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A Gyrodata Directional Survey

BRASKEM  
Well: Mina 07, 7"  
Location: NO RIG, SAL GEMA  
Job Number: BZ0419GVC031

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
635.00	0.23	268.40	635.00	0.15	0.82 S	0.40 W
636.00	0.25	268.39	636.00	0.13	0.82 S	0.40 W
637.00	0.26	268.70	637.00	0.11	0.82 S	0.40 W
638.00	0.27	269.39	638.00	0.11	0.82 S	0.41 W
639.00	0.27	269.44	639.00	0.11	0.82 S	0.41 W
640.00	0.28	270.68	640.00	0.11	0.82 S	0.42 W
641.00	0.28	271.72	641.00	0.12	0.82 S	0.42 W
642.00	0.28	271.70	642.00	0.13	0.82 S	0.43 W
643.00	0.28	272.30	643.00	0.13	0.82 S	0.43 W
644.00	0.27	271.71	644.00	0.13	0.82 S	0.44 W
645.00	0.26	269.56	645.00	0.17	0.82 S	0.44 W
646.00	0.25	267.13	646.00	0.20	0.82 S	0.45 W
647.00	0.24	265.25	647.00	0.22	0.82 S	0.45 W
648.00	0.23	263.37	648.00	0.20	0.82 S	0.46 W
649.00	0.21	260.36	649.00	0.13	0.83 S	0.46 W
650.00	0.19	256.16	650.00	0.16	0.83 S	0.46 W
651.00	0.17	251.16	651.00	0.16	0.83 S	0.47 W
652.00	0.15	243.67	652.00	0.17	0.83 S	0.47 W
653.00	0.14	233.20	653.00	0.16	0.83 S	0.47 W
654.00	0.12	223.48	654.00	0.16	0.83 S	0.47 W
655.00	0.11	213.89	655.00	0.16	0.83 S	0.47 W
656.00	0.10	203.82	656.00	0.17	0.83 S	0.47 W
657.00	0.09	193.38	657.00	0.17	0.84 S	0.47 W
658.00	0.08	186.62	658.00	0.17	0.84 S	0.47 W
659.00	0.07	188.69	659.00	0.17	0.84 S	0.47 W
660.00	0.07	161.14	660.00	0.16	0.84 S	0.47 W
661.00	0.07	144.02	661.00	0.16	0.84 S	0.47 W
662.00	0.07	137.81	662.00	0.15	0.84 S	0.47 W
663.00	0.07	184.59	663.00	0.14	0.84 S	0.47 W
664.00	0.08	278.42	664.00	0.12	0.84 S	0.47 W
665.00	0.08	298.70	665.00	0.10	0.84 S	0.48 W
666.00	0.09	262.25	666.00	0.07	0.84 S	0.48 W
667.00	0.10	251.42	667.00	0.04	0.84 S	0.48 W
668.00	0.11	261.65	668.00	0.01	0.84 S	0.48 W
669.00	0.11	267.01	669.00	0.04	0.84 S	0.48 W
670.00	0.12	263.63	670.00	0.07	0.84 S	0.48 W

DNFVIAL  
Fls. 729  


A Gyrodata Directional Survey

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MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
671.00	0.12	257.63	671.00	0.11	0.84 S	0.49W
672.00	0.12	252.26	672.00	0.15	0.84 S	0.49W
673.00	0.13	247.38	673.00	0.17	0.85 S	0.49W
674.00	0.13	242.85	674.00	0.18	0.85 S	0.49W
675.00	0.14	239.41	675.00	0.22	0.85 S	0.49W
676.00	0.13	235.78	676.00	0.24	0.85 S	0.50W
677.00	0.13	232.73	677.00	0.25	0.85 S	0.50W
678.00	0.13	230.31	678.00	0.19	0.85 S	0.50W
679.00	0.12	228.55	679.00	0.21	0.85 S	0.50W
680.00	0.13	228.06	680.00	0.25	0.85 S	0.50W
681.00	0.13	227.64	681.00	0.22	0.86 S	0.50W
682.00	0.14	228.87	682.00	0.23	0.86 S	0.51W
683.00	0.15	231.37	683.00	0.27	0.86 S	0.51W
684.00	0.15	234.23	684.00	0.32	0.86 S	0.51W
685.00	0.16	236.84	685.00	0.34	0.86 S	0.51W
686.00	0.17	239.26	686.00	0.35	0.86 S	0.52W
687.00	0.19	242.04	687.00	0.37	0.86 S	0.52W
688.00	0.20	243.94	688.00	0.37	0.87 S	0.52W
689.00	0.21	244.66	689.00	0.37	0.87 S	0.52W
690.00	0.22	243.96	690.00	0.37	0.87 S	0.53W
691.00	0.22	240.89	691.00	0.35	0.87 S	0.53W
692.00	0.23	237.29	692.00	0.32	0.87 S	0.53W
693.00	0.23	232.25	693.00	0.29	0.88 S	0.54W
694.00	0.24	225.47	694.00	0.26	0.88 S	0.54W
695.00	0.25	217.51	695.00	0.22	0.88 S	0.54W
696.00	0.26	209.21	696.00	0.18	0.89 S	0.55W
697.00	0.28	200.96	697.00	0.15	0.89 S	0.55W
698.00	0.29	192.89	698.00	0.12	0.89 S	0.55W
699.00	0.31	185.25	699.00	0.08	0.90 S	0.55W
700.00	0.33	178.38	700.00	0.06	0.91 S	0.55W
701.00	0.34	172.63	701.00	0.07	0.91 S	0.55W
702.00	0.36	168.40	702.00	0.09	0.92 S	0.55W
703.00	0.37	164.51	703.00	0.10	0.92 S	0.55W
704.00	0.37	161.70	704.00	0.12	0.93 S	0.55W
705.00	0.37	160.29	705.00	0.13	0.94 S	0.54W
706.00	0.36	159.51	706.00	0.14	0.94 S	0.54W



