

DATA: 14/04/2019
FOLHA: 7.468
[assinatura]

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ELABORADO POR: M. Silva
Fis. 7.469
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Parte 1
Discussão


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1.0 DISCUSSÃO

O Giroscópio FA088 foi utilizado para fazer uma amostragem na Mina 19.
A amostragem foi coletada da superfície até 891.02m.
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: 08 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: 08 de Abril de 2019

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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 19
Latitude	:	9.634043 deg. S
Longitude	:	35.749959 deg. W
Data da amostragem	:	8 de Abril de 2019
Tipo de amostragem	:	Gyro Multishot Contínuo
Referência de profundidade	:	Ground
Max. Profundidade da amostragem	:	891.02 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

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Parte 4
Listagem Definitiva da Amostragem

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4.0 LISTAGEM DEFINITIVA DA AMOSTRAGEM

A Gyrodata Directional Survey

for

BRASKEM

Well: **Mina 19**,
Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC039

Run Date: 08 Apr 2019

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 9.634043 deg. S

Longitude: 35.749959 deg. W

Azimuth Correction:

Gyro: Bearings are Relative to True North

Depth Reference: Ground

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 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039


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
10.02	0.73	178.01	10.02	0.00	0.06 S	0.00 E
11.04	0.65	189.46	11.04	0.00	0.08 S	0.00 E
11.96	0.66	188.32	11.96	0.00	0.09 S	0.00W
13.02	0.60	196.36	13.02	0.00	0.10 S	0.00W
14.02	0.54	199.72	14.02	0.00	0.11 S	0.01W
15.02	0.51	203.37	15.02	0.00	0.12 S	0.01W
15.91	0.53	203.04	15.91	0.00	0.12 S	0.01W
16.95	0.48	196.09	16.95	0.00	0.13 S	0.02W
17.99	0.53	198.52	17.99	0.00	0.14 S	0.02W
19.04	0.46	199.81	19.04	0.00	0.15 S	0.02W
20.00	0.44	206.22	20.00	0.00	0.16 S	0.02W
21.04	0.35	214.91	21.04	0.00	0.16 S	0.03W
22.06	0.36	224.58	22.06	0.00	0.17 S	0.03W
23.02	0.33	240.27	23.02	0.00	0.17 S	0.04W
24.00	0.36	242.81	24.00	0.00	0.17 S	0.04W
24.99	0.34	249.74	24.99	0.00	0.18 S	0.05W
26.02	0.41	247.51	26.02	1.11	0.18 S	0.05W
26.99	0.38	256.36	26.99	1.04	0.18 S	0.06W
30.00	0.45	251.93	30.00	1.04	0.19 S	0.08W
31.00	0.45	257.44	31.00	1.11	0.19 S	0.09W
32.00	0.45	258.49	32.00	1.24	0.19 S	0.10W
33.00	0.48	259.74	33.00	1.28	0.19 S	0.10W
34.00	0.51	261.08	34.00	1.30	0.19 S	0.11W
35.00	0.56	264.16	35.00	1.37	0.19 S	0.12W
36.00	0.65	265.42	36.00	1.40	0.20 S	0.13W
37.00	0.70	264.97	37.00	1.44	0.20 S	0.14W
38.00	0.76	264.55	38.00	1.42	0.20 S	0.16W
39.00	0.81	264.68	39.00	1.44	0.20 S	0.17W
40.00	0.87	264.42	40.00	1.48	0.20 S	0.18W
41.00	0.93	264.28	41.00	1.48	0.20 S	0.20W
42.00	0.99	263.99	42.00	1.55	0.20 S	0.22W
43.00	1.06	263.62	43.00	1.57	0.21 S	0.23W
44.00	1.14	263.30	44.00	1.58	0.21 S	0.25W
45.00	1.21	263.15	45.00	1.68	0.21 S	0.27W
46.00	1.28	262.96	46.00	1.74	0.21 S	0.30W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
47.00	1.35	262.58	47.00	1.80	0.22 S	0.32 W
48.00	1.43	262.13	48.00	1.83	0.22 S	0.34 W
49.00	1.50	261.71	49.00	1.85	0.22 S	0.37 W
50.00	1.58	261.28	50.00	1.86	0.23 S	0.39 W
51.00	1.65	260.79	51.00	1.83	0.23 S	0.42 W
52.00	1.71	260.30	52.00	1.83	0.24 S	0.45 W
53.00	1.75	259.98	52.99	1.83	0.24 S	0.48 W
54.00	1.78	259.65	53.99	1.83	0.25 S	0.51 W
55.00	1.82	259.32	54.99	1.84	0.25 S	0.54 W
56.00	1.87	258.76	55.99	1.84	0.26 S	0.57 W
57.00	1.93	257.91	56.99	1.84	0.26 S	0.61 W
58.00	2.00	257.06	57.99	1.83	0.27 S	0.64 W
59.00	2.07	256.21	58.99	1.82	0.28 S	0.67 W
60.00	2.13	255.40	59.99	1.82	0.29 S	0.71 W
61.00	2.19	254.60	60.99	1.82	0.30 S	0.75 W
62.00	2.25	253.86	61.99	1.82	0.31 S	0.78 W
63.00	2.30	253.13	62.99	1.82	0.32 S	0.82 W
64.00	2.35	252.36	63.99	1.82	0.33 S	0.86 W
65.00	2.40	251.64	64.99	1.82	0.35 S	0.90 W
66.00	2.45	250.98	65.99	1.82	0.36 S	0.94 W
67.00	2.50	250.34	66.99	1.83	0.37 S	0.98 W
68.00	2.55	249.71	67.98	1.86	0.39 S	1.02 W
69.00	2.60	249.06	68.98	1.90	0.40 S	1.06 W
70.00	2.65	248.39	69.98	1.93	0.42 S	1.11 W
71.00	2.71	247.70	70.98	1.95	0.44 S	1.15 W
72.00	2.76	247.01	71.98	1.95	0.46 S	1.19 W
73.00	2.82	246.34	72.98	1.95	0.48 S	1.24 W
74.00	2.87	245.70	73.98	1.95	0.50 S	1.28 W
75.00	2.93	245.14	74.98	1.95	0.52 S	1.33 W
76.00	2.99	244.63	75.97	1.96	0.54 S	1.38 W
77.00	3.05	244.16	76.97	1.97	0.56 S	1.42 W
78.00	3.11	243.72	77.97	1.99	0.59 S	1.47 W
79.00	3.18	243.28	78.97	2.00	0.61 S	1.52 W
80.00	3.24	242.86	79.97	2.03	0.64 S	1.57 W
81.00	3.31	242.48	80.97	2.06	0.66 S	1.62 W
82.00	3.37	242.15	81.97	2.09	0.69 S	1.67 W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
83.00	3.44	241.91	82.96	2.13	0.72 S	1.73W
84.00	3.51	241.69	83.96	2.17	0.75 S	1.78W
85.00	3.58	241.55	84.96	2.22	0.77 S	1.83W
86.00	3.65	241.43	85.96	2.26	0.80 S	1.89W
87.00	3.72	241.28	86.96	2.31	0.84 S	1.95W
88.00	3.79	241.06	87.95	2.34	0.87 S	2.00W
89.00	3.86	240.85	88.95	2.33	0.90 S	2.06W
90.00	3.94	240.68	89.95	2.33	0.93 S	2.12W
91.00	4.01	240.53	90.95	2.32	0.97 S	2.18W
92.00	4.09	240.40	91.94	2.34	1.00 S	2.24W
93.00	4.16	240.27	92.94	2.40	1.04 S	2.31W
94.00	4.24	240.12	93.94	2.45	1.07 S	2.37W
95.00	4.32	239.97	94.94	2.50	1.11 S	2.43W
96.00	4.41	239.78	95.93	2.54	1.15 S	2.50W
97.00	4.50	239.61	96.93	2.59	1.19 S	2.57W
98.00	4.60	239.50	97.93	2.63	1.23 S	2.63W
99.00	4.70	239.48	98.92	2.66	1.27 S	2.70W
100.00	4.80	239.50	99.92	2.70	1.31 S	2.78W
101.00	4.91	239.51	100.92	2.73	1.35 S	2.85W
102.00	5.02	239.53	101.91	2.75	1.40 S	2.92W
103.00	5.11	239.53	102.91	2.78	1.44 S	3.00W
104.00	5.17	239.52	103.91	2.80	1.49 S	3.08W
105.00	5.23	239.50	104.90	2.81	1.53 S	3.15W
106.00	5.28	239.49	105.90	2.83	1.58 S	3.23W
107.00	5.37	239.47	106.89	2.85	1.63 S	3.31W
108.00	5.49	239.43	107.89	2.86	1.68 S	3.39W
109.00	5.61	239.39	108.88	2.87	1.73 S	3.48W
110.00	5.72	239.34	109.88	2.88	1.78 S	3.56W
111.00	5.84	239.28	110.87	2.89	1.83 S	3.65W
112.00	5.95	239.22	111.87	2.89	1.88 S	3.74W
113.00	6.06	239.15	112.86	2.89	1.93 S	3.83W
114.00	6.16	239.08	113.86	2.89	1.99 S	3.92W
115.00	6.27	239.00	114.85	2.89	2.04 S	4.01W
116.00	6.37	238.92	115.85	2.89	2.10 S	4.11W
117.00	6.46	238.83	116.84	2.89	2.16 S	4.20W
118.00	6.56	238.75	117.83	2.91	2.22 S	4.30W

