1.82	31.67 N	134.56W
619.00	15.36	291.73	596.15	1.67	31.77 N	134.81W
620.00	15.39	291.76	597.12	1.54	31.87 N	135.06W
621.00	15.41	291.78	598.08	1.42	31.97 N	135.30W
622.00	15.39	291.82	599.04	1.30	32.06 N	135.55W
623.00	15.32	291.84	600.01	1.19	32.16 N	135.79W
624.00	15.24	291.85	600.97	1.12	32.26 N	136.04W
625.00	15.16	291.86	601.94	1.04	32.36 N	136.28W
626.00	15.10	291.83	602.90	0.96	32.46 N	136.53W
627.00	15.06	291.84	603.87	0.91	32.55 N	136.77W
628.00	15.03	291.81	604.83	0.83	32.65 N	137.01W
629.00	15.01	291.87	605.80	0.81	32.75 N	137.25W
630.00	14.99	291.89	606.77	0.79	32.84 N	137.49W
631.00	14.96	291.95	607.73	0.79	32.94 N	137.73W
632.00	14.93	291.99	608.70	0.79	33.03 N	137.97W
633.00	14.87	291.99	609.66	0.80	33.13 N	138.21W
634.00	14.83	292.02	610.63	0.86	33.23 N	138.44W
635.00	14.80	292.04	611.60	0.89	33.32 N	138.68W
636.00	14.79	292.04	612.57	0.92	33.42 N	138.92W

A Gyrodata Directional Survey

BRASKEM

Well: Mina 27

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
637.00	14.78	292.13	613.53	0.91	33.51 N	139.15W
638.00	14.76	292.13	614.50	0.85	33.61 N	139.39W
639.00	14.73	292.15	615.47	0.79	33.71 N	139.63W
640.00	14.70	292.19	616.43	0.73	33.80 N	139.86W
641.00	14.68	292.15	617.40	0.69	33.90 N	140.10W
642.00	14.65	292.16	618.37	0.66	33.99 N	140.33W
643.00	14.63	292.15	619.34	0.64	34.09 N	140.56W
644.00	14.60	292.12	620.30	0.65	34.18 N	140.80W
645.00	14.59	292.14	621.27	0.65	34.28 N	141.03W
646.00	14.57	292.17	622.24	0.65	34.37 N	141.26W
647.00	14.55	292.12	623.21	0.66	34.47 N	141.50W
648.00	14.54	292.12	624.17	0.62	34.56 N	141.73W
649.00	14.51	292.09	625.14	0.62	34.66 N	141.96W
650.00	14.50	292.08	626.11	0.63	34.75 N	142.19W
651.00	14.49	292.06	627.08	0.67	34.85 N	142.43W
652.00	14.48	292.06	628.05	0.71	34.94 N	142.66W
653.00	14.47	292.06	629.02	0.73	35.03 N	142.89W
654.00	14.45	292.06	629.98	0.75	35.13 N	143.12W
655.00	14.43	292.09	630.95	0.74	35.22 N	143.35W
656.00	14.41	292.09	631.92	0.77	35.31 N	143.58W
657.00	14.40	292.09	632.89	0.83	35.41 N	143.81W
658.00	14.39	292.10	633.86	0.90	35.50 N	144.04W
659.00	14.36	292.12	634.83	0.96	35.60 N	144.27W
660.00	14.34	292.15	635.80	1.01	35.69 N	144.50W
661.00	14.31	292.15	636.76	1.02	35.78 N	144.73W
662.00	14.27	292.16	637.73	1.01	35.88 N	144.96W
663.00	14.25	292.15	638.70	1.01	35.97 N	145.19W
664.00	14.21	292.17	639.67	0.98	36.06 N	145.42W
665.00	14.17	292.21	640.64	0.97	36.15 N	145.64W
666.00	14.12	292.24	641.61	0.98	36.25 N	145.87W
667.00	14.07	292.24	642.58	1.00	36.34 N	146.10W
668.00	14.03	292.23	643.55	1.03	36.43 N	146.32W
669.00	13.98	292.25	644.52	1.02	36.52 N	146.54W
670.00	13.96	292.27	645.49	1.03	36.61 N	146.77W
671.00	13.91	292.29	646.46	1.05	36.70 N	146.99W
672.00	13.82	292.39	647.43	1.08	36.80 N	147.21W