JNP/WAL  
Fig. 2.220  
Q

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 07, 7"  
Location: NO RIG, SAL GEMA  
Job Number: BZ0419GVC031

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
707.00	0.34	160.04	707.00	0.15	0.95 S	0.54W
708.00	0.31	160.76	708.00	0.17	0.95 S	0.54W
709.00	0.29	163.63	709.00	0.18	0.96 S	0.54W
710.00	0.26	167.88	710.00	0.19	0.96 S	0.53W
711.00	0.23	173.70	711.00	0.20	0.97 S	0.53W
712.00	0.20	179.68	712.00	0.22	0.97 S	0.53W
713.00	0.17	189.03	713.00	0.23	0.97 S	0.53W
714.00	0.14	204.16	714.00	0.24	0.98 S	0.53W
715.00	0.13	216.91	715.00	0.25	0.98 S	0.54W
716.00	0.11	228.08	716.00	0.26	0.98 S	0.54W
717.00	0.10	239.18	717.00	0.26	0.98 S	0.54W
718.00	0.10	249.50	718.00	0.26	0.98 S	0.54W
719.00	0.10	259.95	719.00	0.25	0.98 S	0.54W
720.00	0.10	266.75	720.00	0.24	0.98 S	0.54W
721.00	0.11	271.34	721.00	0.21	0.98 S	0.55W
722.00	0.12	274.11	722.00	0.19	0.98 S	0.55W
723.00	0.13	276.54	723.00	0.15	0.98 S	0.55W
724.00	0.14	274.48	724.00	0.11	0.98 S	0.55W
725.00	0.15	265.58	725.00	0.17	0.98 S	0.55W
726.00	0.15	258.56	726.00	0.14	0.98 S	0.56W
727.00	0.16	251.61	727.00	0.08	0.98 S	0.56W
728.00	0.17	243.94	728.00	0.12	0.98 S	0.56W
729.00	0.17	236.00	729.00	0.18	0.98 S	0.56W
730.00	0.18	227.28	730.00	0.21	0.99 S	0.57W
731.00	0.18	220.69	731.00	0.00	0.99 S	0.57W
732.00	0.18	214.51	732.00	0.00	0.99 S	0.57W
733.00	0.19	208.52	733.00	0.00	0.99 S	0.57W
734.00	0.20	202.48	734.00	0.00	1.00 S	0.57W
735.00	0.21	197.56	735.00	0.00	1.00 S	0.58W
736.00	0.23	194.25	736.00	0.00	1.00 S	0.58W
737.00	0.24	192.37	736.99	0.00	1.01 S	0.58W
738.00	0.24	188.99	737.99	0.00	1.01 S	0.58W
739.00	0.25	185.73	738.99	0.00	1.02 S	0.58W
740.00	0.27	205.58	739.99	0.00	1.02 S	0.58W
741.00	0.27	203.93	740.99	0.00	1.03 S	0.58W
742.00	0.27	186.99	741.99	0.00	1.03 S	0.58W

7b/AdNC

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A Gyrodata Directional Survey

BRASKEM  
Well: Mina 07, 7"  
Location: NO RIG, SAL GEMA  
Job Number: BZ0419GVC031

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
743.00	0.25	163.87	742.99	0.00	1.03 S	0.58 W
744.00	0.25	160.85	743.99	0.00	1.04 S	0.58 W
745.00	0.25	161.63	744.99	0.00	1.04 S	0.58 W

Final Station Closure: Distance: 1.19 m Az: 209.11 deg.



CNPJ  
7.222  
[assinatura]

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

SNP VIAL  
Fs. 7.223  
[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	0.008	0.008	0.008	0.00017	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	63.25	To	64.37	In-Spec If +/- 2.5 °C of Calibration

INCLINATION DIFFERENCE TEST

Chi-square test value	16.3
Tolerance	34.4
Number of overlapping survey stations used	15.0


CO-ORDINATE DIFFERENCE TEST

	North	East	Vertical
Chi-square test value	0.8	0.8	3.7
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**