A Gyrodata Directional Survey

BRASKEM

Well: Mina 19

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC039


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
119.00	6.65	238.65	118.83	2.96	2.28 S	4.40 W
120.00	6.74	238.52	119.82	3.01	2.34 S	4.50 W
121.00	6.83	238.36	120.81	3.06	2.40 S	4.60 W
122.00	6.92	238.18	121.80	3.08	2.46 S	4.70 W
123.00	7.01	237.98	122.80	3.07	2.53 S	4.80 W
124.00	7.10	237.77	123.79	3.06	2.59 S	4.91 W
125.00	7.20	237.56	124.78	3.05	2.66 S	5.01 W
126.00	7.29	237.34	125.77	3.05	2.73 S	5.12 W
127.00	7.38	237.16	126.77	3.04	2.80 S	5.23 W
128.00	7.48	236.98	127.76	3.04	2.87 S	5.33 W
129.00	7.58	236.77	128.75	3.05	2.94 S	5.44 W
130.00	7.68	236.61	129.74	3.05	3.01 S	5.55 W
131.00	7.78	236.47	130.73	3.06	3.08 S	5.67 W
132.00	7.89	236.37	131.72	3.07	3.16 S	5.78 W
133.00	7.99	236.28	132.71	3.08	3.24 S	5.89 W
134.00	8.10	236.23	133.70	3.09	3.31 S	6.01 W
135.00	8.21	236.18	134.69	3.10	3.39 S	6.13 W
136.00	8.32	236.14	135.68	3.09	3.47 S	6.25 W
137.00	8.43	236.12	136.67	3.05	3.55 S	6.37 W
138.00	8.54	236.11	137.66	3.03	3.64 S	6.49 W
139.00	8.65	236.11	138.65	3.02	3.72 S	6.62 W
140.00	8.75	236.14	139.64	2.98	3.80 S	6.74 W
141.00	8.86	236.16	140.63	2.95	3.89 S	6.87 W
142.00	8.97	236.20	141.61	2.95	3.98 S	7.00 W
143.00	9.08	236.23	142.60	2.94	4.06 S	7.13 W
144.00	9.19	236.27	143.59	2.93	4.15 S	7.26 W
145.00	9.30	236.31	144.58	2.93	4.24 S	7.39 W
146.00	9.41	236.37	145.56	2.92	4.33 S	7.53 W
147.00	9.52	236.40	146.55	2.91	4.42 S	7.67 W
148.00	9.62	236.42	147.53	2.90	4.51 S	7.80 W
149.00	9.73	236.40	148.52	2.89	4.61 S	7.94 W
150.00	9.83	236.30	149.51	2.88	4.70 S	8.09 W
151.00	9.91	236.16	150.49	2.86	4.80 S	8.23 W
152.00	9.96	236.04	151.48	2.85	4.89 S	8.37 W
153.00	10.03	235.85	152.46	2.85	4.99 S	8.51 W
154.00	10.11	235.61	153.45	2.84	5.09 S	8.66 W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
155.00	10.16	235.47	154.43	2.84	5.19 S	8.80W
156.00	10.22	235.28	155.41	2.83	5.29 S	8.95W
157.00	10.31	235.03	156.40	2.83	5.39 S	9.10W
158.00	10.40	234.78	157.38	2.83	5.49 S	9.24W
159.00	10.49	234.52	158.37	2.83	5.60 S	9.39W
160.00	10.58	234.23	159.35	2.82	5.70 S	9.54W
161.00	10.67	233.96	160.33	2.84	5.81 S	9.69W
162.00	10.77	233.71	161.31	2.83	5.92 S	9.84W
163.00	10.86	233.50	162.30	2.82	6.03 S	9.99W
164.00	10.96	233.35	163.28	2.83	6.15 S	10.14W
165.00	11.05	233.23	164.26	2.83	6.26 S	10.30W
166.00	11.14	233.11	165.24	2.82	6.38 S	10.45W
167.00	11.23	232.94	166.22	2.86	6.49 S	10.60W
168.00	11.33	232.71	167.20	2.89	6.61 S	10.76W
169.00	11.42	232.45	168.18	2.89	6.73 S	10.92W
170.00	11.51	232.18	169.16	2.93	6.85 S	11.07W
171.00	11.59	231.97	170.14	2.94	6.97 S	11.23W
172.00	11.68	231.77	171.12	2.90	7.10 S	11.39W
173.00	11.77	231.43	172.10	2.87	7.23 S	11.55W
174.00	11.85	230.93	173.08	2.82	7.35 S	11.71W
175.00	11.90	230.39	174.06	2.78	7.48 S	11.87W
176.00	11.99	229.96	175.04	2.74	7.62 S	12.03W
177.00	12.08	229.94	176.02	2.71	7.75 S	12.19W
178.00	12.17	229.94	176.99	2.67	7.89 S	12.35W
179.00	12.30	230.16	177.97	2.65	8.02 S	12.51W
180.00	12.40	230.14	178.95	2.64	8.16 S	12.67W
181.00	12.45	229.82	179.92	2.65	8.30 S	12.84W
182.00	12.53	229.52	180.90	2.66	8.44 S	13.00W
183.00	12.63	229.37	181.88	2.70	8.58 S	13.17W
184.00	12.72	229.34	182.85	2.71	8.72 S	13.34W
185.00	12.83	229.47	183.83	2.72	8.87 S	13.50W
186.00	12.93	229.55	184.80	2.71	9.01 S	13.67W
187.00	13.00	229.54	185.78	2.71	9.16 S	13.84W
188.00	13.07	229.56	186.75	2.60	9.30 S	14.02W
189.00	13.13	229.60	187.72	2.57	9.45 S	14.19W