A Gyrodata Directional Survey


BRASKEM

Well: Mina 27

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
673.00	13.73	292.38	648.40	1.12	36.89 N	147.43 W
674.00	13.64	292.43	649.38	1.14	36.98 N	147.65 W
675.00	13.58	292.44	650.35	1.16	37.07 N	147.87 W
676.00	13.55	292.49	651.32	1.17	37.16 N	148.09 W
677.00	13.55	292.54	652.29	1.18	37.25 N	148.30 W
678.00	13.54	292.54	653.26	1.20	37.34 N	148.52 W
679.00	13.54	292.58	654.24	1.21	37.42 N	148.73 W
680.00	13.54	292.61	655.21	1.22	37.51 N	148.95 W
681.00	13.52	292.73	656.18	1.19	37.61 N	149.17 W
682.00	13.50	292.79	657.15	1.20	37.70 N	149.38 W
683.00	13.46	292.83	658.13	1.23	37.79 N	149.60 W
684.00	13.44	292.78	659.10	1.25	37.88 N	149.81 W
685.00	13.41	292.75	660.07	1.29	37.97 N	150.03 W
686.00	13.37	292.73	661.04	1.27	38.06 N	150.24 W
687.00	13.33	292.66	662.02	1.20	38.14 N	150.45 W
688.00	13.28	292.71	662.99	1.13	38.23 N	150.66 W
689.00	13.23	292.62	663.96	1.06	38.32 N	150.88 W
690.00	13.19	292.62	664.94	1.04	38.41 N	151.09 W
691.00	13.14	292.57	665.91	1.04	38.50 N	151.30 W
692.00	13.09	292.57	666.88	1.06	38.58 N	151.51 W
693.00	13.05	292.53	667.86	1.06	38.67 N	151.72 W
694.00	13.00	292.49	668.83	1.03	38.76 N	151.92 W
695.00	12.95	292.42	669.81	1.02	38.84 N	152.13 W
696.00	12.93	292.36	670.78	1.02	38.93 N	152.34 W
697.00	12.87	292.36	671.76	1.03	39.01 N	152.54 W
698.00	12.80	292.32	672.73	1.01	39.10 N	152.75 W
699.00	12.73	292.28	673.71	1.01	39.18 N	152.95 W
700.00	12.67	292.23	674.68	1.00	39.26 N	153.16 W
701.00	12.64	292.15	675.66	0.99	39.35 N	153.36 W
702.00	12.62	292.05	676.63	0.97	39.43 N	153.56 W
703.00	12.60	292.05	677.61	0.96	39.51 N	153.77 W
704.00	12.58	292.00	678.59	0.94	39.59 N	153.97 W
705.00	12.54	292.03	679.56	0.96	39.67 N	154.17 W
706.00	12.51	292.05	680.54	0.97	39.76 N	154.37 W
707.00	12.50	292.03	681.51	0.98	39.84 N	154.57 W
708.00	12.49	292.02	682.49	1.00	39.92 N	154.77 W

ORIGINAL
Fts. 2360


A Gyrodata Directional Survey

BRASKEM

Well: Mina 27

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC035


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
709.00	12.52	292.02	683.47	1.00	40.00 N	154.97W
710.00	12.53	292.00	684.44	1.00	40.08 N	155.17W
711.00	12.51	292.02	685.42	1.02	40.16 N	155.37W
712.00	12.48	292.05	686.40	1.02	40.24 N	155.57W
713.00	12.47	291.96	687.37	1.00	40.32 N	155.78W
714.00	12.45	291.94	688.35	0.98	40.41 N	155.98W
715.00	12.43	291.94	689.32	0.95	40.49 N	156.18W
716.00	12.40	291.93	690.30	0.95	40.57 N	156.37W
717.00	12.37	291.94	691.28	0.95	40.65 N	156.57W
718.00	12.34	291.90	692.26	0.95	40.73 N	156.77W
719.00	12.30	291.90	693.23	0.97	40.81 N	156.97W
720.00	12.25	291.84	694.21	0.97	40.88 N	157.17W
721.00	12.19	291.77	695.19	0.99	40.96 N	157.36W
722.00	12.13	291.62	696.16	1.05	41.04 N	157.56W
723.00	12.07	291.61	697.14	1.06	41.12 N	157.75W
724.00	12.02	291.58	698.12	1.13	41.20 N	157.95W
725.00	11.97	291.58	699.10	1.17	41.27 N	158.14W
726.00	11.92	291.64	700.08	1.14	41.35 N	158.33W
727.00	11.86	291.63	701.05	1.13	41.42 N	158.53W
728.00	11.81	291.62	702.03	1.15	41.50 N	158.72W
729.00	11.76	291.66	703.01	1.18	41.57 N	158.91W
730.00	11.73	291.67	703.99	1.21	41.65 N	159.10W
731.00	11.70	291.67	704.97	1.23	41.72 N	159.28W
732.00	11.67	291.68	705.95	1.22	41.80 N	159.47W
733.00	11.65	291.70	706.93	1.20	41.87 N	159.66W
734.00	11.61	291.64	707.91	1.20	41.95 N	159.85W
735.00	11.57	291.63	708.89	1.17	42.02 N	160.03W
736.00	11.52	291.63	709.87	1.16	42.10 N	160.22W
737.00	11.45	291.73	710.85	1.13	42.17 N	160.41W
738.00	11.43	291.82	711.83	1.09	42.24 N	160.59W
739.00	11.39	291.86	712.81	1.07	42.32 N	160.77W
740.00	11.36	291.91	713.79	1.09	42.39 N	160.96W
741.00	11.37	291.78	714.77	1.07	42.46 N	161.14W
742.00	11.35	291.79	715.75	1.04	42.54 N	161.32W
743.00	11.32	291.81	716.73	1.02	42.61 N	161.50W
744.00	11.27	291.84	717.71	0.95	42.68 N	161.69W