ORIGINAL  
Fol. 7225  


**6.0 RELATÓRIO CRONOLÓGICO DA OPERAÇÃO**

**04 de abril de 2019**

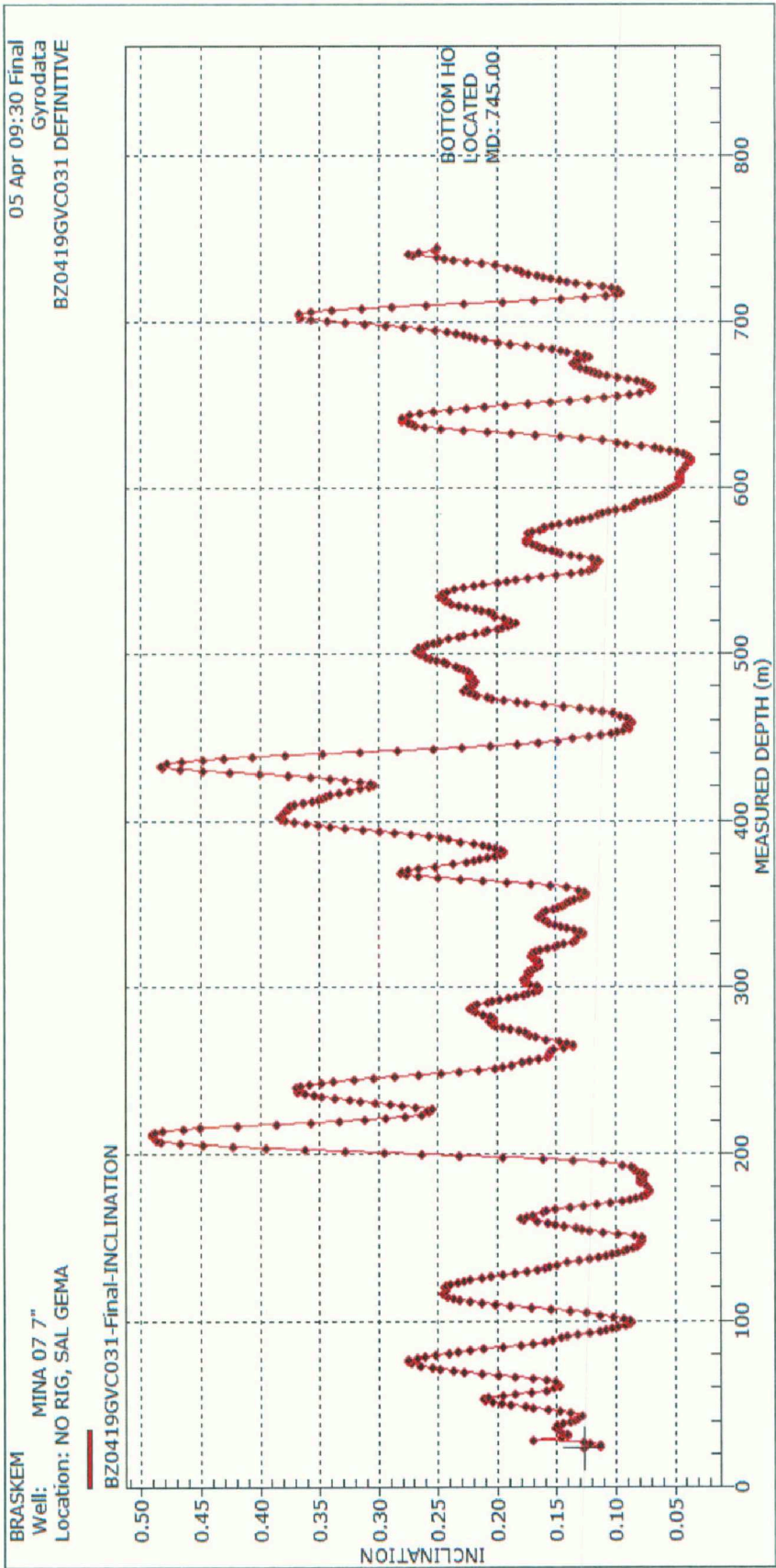
09:00 Chegada na mina 07  
09:40 Conexão gyrodata/flodim  
10:30 Início de corrida mina 07  
13:10 Desmontagem de equipamentos  
13:20 Saida da mina 07  
13:30 Pós calibração