190.00	13.20	229.65	188.70	2.57	9.60 S	14.36W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
191.00	13.27	229.68	189.67	2.54	9.75 S	14.54W
192.00	13.34	229.66	190.64	2.54	9.89 S	14.71W
193.00	13.41	229.63	191.62	2.34	10.04 S	14.89W
194.00	13.49	229.64	192.59	2.26	10.19 S	15.07W
195.00	13.58	229.65	193.56	2.23	10.35 S	15.24W
196.00	13.68	229.67	194.53	2.24	10.50 S	15.42W
197.00	13.80	229.63	195.51	2.44	10.65 S	15.60W
198.00	13.94	229.65	196.48	2.50	10.81 S	15.79W
199.00	14.06	229.69	197.45	2.49	10.96 S	15.97W
200.00	14.17	229.68	198.42	2.45	11.12 S	16.16W
201.00	14.26	229.74	199.39	2.44	11.28 S	16.34W
202.00	14.36	229.88	200.35	2.22	11.44 S	16.53W
203.00	14.34	229.52	201.32	2.08	11.60 S	16.72W
204.00	14.38	229.02	202.29	2.09	11.76 S	16.91W
205.00	14.45	229.11	203.26	2.07	11.93 S	17.10W
206.00	14.52	229.13	204.23	2.08	12.09 S	17.29W
207.00	14.61	229.21	205.20	2.27	12.25 S	17.48W
208.00	14.46	227.90	206.16	2.31	12.42 S	17.67W
209.00	14.46	227.34	207.13	2.25	12.59 S	17.85W
210.00	14.53	227.35	208.10	2.21	12.76 S	18.03W
211.00	14.63	227.64	209.07	2.15	12.93 S	18.22W
212.00	14.97	229.59	210.04	2.07	13.10 S	18.41W
213.00	15.12	230.39	211.00	1.95	13.26 S	18.61W
214.00	15.19	230.49	211.97	1.84	13.43 S	18.81W
215.00	15.27	230.58	212.93	1.76	13.60 S	19.02W
216.00	15.35	230.77	213.90	1.65	13.76 S	19.22W
217.00	15.22	229.78	214.86	1.56	13.93 S	19.42W
218.00	15.02	226.56	215.83	1.66	14.11 S	19.62W
219.00	15.04	226.07	216.79	1.71	14.29 S	19.80W
220.00	15.08	226.12	217.76	1.71	14.47 S	19.99W
221.00	15.26	227.23	218.72	1.68	14.65 S	20.18W
222.00	15.60	230.50	219.69	1.60	14.82 S	20.38W
223.00	15.68	231.23	220.65	1.93	14.99 S	20.59W
224.00	15.70	231.30	221.61	2.01	15.16 S	20.80W
225.00	15.75	231.34	222.58	1.98	15.33 S	21.01W
226.00	15.78	231.46	223.54	1.86	15.50 S	21.23W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
227.00	15.81	231.51	224.50	1.27	15.67 S	21.44W
228.00	15.83	231.55	225.46	1.03	15.84 S	21.65W
229.00	15.84	231.56	226.42	0.93	16.01 S	21.87W
230.00	15.86	231.51	227.39	0.83	16.18 S	22.08W
231.00	15.85	231.49	228.35	0.73	16.35 S	22.29W
232.00	15.86	231.49	229.31	1.00	16.52 S	22.51W
233.00	15.90	231.72	230.27	1.84	16.69 S	22.72W
234.00	15.92	231.84	231.23	1.96	16.86 S	22.94W
235.00	15.98	232.04	232.20	1.95	17.03 S	23.15W
236.00	16.00	232.17	233.16	1.63	17.20 S	23.37W
237.00	16.02	232.10	234.12	0.71	17.36 S	23.59W
238.00	16.02	232.20	235.08	0.53	17.53 S	23.81W
239.00	16.01	232.21	236.04	0.54	17.70 S	24.02W
240.00	16.03	232.25	237.00	0.63	17.87 S	24.24W
241.00	16.02	232.32	237.96	0.69	18.04 S	24.46W
242.00	16.01	232.31	238.92	0.81	18.21 S	24.68W
243.00	15.99	232.43	239.88	0.92	18.38 S	24.90W
244.00	15.96	232.45	240.85	0.98	18.55 S	25.12W
245.00	15.92	232.53	241.81	1.06	18.71 S	25.33W
246.00	15.88	232.61	242.77	1.10	18.88 S	25.55W
247.00	15.85	232.66	243.73	1.14	19.05 S	25.77W
248.00	15.82	232.79	244.69	1.19	19.21 S	25.99W
249.00	15.80	232.87	245.66	1.23	19.38 S	26.20W
250.00	15.77	232.99	246.62	1.29	19.54 S	26.42W
251.00	15.74	233.07	247.58	1.32	19.70 S	26.64W
252.00	15.68	233.13	248.54	1.33	19.87 S	26.85W
253.00	15.62	233.20	249.51	1.31	20.03 S	27.07W
254.00	15.55	233.24	250.47	1.30	20.19 S	27.28W
255.00	15.45	233.39	251.43	1.30	20.35 S	27.50W
256.00	15.34	233.46	252.40	1.33	20.51 S	27.71W
257.00	15.24	233.64	253.36	1.35	20.66 S	27.92W
258.00	15.15	233.85	254.33	1.32	20.82 S	28.14W
259.00	15.08	233.89	255.29	1.27	20.97 S	28.35W
260.00	15.03	234.00	256.26	1.20	21.12 S	28.56W
261.00	14.99	234.06	257.22	1.12	21.28 S	28.77W