ORIGINAL
Fts. 7-364
[Signature]

A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
745.00	11.22	291.92	718.69	0.95	42.76 N	161.87W
746.00	11.17	291.92	719.67	0.95	42.83 N	162.05W
747.00	11.15	291.84	720.65	0.95	42.90 N	162.23W
748.00	11.14	291.75	721.64	0.96	42.97 N	162.41W
749.00	11.10	291.65	722.62	0.96	43.04 N	162.59W
750.00	11.08	291.64	723.60	0.97	43.11 N	162.76W
751.00	11.03	291.67	724.58	0.95	43.19 N	162.94W
752.00	11.00	291.64	725.56	0.94	43.26 N	163.12W
753.00	10.98	291.70	726.54	0.93	43.33 N	163.30W
754.00	10.95	291.74	727.52	0.90	43.40 N	163.47W
755.00	10.88	291.80	728.51	0.90	43.47 N	163.65W
756.00	10.85	291.83	729.49	0.91	43.54 N	163.82W
757.00	10.82	291.84	730.47	0.92	43.61 N	164.00W
758.00	10.79	291.84	731.45	0.91	43.68 N	164.17W
759.00	10.81	291.79	732.43	0.88	43.75 N	164.35W
760.00	10.78	291.81	733.42	0.85	43.82 N	164.52W
761.00	10.75	291.73	734.40	0.86	43.88 N	164.69W
762.00	10.72	291.63	735.38	0.86	43.95 N	164.87W
763.00	10.69	291.60	736.36	0.88	44.02 N	165.04W
764.00	10.65	291.58	737.35	0.87	44.09 N	165.21W
765.00	10.60	291.67	738.33	0.94	44.16 N	165.38W
766.00	10.57	291.69	739.31	1.04	44.23 N	165.55W
767.00	10.51	291.76	740.30	1.04	44.29 N	165.72W
768.00	10.50	291.77	741.28	1.05	44.36 N	165.89W
769.00	10.49	291.70	742.26	0.94	44.43 N	166.06W
770.00	10.46	291.69	743.25	0.76	44.50 N	166.23W
771.00	10.46	291.64	744.23	0.75	44.56 N	166.40W
772.00	10.43	291.54	745.21	0.73	44.63 N	166.57W
773.00	10.41	291.51	746.20	0.72	44.70 N	166.74W
774.00	10.39	291.62	747.18	0.75	44.76 N	166.91W
775.00	10.37	291.75	748.16	0.75	44.83 N	167.07W
776.00	10.31	292.01	749.15	0.75	44.90 N	167.24W
777.00	10.29	292.05	750.13	0.76	44.96 N	167.41W
778.00	10.26	292.05	751.12	0.78	45.03 N	167.57W
779.00	10.23	291.96	752.10	0.77	45.10 N	167.74W