Fig. 7-226

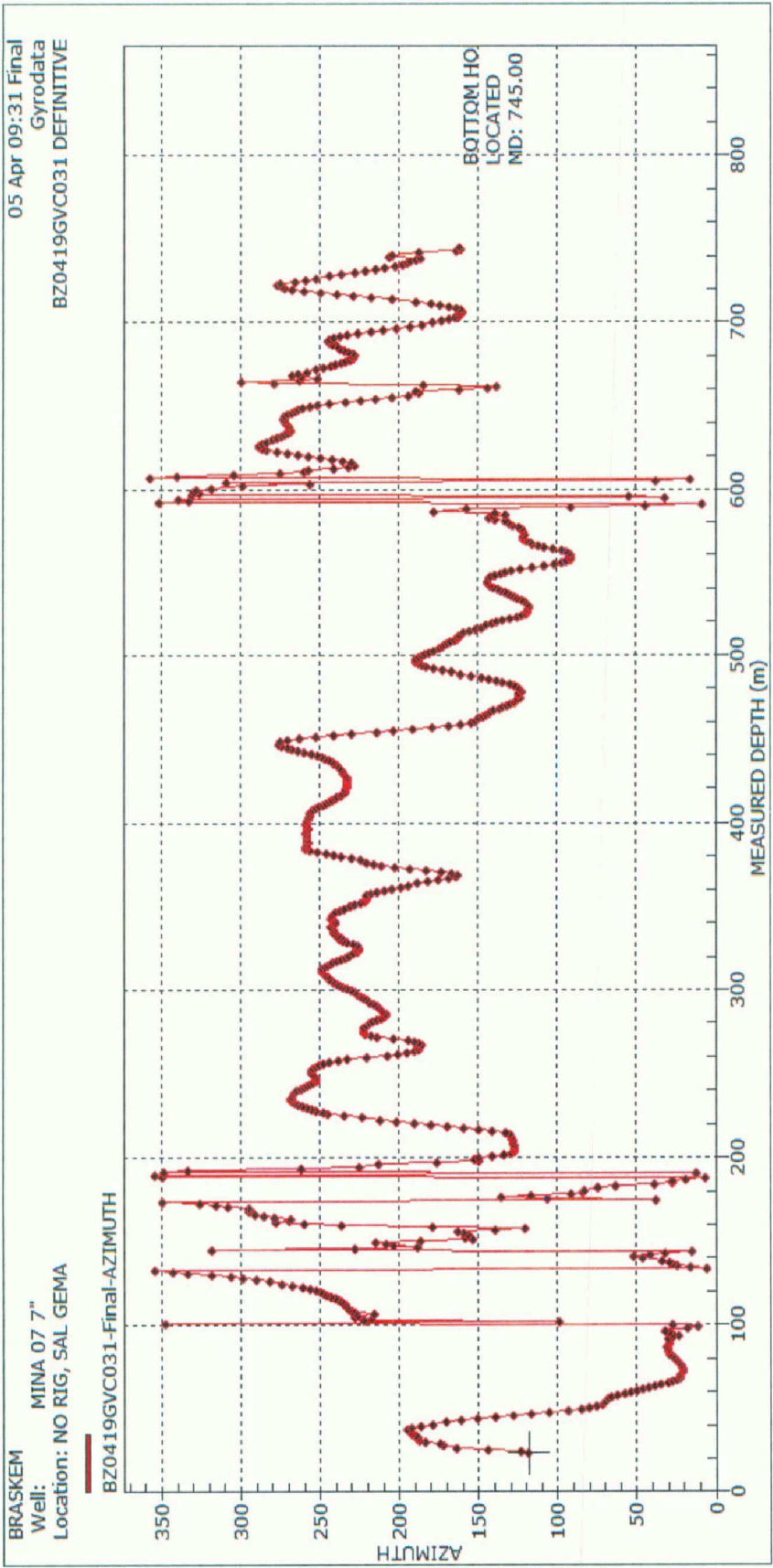
**Parte 7**  
**Gráficos**

DNP/IAL  
Fls. 7227

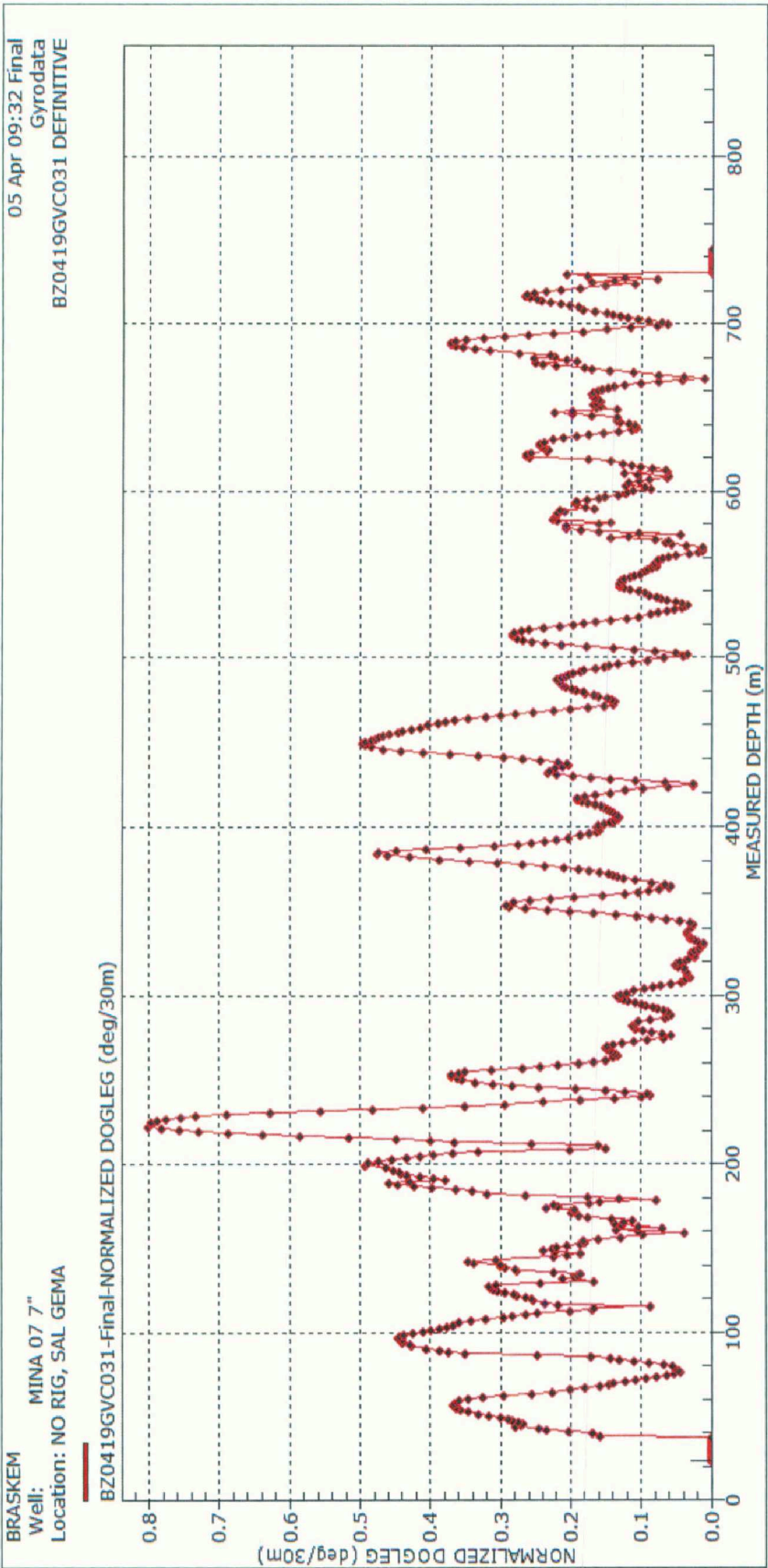




ORIGINAL  
Fig. 7.228  
*[Signature]*



DNPVAL  
No. 7.29  
[Signature]