262.00	14.94	234.01	258.19	1.00	21.43 S	28.97W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
263.00	14.88	234.03	259.16	0.83	21.58 S	29.18W
264.00	14.83	233.99	260.12	0.70	21.73 S	29.39W
265.00	14.79	233.89	261.09	0.56	21.88 S	29.60W
266.00	14.76	233.87	262.06	0.47	22.03 S	29.80W
267.00	14.77	233.78	263.02	0.38	22.18 S	30.01W
268.00	14.77	233.73	263.99	0.31	22.33 S	30.21W
269.00	14.78	233.77	264.96	0.22	22.48 S	30.42W
270.00	14.79	233.77	265.92	0.16	22.63 S	30.63W
271.00	14.74	233.69	266.89	0.26	22.78 S	30.83W
272.00	14.70	233.49	267.86	0.36	22.93 S	31.04W
273.00	14.70	233.47	268.83	0.46	23.09 S	31.24W
274.00	14.73	233.69	269.79	0.56	23.24 S	31.44W
275.00	14.79	234.02	270.76	0.63	23.39 S	31.65W
276.00	14.88	234.48	271.73	0.71	23.54 S	31.86W
277.00	14.98	234.50	272.69	0.81	23.69 S	32.07W
278.00	15.08	234.23	273.66	0.91	23.84 S	32.28W
279.00	15.17	234.02	274.62	1.01	23.99 S	32.49W
280.00	15.26	233.85	275.59	1.09	24.14 S	32.70W
281.00	15.33	233.90	276.55	1.14	24.30 S	32.91W
282.00	15.37	233.97	277.52	1.16	24.46 S	33.13W
283.00	15.41	234.04	278.48	1.19	24.61 S	33.34W
284.00	15.46	233.98	279.45	1.20	24.77 S	33.56W
285.00	15.50	233.97	280.41	1.20	24.93 S	33.77W
286.00	15.54	234.07	281.37	1.27	25.08 S	33.99W
287.00	15.57	234.14	282.34	1.32	25.24 S	34.21W
288.00	15.60	234.28	283.30	1.33	25.40 S	34.43W
289.00	15.63	234.33	284.26	1.30	25.55 S	34.65W
290.00	15.66	234.30	285.23	1.21	25.71 S	34.86W
291.00	15.70	234.34	286.19	1.11	25.87 S	35.08W
292.00	15.74	234.40	287.15	1.00	26.03 S	35.30W
293.00	15.78	234.45	288.11	0.91	26.18 S	35.52W
294.00	15.83	234.48	289.08	0.84	26.34 S	35.75W
295.00	15.87	234.42	290.04	0.75	26.50 S	35.97W
296.00	15.89	234.39	291.00	0.68	26.66 S	36.19W
297.00	15.92	234.38	291.96	0.64	26.82 S	36.41W
298.00	15.94	234.45	292.92	0.61	26.98 S	36.64W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
299.00	15.96	234.50	293.88	0.60	27.14 S	36.86W
300.00	15.97	234.52	294.85	0.57	27.30 S	37.08W
301.00	15.98	234.64	295.81	0.49	27.46 S	37.31W
302.00	15.98	234.73	296.77	0.44	27.62 S	37.53W
303.00	15.98	234.82	297.73	0.36	27.78 S	37.76W
304.00	15.99	234.88	298.69	0.31	27.94 S	37.98W
305.00	15.98	234.90	299.65	0.29	28.09 S	38.21W
306.00	15.98	234.91	300.61	0.26	28.25 S	38.43W
307.00	15.97	234.89	301.57	0.24	28.41 S	38.66W
308.00	15.97	234.86	302.54	0.27	28.57 S	38.88W
309.00	15.98	234.84	303.50	0.34	28.73 S	39.11W
310.00	15.96	234.80	304.46	0.43	28.89 S	39.33W
311.00	15.96	234.83	305.42	0.49	29.04 S	39.56W
312.00	15.96	234.93	306.38	0.55	29.20 S	39.78W
313.00	15.96	234.99	307.34	0.59	29.36 S	40.01W
314.00	15.97	235.15	308.30	0.60	29.52 S	40.23W
315.00	15.95	235.24	309.27	0.63	29.67 S	40.46W
316.00	15.91	235.28	310.23	0.63	29.83 S	40.69W
317.00	15.86	235.34	311.19	0.64	29.99 S	40.91W
318.00	15.82	235.33	312.15	0.65	30.14 S	41.14W
319.00	15.79	235.33	313.11	0.70	30.30 S	41.36W
320.00	15.77	235.28	314.08	0.72	30.45 S	41.58W
321.00	15.75	235.30	315.04	0.77	30.61 S	41.81W
322.00	15.71	235.29	316.00	0.82	30.76 S	42.03W
323.00	15.65	235.33	316.96	0.83	30.91 S	42.25W
324.00	15.60	235.39	317.93	0.87	31.07 S	42.47W
325.00	15.54	235.43	318.89	0.87	31.22 S	42.69W
326.00	15.52	235.55	319.85	0.87	31.37 S	42.91W
327.00	15.49	235.66	320.82	0.87	31.52 S	43.14W
328.00	15.47	235.74	321.78	0.86	31.67 S	43.36W
329.00	15.46	235.75	322.74	0.85	31.82 S	43.58W
330.00	15.45	235.83	323.71	0.82	31.97 S	43.80W
331.00	15.45	235.90	324.67	0.75	32.12 S	44.02W
332.00	15.44	236.00	325.64	0.69	32.27 S	44.24W
333.00	15.44	236.18	326.60	0.65	32.42 S	44.46W
334.00	15.38	236.17	327.56	0.61	32.57 S	44.68W