DIRECCIONAL
Cts. 7362


A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
780.00	10.14	291.91	753.08	0.74	45.16 N	167.90W
781.00	9.99	292.11	754.07	0.73	45.23 N	168.06W
782.00	9.96	292.00	755.05	0.69	45.29 N	168.22W
783.00	9.93	291.89	756.04	0.71	45.36 N	168.38W
784.00	10.01	291.69	757.02	0.73	45.42 N	168.54W
785.00	10.12	291.41	758.01	0.71	45.49 N	168.71W
786.00	10.10	291.50	758.99	0.70	45.55 N	168.87W
787.00	10.09	291.57	759.98	0.67	45.61 N	169.03W
788.00	10.07	291.54	760.96	0.67	45.68 N	169.19W
789.00	10.06	291.48	761.95	0.66	45.74 N	169.36W
790.00	10.04	291.28	762.93	0.66	45.81 N	169.52W
791.00	10.01	291.12	763.91	0.63	45.87 N	169.68W
792.00	9.97	291.09	764.90	0.62	45.93 N	169.84W
793.00	9.92	291.02	765.88	0.60	45.99 N	170.01W
794.00	9.89	291.00	766.87	0.57	46.06 N	170.17W
795.00	9.87	290.96	767.86	0.49	46.12 N	170.33W
796.00	9.85	290.94	768.84	0.39	46.18 N	170.49W
797.00	9.84	290.89	769.83	0.37	46.24 N	170.65W
798.00	9.81	290.83	770.81	0.35	46.30 N	170.80W
799.00	9.78	290.72	771.80	0.43	46.36 N	170.96W
800.00	9.77	290.76	772.78	0.53	46.42 N	171.12W
801.00	9.78	290.76	773.77	0.52	46.48 N	171.28W
802.00	9.77	290.82	774.75	0.53	46.54 N	171.44W
803.00	9.75	291.02	775.74	0.51	46.60 N	171.60W
804.00	9.74	291.04	776.72	0.50	46.66 N	171.76W
805.00	9.72	291.00	777.71	0.48	46.72 N	171.91W
806.00	9.70	291.06	778.70	0.45	46.78 N	172.07W
807.00	9.70	291.00	779.68	0.40	46.84 N	172.23W
808.00	9.69	290.91	780.67	0.33	46.90 N	172.39W
809.00	9.69	290.91	781.65	0.31	46.96 N	172.54W
810.00	9.68	290.85	782.64	0.30	47.02 N	172.70W
811.00	9.67	290.83	783.62	0.27	47.08 N	172.86W
812.00	9.64	290.95	784.61	0.28	47.14 N	173.01W
813.00	9.62	290.97	785.60	0.25	47.20 N	173.17W
814.00	9.60	291.03	786.58	0.25	47.26 N	173.33W
815.00	9.59	291.07	787.57	0.25	47.32 N	173.48W

A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
816.00	9.59	291.00	788.55	0.27	47.38 N	173.64W
817.00	9.57	291.09	789.54	0.25	47.44 N	173.79W
818.00	9.57	291.08	790.53	0.22	47.50 N	173.95W
819.00	9.56	291.11	791.51	0.21	47.56 N	174.10W
820.00	9.56	290.98	792.50	0.19	47.62 N	174.26W
821.00	9.56	290.87	793.48	0.18	47.68 N	174.41W
822.00	9.57	290.83	794.47	0.18	47.74 N	174.57W
823.00	9.59	290.75	795.46	0.19	47.80 N	174.72W
824.00	9.58	290.78	796.44	0.22	47.86 N	174.88W
825.00	9.57	290.92	797.43	0.25	47.92 N	175.04W
826.00	9.58	290.92	798.41	0.30	47.98 N	175.19W
827.00	9.56	291.01	799.40	0.35	48.04 N	175.35W
828.00	9.56	291.09	800.39	0.42	48.10 N	175.50W
829.00	9.54	291.08	801.37	0.46	48.16 N	175.66W
830.00	9.53	291.15	802.36	0.45	48.22 N	175.81W
831.00	9.52	291.16	803.35	0.39	48.28 N	175.96W
832.00	9.52	290.92	804.33	0.31	48.33 N	176.12W
833.00	9.53	290.93	805.32	0.33	48.39 N	176.27W
834.00	9.53	290.88	806.30	0.44	48.45 N	176.43W
835.00	9.53	290.86	807.29	0.57	48.51 N	176.58W
836.00	9.52	290.84	808.28	0.64	48.57 N	176.74W
837.00	9.52	290.85	809.26	0.62	48.63 N	176.89W
838.00	9.50	290.86	810.25	0.52	48.69 N	177.05W
839.00	9.47	290.95	811.23	0.35	48.75 N	177.20W
840.00	9.43	291.07	812.22	0.26	48.81 N	177.35W
841.00	9.37	291.20	813.21	0.26	48.87 N	177.51W
842.00	9.29	291.39	814.19	0.26	48.92 N	177.66W
843.00	9.21	291.56	815.18	0.29	48.98 N	177.81W
844.00	9.15	291.62	816.17	0.31	49.04 N	177.96W
845.00	9.15	291.61	817.16	0.37	49.10 N	178.10W
846.00	9.21	291.49	818.14	0.47	49.16 N	178.25W
847.00	9.27	291.30	819.13	0.61	49.22 N	178.40W
848.00	9.25	291.31	820.12	0.70	49.28 N	178.55W
849.00	9.13	291.64	821.10	0.70	49.33 N	178.70W
850.00	9.02	292.18	822.09	0.64	49.39 N	178.85W
851.00	8.97	292.35	823.08	0.58	49.45 N	178.99W