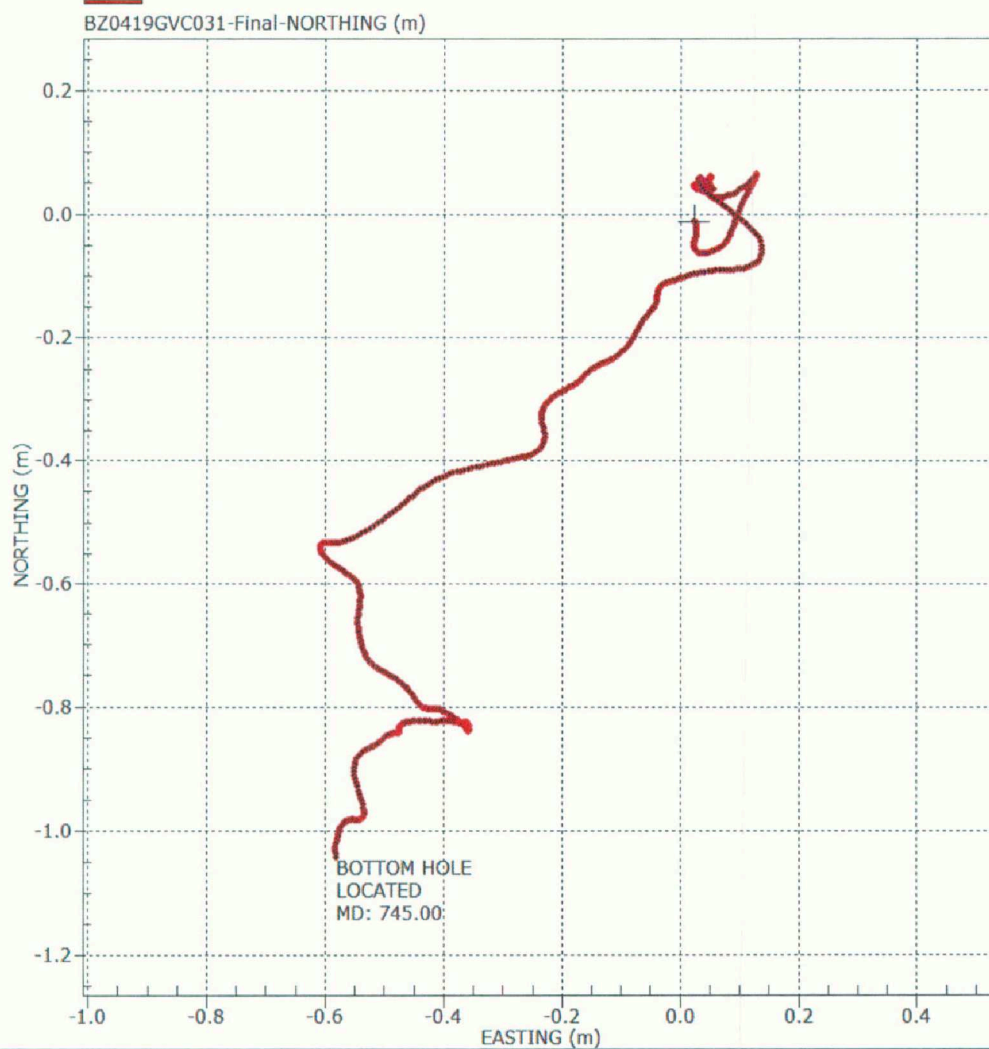




DNP/VAL  
Fig. 7.230  
①

BRASKEM  
Well: MINA 07 7"  
Location: NO RIG, SAL GEMA

05 Apr 09:42 Final  
Gyrodatta  
BZ0419GVC031 DEFINITIVE





**Braskem**

Campo: Sal Gema

Poço: Mina 01

Gyro Multshot Contínuo

Data da Amostragem: 4 de Abril de 2019

**Número de Trabalho: BZ0419GVC032**

DNP/AL  
Fis. 7232  
*[Signature]*

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**Parte 1**  
**Discussão**






**1.0 DISCUSSÃO**

O Giroscópio FA088 foi utilizado para fazer uma amostragem na Mina 01.  
A amostragem foi coletada da superfície até 600.00m.  
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.

DNP VIAL  
Fis. 7.235  


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

DNP/VAL  
Fis. 7.236  


**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: 04 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: 04 de Abril de 2019

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Fis. 7239  
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**Parte 3**  
**Detalhes da Amostragem**




DNFV/AL  
Fls. 7.238  


**3.0     DETALHES DA AMOSTRAGEM**

Cliente	:	Braskem
Sonda	:	N/A
Campo	:	Sal Gema
Poço	:	Mina 01
Latitude	:	9.636336 deg. S
Longitude	:	35.748372 deg. W
Data da amostragem	:	4 de Abril de 2019
Tipo de amostragem	:	Gyro Multishot Contínuo
Referência de profundidade	:	Ground
Max. Profundidade da amostragem	:	600 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**

DNF/AL  
No. 7-240  


**4.0 LISTAGEM DEFINITIVA DA AMOSTRAGEM**

A Gyrodata Directional Survey

for

**BRASKEM**

Well: **Mina 01**,  
Location: RIGLESS, SAL GEMA

Job Number: BZ0419GVC032

Run Date: 04 Apr 2019

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 9.636336 deg. S