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BRASKEM

Well: Mina 19

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
335.00	15.32	236.01	328.53	0.57	32.72 S	44.90W
336.00	15.26	235.93	329.49	0.54	32.86 S	45.12W
337.00	15.19	235.86	330.46	0.51	33.01 S	45.33W
338.00	15.19	235.95	331.42	0.45	33.16 S	45.55W
339.00	15.19	236.17	332.39	0.41	33.30 S	45.77W
340.00	15.19	236.30	333.35	0.36	33.45 S	45.99W
341.00	15.19	236.37	334.32	0.32	33.59 S	46.21W
342.00	15.19	236.42	335.28	0.29	33.74 S	46.42W
343.00	15.19	236.41	336.25	0.24	33.88 S	46.64W
344.00	15.18	236.35	337.21	0.23	34.03 S	46.86W
345.00	15.19	236.35	338.18	0.20	34.18 S	47.08W
346.00	15.21	236.24	339.14	0.20	34.32 S	47.30W
347.00	15.21	236.19	340.11	0.18	34.47 S	47.51W
348.00	15.22	236.24	341.07	0.14	34.61 S	47.73W
349.00	15.23	236.21	342.04	0.09	34.76 S	47.95W
350.00	15.26	236.27	343.00	0.05	34.90 S	48.17W
351.00	15.28	236.33	343.97	0.10	35.05 S	48.39W
352.00	15.28	236.31	344.93	0.15	35.20 S	48.61W
353.00	15.28	236.29	345.90	0.15	35.34 S	48.83W
354.00	15.26	236.28	346.86	0.11	35.49 S	49.05W
355.00	15.25	236.23	347.83	0.12	35.64 S	49.26W
356.00	15.25	236.23	348.79	0.12	35.78 S	49.48W
357.00	15.24	236.22	349.76	0.11	35.93 S	49.70W
358.00	15.27	236.22	350.72	0.11	36.07 S	49.92W
359.00	15.27	236.22	351.69	0.13	36.22 S	50.14W
360.00	15.28	236.25	352.65	0.13	36.37 S	50.36W
361.00	15.28	236.28	353.62	0.12	36.51 S	50.58W
362.00	15.27	236.21	354.58	0.12	36.66 S	50.80W
363.00	15.30	236.27	355.54	0.35	36.81 S	51.02W
364.00	15.29	236.26	356.51	1.23	36.95 S	51.24W
365.00	15.31	236.21	357.47	1.26	37.10 S	51.45W
366.00	15.32	236.25	358.44	1.26	37.25 S	51.67W
367.00	15.32	236.12	359.40	1.14	37.39 S	51.89W
368.00	15.33	236.10	360.37	0.16	37.54 S	52.11W
369.00	15.30	236.09	361.33	0.14	37.69 S	52.33W
370.00	15.30	236.09	362.30	0.13	37.84 S	52.55W