ORIGINAL
Fis. 2.364
[Signature]

A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
852.00	8.99	292.32	824.07	0.54	49.51 N	179.13W
853.00	9.10	291.94	825.06	0.52	49.57 N	179.28W
854.00	9.24	291.24	826.04	0.52	49.63 N	179.43W
855.00	9.31	290.94	827.03	0.49	49.69 N	179.58W
856.00	9.32	290.89	828.02	0.42	49.75 N	179.73W
857.00	9.30	290.87	829.00	0.33	49.80 N	179.88W
858.00	9.27	290.82	829.99	0.26	49.86 N	180.03W
859.00	9.24	290.77	830.98	0.21	49.92 N	180.18W
860.00	9.17	290.75	831.96	0.22	49.97 N	180.33W
861.00	9.05	290.94	832.95	0.28	50.03 N	180.48W
862.00	8.92	291.30	833.94	0.36	50.09 N	180.63W
863.00	8.84	291.48	834.93	0.35	50.14 N	180.77W
864.00	8.84	291.49	835.92	0.24	50.20 N	180.91W
865.00	8.89	291.31	836.90	0.17	50.26 N	181.06W
866.00	8.95	291.17	837.89	0.16	50.31 N	181.20W
867.00	8.98	291.08	838.88	0.19	50.37 N	181.35W
868.00	8.98	291.16	839.87	0.23	50.42 N	181.49W
869.00	8.96	291.36	840.85	0.34	50.48 N	181.64W
870.00	8.94	291.39	841.84	0.40	50.54 N	181.78W
871.00	8.95	291.27	842.83	0.37	50.59 N	181.93W
872.00	8.96	291.30	843.82	0.32	50.65 N	182.07W
873.00	8.96	291.40	844.81	0.25	50.71 N	182.22W
874.00	8.95	291.46	845.79	0.20	50.76 N	182.36W
875.00	8.94	291.56	846.78	0.16	50.82 N	182.51W
876.00	8.93	291.60	847.77	0.07	50.88 N	182.65W
877.00	8.91	291.63	848.76	0.11	50.94 N	182.79W
878.00	8.90	291.64	849.74	0.18	50.99 N	182.94W
879.00	8.89	291.61	850.73	0.15	51.05 N	183.08W
880.00	8.88	291.55	851.72	0.09	51.11 N	183.23W
881.00	8.88	291.46	852.71	0.07	51.16 N	183.37W
882.00	8.88	291.33	853.70	0.11	51.22 N	183.51W
883.00	8.90	291.32	854.68	0.10	51.28 N	183.66W
884.00	8.90	291.25	855.67	0.05	51.33 N	183.80W
885.00	8.92	291.07	856.66	0.05	51.39 N	183.95W
886.00	8.95	291.04	857.65	0.00	51.44 N	184.09W
887.00	8.98	291.15	858.64	0.00	51.50 N	184.24W

ORIGINAL
Cts. 7365


A Gyrodata Directional Survey

BRASKEM
Well: Mina 27
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC035

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
888.00	9.03	291.21	859.62	0.00	51.56 N	184.38W
889.00	9.05	291.29	860.61	0.00	51.61 N	184.53W
890.00	9.04	291.36	861.60	0.00	51.67 N	184.67W
891.00	9.03	291.41	862.59	0.00	51.73 N	184.82W
892.00	9.02	291.45	863.57	0.00	51.78 N	184.97W
893.00	9.01	291.49	864.56	0.00	51.84 N	185.11W
894.00	8.99	291.60	865.55	0.00	51.90 N	185.26W
895.00	8.96	291.65	866.54	0.00	51.96 N	185.40W
896.00	8.94	291.60	867.53	0.00	52.01 N	185.55W
897.00	8.91	291.65	868.51	0.00	52.07 N	185.69W
898.00	8.91	291.64	869.50	0.00	52.13 N	185.84W
899.00	8.93	291.59	870.49	0.00	52.19 N	185.98W
900.00	8.92	291.66	871.48	0.00	52.24 N	186.12W

Final Station Closure: Distance: 193.32 m Az: 285.68 deg.

Parte 5
Controle de Qualidade