Longitude: 35.748372 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

DNF/AL  
Fts. 7.241  


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

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
30.00	1.15	150.69	30.00	0.00	0.26 S	0.15 E
31.00	1.15	150.01	31.00	0.00	0.28 S	0.16 E
32.00	1.15	150.28	32.00	0.00	0.30 S	0.17 E
33.00	1.16	149.75	33.00	0.00	0.31 S	0.18 E
34.00	1.15	150.66	34.00	0.00	0.33 S	0.19 E
35.00	1.13	151.63	35.00	0.00	0.35 S	0.20 E
36.00	1.11	151.41	36.00	0.00	0.37 S	0.21 E
37.00	1.10	151.47	37.00	0.00	0.38 S	0.21 E
38.00	1.09	151.26	38.00	0.00	0.40 S	0.22 E
39.00	1.08	150.99	39.00	0.00	0.42 S	0.23 E
40.00	1.07	150.79	40.00	0.00	0.43 S	0.24 E
41.00	1.05	150.51	41.00	0.00	0.45 S	0.25 E
42.00	1.04	150.46	42.00	0.00	0.46 S	0.26 E
43.00	1.03	150.05	43.00	0.00	0.48 S	0.27 E
44.00	1.02	149.57	44.00	0.00	0.50 S	0.28 E
45.00	1.00	149.07	45.00	0.32	0.51 S	0.29 E
46.00	0.99	148.41	46.00	0.32	0.53 S	0.30 E
47.00	0.98	147.79	46.99	0.34	0.54 S	0.31 E
48.00	0.97	147.13	47.99	0.34	0.55 S	0.31 E
49.00	0.96	146.41	48.99	0.36	0.57 S	0.32 E
50.00	0.95	145.56	49.99	0.38	0.58 S	0.33 E
51.00	0.94	144.79	50.99	0.38	0.60 S	0.34 E
52.00	0.94	143.83	51.99	0.38	0.61 S	0.35 E
53.00	0.94	142.67	52.99	0.38	0.62 S	0.36 E
54.00	0.94	141.66	53.99	0.38	0.64 S	0.37 E
55.00	0.95	140.62	54.99	0.38	0.65 S	0.38 E
56.00	0.95	139.58	55.99	0.37	0.66 S	0.39 E
57.00	0.96	138.49	56.99	0.37	0.67 S	0.40 E
58.00	0.97	137.47	57.99	0.35	0.69 S	0.42 E
59.00	0.98	136.47	58.99	0.34	0.70 S	0.43 E
60.00	1.00	135.57	59.99	0.33	0.71 S	0.44 E
61.00	1.01	134.67	60.99	0.31	0.72 S	0.45 E
62.00	1.02	133.75	61.99	0.30	0.74 S	0.46 E
63.00	1.02	133.08	62.99	0.29	0.75 S	0.48 E
64.00	1.03	132.44	63.99	0.28	0.76 S	0.49 E