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A Gyrodata Directional Survey

BRASKEM

Well: Mina 19

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
371.00	15.30	236.19	363.26	0.14	37.98 S	52.77W
372.00	15.29	236.22	364.23	0.16	38.13 S	52.99W
373.00	15.27	236.14	365.19	0.21	38.28 S	53.21W
374.00	15.28	236.06	366.15	0.24	38.42 S	53.43W
375.00	15.27	235.97	367.12	0.27	38.57 S	53.65W
376.00	15.28	235.86	368.08	0.30	38.72 S	53.86W
377.00	15.27	235.80	369.05	0.28	38.87 S	54.08W
378.00	15.19	234.90	370.01	0.35	39.01 S	54.30W
379.00	15.04	231.57	370.98	0.37	39.17 S	54.51W
380.00	14.99	231.56	371.94	0.39	39.33 S	54.71W
381.00	14.96	231.64	372.91	0.46	39.49 S	54.91W
382.00	14.94	232.14	373.88	0.45	39.65 S	55.12W
383.00	15.13	236.04	374.84	0.48	39.80 S	55.33W
384.00	15.13	236.11	375.81	0.47	39.95 S	55.54W
385.00	15.13	236.07	376.77	0.47	40.09 S	55.76W
386.00	15.12	235.99	377.74	0.50	40.24 S	55.97W
387.00	15.11	235.87	378.70	0.49	40.39 S	56.19W
388.00	15.10	235.73	379.67	0.50	40.53 S	56.41W
389.00	15.09	235.64	380.64	0.53	40.68 S	56.62W
390.00	15.08	235.58	381.60	0.57	40.83 S	56.84W
391.00	15.05	235.53	382.57	0.60	40.97 S	57.05W
392.00	15.05	235.52	383.53	0.62	41.12 S	57.26W
393.00	15.03	235.44	384.50	0.42	41.27 S	57.48W
394.00	15.01	235.35	385.46	0.70	41.42 S	57.69W
395.00	15.02	235.22	386.43	0.69	41.56 S	57.90W
396.00	14.99	235.04	387.40	0.66	41.71 S	58.12W
397.00	14.98	234.99	388.36	0.52	41.86 S	58.33W
398.00	14.97	234.91	389.33	0.60	42.01 S	58.54W
399.00	14.96	234.85	390.29	0.64	42.16 S	58.75W
400.00	14.97	234.80	391.26	0.66	42.30 S	58.96W
401.00	14.98	234.73	392.23	0.67	42.45 S	59.17W
402.00	14.99	234.72	393.19	0.67	42.60 S	59.38W
403.00	14.98	234.59	394.16	0.67	42.75 S	59.60W
404.00	14.94	234.49	395.12	0.69	42.90 S	59.81W
405.00	14.89	234.35	396.09	0.71	43.05 S	60.02W
406.00	14.85	234.24	397.06	0.71	43.20 S	60.22W



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BRASKEM

Well: Mina 19

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
407.00	14.82	234.18	398.02	0.73	43.35 S	60.43W
408.00	14.82	234.15	398.99	0.72	43.50 S	60.64W
409.00	14.83	234.17	399.96	0.71	43.65 S	60.85W
410.00	14.83	234.16	400.92	0.72	43.80 S	61.05W
411.00	14.84	234.15	401.89	0.68	43.95 S	61.26W
412.00	14.84	234.11	402.86	0.69	44.10 S	61.47W
413.00	14.83	234.04	403.82	0.68	44.25 S	61.68W
414.00	14.82	233.93	404.79	0.68	44.40 S	61.88W
415.00	14.80	233.85	405.76	0.69	44.55 S	62.09W
416.00	14.79	233.75	406.72	0.69	44.70 S	62.30W
417.00	14.79	233.57	407.69	0.73	44.85 S	62.50W
418.00	14.79	233.41	408.66	0.71	45.01 S	62.71W
419.00	14.80	233.21	409.62	0.68	45.16 S	62.91W
420.00	14.78	233.07	410.59	0.63	45.31 S	63.12W
421.00	14.77	232.99	411.56	0.58	45.47 S	63.32W
422.00	14.75	232.93	412.53	0.55	45.62 S	63.52W
423.00	14.74	232.89	413.49	0.56	45.77 S	63.73W
424.00	14.73	232.80	414.46	0.58	45.93 S	63.93W
425.00	14.72	232.68	415.43	0.60	46.08 S	64.13W
426.00	14.76	232.56	416.39	0.64	46.23 S	64.33W
427.00	14.74	232.46	417.36	0.66	46.39 S	64.53W
428.00	14.74	232.42	418.33	0.50	46.54 S	64.74W
429.00	14.76	232.30	419.29	0.50	46.70 S	64.94W
430.00	14.66	232.37	420.26	0.48	46.85 S	65.14W
431.00	14.62	232.42	421.23	0.50	47.01 S	65.34W
432.00	14.57	232.36	422.20	0.67	47.16 S	65.54W
433.00	14.50	232.51	423.17	0.65	47.32 S	65.74W
434.00	14.49	232.48	424.13	0.65	47.47 S	65.94W
435.00	14.48	232.46	425.10	0.62	47.62 S	66.13W
436.00	14.47	232.51	426.07	0.58	47.77 S	66.33W
437.00	14.46	232.53	427.04	0.60	47.92 S	66.53W
438.00	14.45	232.50	428.01	0.64	48.08 S	66.73W
439.00	14.45	232.46	428.97	0.68	48.23 S	66.93W
440.00	14.39	232.55	429.94	0.71	48.38 S	67.12W
441.00	14.35	232.50	430.91	0.75	48.53 S	67.32W
442.00	14.32	232.52	431.88	0.76	48.68 S	67.52W