DNFM/AL  
Fls. 7.249  
01

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
65.00	1.04	131.93	64.99	0.26	0.77 S	0.50 E
66.00	1.04	131.62	65.99	0.27	0.78 S	0.52 E
67.00	1.05	131.20	66.99	0.28	0.80 S	0.53 E
68.00	1.05	130.87	67.99	0.30	0.81 S	0.54 E
69.00	1.04	130.40	68.99	0.33	0.82 S	0.56 E
70.00	1.03	130.07	69.99	0.36	0.83 S	0.57 E
71.00	1.02	129.78	70.99	0.38	0.84 S	0.59 E
72.00	1.00	129.77	71.99	0.41	0.86 S	0.60 E
73.00	0.98	129.96	72.99	0.44	0.87 S	0.61 E
74.00	0.96	129.99	73.99	0.47	0.88 S	0.63 E
75.00	0.94	130.13	74.99	0.50	0.89 S	0.64 E
76.00	0.90	130.37	75.99	0.52	0.90 S	0.65 E
77.00	0.87	130.47	76.99	0.54	0.91 S	0.66 E
78.00	0.83	131.02	77.99	0.55	0.92 S	0.67 E
79.00	0.79	132.00	78.99	0.56	0.93 S	0.68 E
80.00	0.75	133.47	79.99	0.57	0.94 S	0.69 E
81.00	0.72	134.88	80.99	0.58	0.95 S	0.70 E
82.00	0.68	136.56	81.99	0.58	0.95 S	0.71 E
83.00	0.65	138.04	82.99	0.58	0.96 S	0.72 E
84.00	0.62	139.57	83.99	0.58	0.97 S	0.73 E
85.00	0.59	141.55	84.99	0.57	0.98 S	0.73 E
86.00	0.57	143.38	85.99	0.56	0.99 S	0.74 E
87.00	0.56	145.18	86.99	0.54	1.00 S	0.75 E
88.00	0.55	146.91	87.99	0.52	1.00 S	0.75 E
89.00	0.54	148.57	88.99	0.51	1.01 S	0.76 E
90.00	0.53	149.86	89.99	0.48	1.02 S	0.76 E
91.00	0.53	150.70	90.99	0.45	1.03 S	0.77 E
92.00	0.53	151.76	91.99	0.42	1.04 S	0.77 E
93.00	0.53	152.30	92.99	0.39	1.04 S	0.77 E
94.00	0.53	152.99	93.99	0.35	1.05 S	0.78 E
95.00	0.54	153.41	94.99	0.31	1.06 S	0.78 E
96.00	0.54	153.49	95.99	0.28	1.07 S	0.79 E
97.00	0.54	153.74	96.99	0.24	1.08 S	0.79 E
98.00	0.55	153.82	97.99	0.22	1.09 S	0.80 E
99.00	0.55	154.15	98.99	0.19	1.09 S	0.80 E
100.00	0.55	154.01	99.99	0.16	1.10 S	0.80 E

ORIGINAL  
Fig. 7.243  
[Signature]

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
101.00	0.56	153.82	100.99	0.14	1.11 S	0.81 E
102.00	0.56	153.93	101.99	0.13	1.12 S	0.81 E
103.00	0.56	153.81	102.99	0.11	1.13 S	0.82 E
104.00	0.56	154.07	103.99	0.10	1.14 S	0.82 E
105.00	0.56	154.14	104.99	0.09	1.15 S	0.83 E
106.00	0.56	154.29	105.99	0.08	1.16 S	0.83 E
107.00	0.56	154.45	106.99	0.08	1.16 S	0.83 E
108.00	0.56	154.65	107.99	0.07	1.17 S	0.84 E
109.00	0.56	155.14	108.99	0.07	1.18 S	0.84 E
110.00	0.56	155.44	109.99	0.08	1.19 S	0.85 E
111.00	0.56	155.92	110.99	0.09	1.20 S	0.85 E
112.00	0.56	156.55	111.99	0.09	1.21 S	0.85 E
113.00	0.56	156.86	112.99	0.10	1.22 S	0.86 E
114.00	0.56	157.28	113.99	0.11	1.23 S	0.86 E
115.00	0.56	157.61	114.99	0.12	1.24 S	0.87 E
116.00	0.56	157.85	115.99	0.13	1.25 S	0.87 E
117.00	0.56	158.06	116.99	0.14	1.25 S	0.87 E
118.00	0.56	158.26	117.99	0.15	1.26 S	0.88 E
119.00	0.55	158.56	118.99	0.15	1.27 S	0.88 E
120.00	0.55	159.04	119.99	0.16	1.28 S	0.88 E
121.00	0.54	159.56	120.99	0.16	1.29 S	0.89 E
122.00	0.53	159.91	121.99	0.16	1.30 S	0.89 E
123.00	0.51	159.99	122.99	0.16	1.31 S	0.89 E
124.00	0.50	160.09	123.99	0.16	1.32 S	0.90 E
125.00	0.49	160.21	124.99	0.16	1.32 S	0.90 E
126.00	0.48	160.25	125.99	0.16	1.33 S	0.90 E
127.00	0.47	160.40	126.99	0.15	1.34 S	0.91 E
128.00	0.46	160.26	127.99	0.15	1.35 S	0.91 E
129.00	0.45	159.89	128.99	0.15	1.35 S	0.91 E
130.00	0.44	159.66	129.99	0.15	1.36 S	0.91 E
131.00	0.43	159.62	130.99	0.14	1.37 S	0.92 E
132.00	0.42	159.48	131.99	0.14	1.38 S	0.92 E
133.00	0.42	159.45	132.99	0.13	1.38 S	0.92 E
134.00	0.42	159.52	133.99	0.13	1.39 S	0.92 E
135.00	0.41	159.62	134.99	0.12	1.40 S	0.93 E
136.00	0.41	159.87	135.99	0.11	1.40 S	0.93 E