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A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
443.00	14.49	232.59	432.85	0.78	48.83 S	67.72W
444.00	14.48	232.48	433.82	0.78	48.99 S	67.91W
445.00	14.48	232.45	434.79	0.69	49.14 S	68.11W
446.00	14.43	232.38	435.75	0.64	49.29 S	68.31W
447.00	14.21	232.20	436.72	0.59	49.44 S	68.51W
448.00	14.21	232.23	437.69	0.56	49.59 S	68.70W
449.00	14.21	232.15	438.66	0.56	49.74 S	68.89W
450.00	14.21	232.05	439.63	0.55	49.89 S	69.09W
451.00	14.22	232.26	440.60	0.56	50.04 S	69.28W
452.00	14.18	232.18	441.57	0.52	50.19 S	69.48W
453.00	14.12	232.30	442.54	0.51	50.34 S	69.67W
454.00	14.06	232.34	443.51	0.50	50.49 S	69.86W
455.00	14.02	232.22	444.48	0.42	50.64 S	70.05W
456.00	14.01	232.31	445.45	0.37	50.79 S	70.24W
457.00	13.98	232.25	446.42	0.35	50.94 S	70.44W
458.00	13.96	232.18	447.39	0.53	51.09 S	70.63W
459.00	13.98	232.24	448.36	0.52	51.23 S	70.82W
460.00	13.97	232.32	449.33	0.54	51.38 S	71.01W
461.00	13.98	232.25	450.30	0.50	51.53 S	71.20W
462.00	13.98	232.37	451.27	0.28	51.68 S	71.39W
463.00	13.94	232.50	452.24	0.30	51.82 S	71.58W
464.00	13.93	232.53	453.21	0.28	51.97 S	71.77W
465.00	13.93	232.66	454.18	0.27	52.12 S	71.96W
466.00	13.91	232.64	455.15	0.27	52.26 S	72.16W
467.00	13.94	232.58	456.13	0.22	52.41 S	72.35W
468.00	13.94	232.52	457.10	0.16	52.55 S	72.54W
469.00	13.95	232.42	458.07	0.12	52.70 S	72.73W
470.00	13.97	232.36	459.04	0.11	52.85 S	72.92W
471.00	13.98	232.35	460.01	0.12	53.00 S	73.11W
472.00	13.97	232.29	460.98	0.13	53.14 S	73.30W
473.00	13.97	232.27	461.95	0.17	53.29 S	73.49W
474.00	13.96	232.35	462.92	0.22	53.44 S	73.68W
475.00	13.94	232.28	463.89	0.25	53.59 S	73.88W
476.00	13.93	232.31	464.86	0.28	53.73 S	74.07W
477.00	13.93	232.30	465.83	0.29	53.88 S	74.26W
478.00	13.91	232.21	466.80	0.25	54.03 S	74.45W

UNFAL

Is. 7.490

A Gyrodata Directional Survey


BRASKEM

Well: Mina 19

Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
479.00	13.93	232.25	467.77	0.23	54.18 S	74.64W
480.00	13.94	232.26	468.74	0.24	54.32 S	74.83W
481.00	13.95	232.28	469.71	0.22	54.47 S	75.02W
482.00	13.96	232.37	470.68	0.21	54.62 S	75.21W
483.00	13.96	232.36	471.65	0.23	54.77 S	75.40W
484.00	13.94	232.37	472.62	0.25	54.91 S	75.59W
485.00	13.91	232.35	473.59	0.27	55.06 S	75.78W
486.00	13.89	232.36	474.57	0.28	55.21 S	75.97W
487.00	13.85	232.36	475.54	0.26	55.35 S	76.16W
488.00	13.80	232.36	476.51	0.27	55.50 S	76.35W
489.00	13.76	232.35	477.48	0.23	55.64 S	76.54W
490.00	13.72	232.30	478.45	0.21	55.79 S	76.73W
491.00	13.70	232.34	479.42	0.19	55.93 S	76.91W
492.00	13.69	232.33	480.39	0.18	56.08 S	77.10W
493.00	13.70	232.29	481.36	0.17	56.22 S	77.29W
494.00	13.70	232.38	482.34	0.20	56.37 S	77.48W
495.00	13.70	232.43	483.31	0.23	56.51 S	77.66W
496.00	13.70	232.38	484.28	0.26	56.66 S	77.85W
497.00	13.73	232.42	485.25	0.30	56.80 S	78.04W
498.00	13.71	232.48	486.22	0.33	56.95 S	78.23W
499.00	13.70	232.43	487.19	0.33	57.09 S	78.42W
500.00	13.70	232.46	488.17	0.30	57.23 S	78.60W
501.00	13.70	232.48	489.14	0.28	57.38 S	78.79W
502.00	13.71	232.44	490.11	0.24	57.52 S	78.98W
503.00	13.71	232.52	491.08	0.19	57.67 S	79.17W
504.00	13.73	232.55	492.05	0.16	57.81 S	79.36W
505.00	13.74	232.53	493.02	0.13	57.96 S	79.54W
506.00	13.75	232.57	493.99	0.11	58.10 S	79.73W
507.00	13.76	232.58	494.97	0.11	58.25 S	79.92W
508.00	13.76	232.57	495.94	0.14	58.39 S	80.11W
509.00	13.74	232.55	496.91	0.15	58.53 S	80.30W
510.00	13.72	232.60	497.88	0.18	58.68 S	80.49W
511.00	13.69	232.45	498.85	0.17	58.82 S	80.68W
512.00	13.66	232.35	499.82	0.20	58.97 S	80.86W
513.00	13.63	232.24	500.79	0.16	59.11 S	81.05W
514.00	13.62	232.12	501.77	0.14	59.26 S	81.24W

UNPAVAL
No. 7.491


A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
515.00	13.61	232.20	502.74	0.12	59.40 S	81.42W
516.00	13.61	232.27	503.71	0.11	59.54 S	81.61W
517.00	13.61	232.30	504.68	0.10	59.69 S	81.79W
518.00	13.61	232.39	505.65	0.10	59.83 S	81.98W
519.00	13.60	232.45	506.63	0.15	59.98 S	82.17W
520.00	13.59	232.39	507.60	0.17	60.12 S	82.35W
521.00	13.59	232.37	508.57	0.19	60.26 S	82.54W
522.00	13.58	232.23	509.54	0.21	60.41 S	82.72W
523.00	13.56	232.15	510.51	0.18	60.55 S	82.91W
524.00	13.56	232.14	511.49	0.16	60.69 S	83.10W
525.00	13.54	232.11	512.46	0.13	60.84 S	83.28W
526.00	13.54	232.18	513.43	0.08	60.98 S	83.47W
527.00	13.54	232.22	514.40	0.05	61.12 S	83.65W
528.00	13.56	232.24	515.37	0.05	61.27 S	83.84W
529.00	13.56	232.30	516.35	0.08	61.41 S	84.02W
530.00	13.58	232.33	517.32	0.07	61.56 S	84.21W
531.00	13.59	232.36	518.29	0.03	61.70 S	84.39W
532.00	13.61	232.35	519.26	0.01	61.84 S	84.58W
533.00	13.62	232.34	520.23	0.04	61.99 S	84.77W
534.00	13.59	232.29	521.21	0.07	62.13 S	84.95W
535.00	13.58	232.30	522.18	0.06	62.27 S	85.14W
536.00	13.57	232.37	523.15	0.09	62.42 S	85.32W
537.00	13.56	232.37	524.12	0.08	62.56 S	85.51W
538.00	13.58	232.44	525.10	0.05	62.70 S	85.69W
539.00	13.58	232.51	526.07	0.06	62.85 S	85.88W
540.00	13.59	232.48	527.04	0.05	62.99 S	86.07W
541.00	13.61	232.48	528.01	0.07	63.13 S	86.25W
542.00	13.62	232.48	528.98	0.11	63.28 S	86.44W
543.00	13.63	232.47	529.95	0.13	63.42 S	86.63W
544.00	13.64	232.43	530.93	0.15	63.56 S	86.81W
545.00	13.65	232.43	531.90	0.19	63.71 S	87.00W
546.00	13.64	232.29	532.87	0.24	63.85 S	87.19W
547.00	13.62	232.30	533.84	0.27	64.00 S	87.37W
548.00	13.58	232.30	534.81	0.29	64.14 S	87.56W
549.00	13.54	232.30	535.79	0.25	64.28 S	87.75W
550.00	13.53	232.42	536.76	0.26	64.43 S	87.93W

UNPM/AL
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A Gyrodata Directional Survey

BRASKEM
Well: Mina 19
Location: RIGLESS, SAL GEMA
Job Number: BZ0419GVC039

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	DOGLEG SEVERITY deg/30m	HORIZONTAL COORDINATES meters	
551.00	13.50	232.32	537.73	0.27	64.57 S	88.12W
552.00	13.50	232.23	538.70	0.27	64.71 S	88.30W
553.00	13.51	232.12	539.68	0.32	64.85 S	88.49W
554.00	13.51	232.03	540.65	0.36	65.00 S	88.67W
555.00	13.51	231.95	541.62	0.40	65.14 S	88.85W
556.00	13.52	231.91	542.59	0.47	65.29 S	89.04W
557.00	13.51	231.76	543.56	0.50	65.43 S	89.22W
558.00	13.50	231.77	544.54	0.56	65.57 S	89.40W
559.00	13.47	231.80	545.51	0.60	65.72 S	89.59W
560.00	13.43	231.80	546.48	0.64	65.86 S	89.77W
561.00	13.39	231.83	547.45	0.65	66.01 S	89.95W
562.00	13.37	231.83	548.43	0.63	66.15 S	90.14W
563.00	13.36	231.80	549.40	0.58	66.29 S	90.32W
564.00	13.36	231.82	550.37	0.56	66.43 S	90.50W
565.00	13.34	231.82	551.35	0.59	66.58 S	90.68W
566.00	13.33	231.82	552.32	0.59	66.72 S	90.86W
567.00	13.32	231.82	553.29	0.66	66.86 S	91.04W
568.00	13.29	231.82	554.27	0.72	67.00 S	91.22W
569.00	13.25	231.86	555.24	0.72	67.15 S	91.40W
570.00	13.22	231.77	556.21	0.75	67.29 S	91.58W
571.00	13.17	231.76	557.19	0.73	67.43 S	91.76W
572.00	13.14	231.82	558.16	0.71	67.57 S	91.94W
573.00	13.09	231.78	559.13	0.68	67.71 S	92.12W
574.00	13.05	231.87	560.11	0.64	67.85 S	92.30W
575.00	13.02	231.91	561.08	0.58	67.99 S	92.48W
576.00	13.00	231.92	562.06	0.51	68.13 S	92.65W
577.00	12.99	231.96	563.03	0.48	68.27 S	92.83W
578.00	13.00	231.97	564.01	0.48	68.41 S	93.01W
579.00	12.98	232.04	564.98	0.45	68.54 S	93.18W
580.00	12.95	232.00	565.95	0.43	68.68 S	93.36W
581.00	12.92	231.94	566.93	0.41	68.82 S	93.54W
582.00	12.85	231.86	567.90	0.37	68.96 S	93.71W
583.00	12.80	231.72	568.88	0.36	69.09 S	93.89W
584.00	12.79	231.67	569.85	0.33	69.23 S	94.06W
585.00	12.76	231.64	570.83	0.32	69.37 S	94.23W
586.00	12.79	231.68	571.80	0.30	69.51 S	94.41W