A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
137.00	0.41	160.04	136.99	0.09	1.41 S	0.93 E
138.00	0.41	160.08	137.99	0.08	1.42 S	0.93 E
139.00	0.41	160.38	138.99	0.07	1.42 S	0.94 E
140.00	0.42	160.84	139.99	0.05	1.43 S	0.94 E
141.00	0.42	161.38	140.99	0.04	1.44 S	0.94 E
142.00	0.42	161.94	141.99	0.04	1.44 S	0.94 E
143.00	0.42	162.39	142.99	0.03	1.45 S	0.95 E
144.00	0.42	162.55	143.99	0.02	1.46 S	0.95 E
145.00	0.42	162.68	144.99	0.02	1.46 S	0.95 E
146.00	0.43	162.64	145.99	0.02	1.47 S	0.95 E
147.00	0.43	162.76	146.99	0.03	1.48 S	0.95 E
148.00	0.43	163.23	147.99	0.03	1.49 S	0.96 E
149.00	0.43	163.52	148.99	0.02	1.49 S	0.96 E
150.00	0.44	163.55	149.99	0.02	1.50 S	0.96 E
151.00	0.43	163.49	150.99	0.02	1.51 S	0.96 E
152.00	0.44	163.37	151.99	0.02	1.52 S	0.96 E
153.00	0.44	162.94	152.99	0.02	1.52 S	0.97 E
154.00	0.44	162.93	153.99	0.03	1.53 S	0.97 E
155.00	0.44	162.97	154.99	0.05	1.54 S	0.97 E
156.00	0.44	162.81	155.99	0.06	1.54 S	0.97 E
157.00	0.44	162.94	156.99	0.08	1.55 S	0.98 E
158.00	0.44	162.76	157.99	0.10	1.56 S	0.98 E
159.00	0.44	162.18	158.99	0.12	1.57 S	0.98 E
160.00	0.44	162.03	159.99	0.14	1.57 S	0.98 E
161.00	0.44	162.21	160.99	0.16	1.58 S	0.99 E
162.00	0.44	162.55	161.99	0.17	1.59 S	0.99 E
163.00	0.43	162.47	162.99	0.19	1.60 S	0.99 E
164.00	0.43	162.52	163.99	0.20	1.60 S	0.99 E
165.00	0.42	162.12	164.99	0.21	1.61 S	0.99 E
166.00	0.42	162.02	165.99	0.22	1.62 S	1.00 E
167.00	0.41	162.41	166.99	0.23	1.62 S	1.00 E
168.00	0.39	162.38	167.99	0.24	1.63 S	1.00 E
169.00	0.38	162.21	168.99	0.24	1.64 S	1.00 E
170.00	0.37	162.43	169.99	0.24	1.64 S	1.01 E
171.00	0.35	162.38	170.99	0.24	1.65 S	1.01 E
172.00	0.34	162.10	171.99	0.25	1.65 S	1.01 E



DNF/MAL  
Fls. 7.245  


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
173.00	0.32	161.39	172.99	0.25	1.66 S	1.01 E
174.00	0.30	161.27	173.99	0.25	1.66 S	1.01 E
175.00	0.28	161.47	174.99	0.26	1.67 S	1.01 E
176.00	0.27	162.01	175.99	0.26	1.67 S	1.02 E
177.00	0.25	162.37	176.99	0.26	1.68 S	1.02 E
178.00	0.24	162.30	177.99	0.26	1.68 S	1.02 E
179.00	0.23	162.69	178.99	0.26	1.69 S	1.02 E
180.00	0.22	163.09	179.99	0.26	1.69 S	1.02 E
181.00	0.21	163.22	180.99	0.26	1.69 S	1.02 E
182.00	0.21	163.42	181.99	0.25	1.70 S	1.02 E
183.00	0.20	163.65	182.99	0.25	1.70 S	1.02 E
184.00	0.20	164.22	183.99	0.24	1.70 S	1.02 E
185.00	0.20	165.11	184.99	0.23	1.71 S	1.03 E
186.00	0.20	165.87	185.99	0.22	1.71 S	1.03 E
187.00	0.19	166.34	186.99	0.20	1.71 S	1.03 E
188.00	0.19	166.76	187.99	0.19	1.72 S	1.03 E
189.00	0.19	166.83	188.99	0.17	1.72 S	1.03 E
190.00	0.18	167.18	189.99	0.15	1.72 S	1.03 E
191.00	0.18	167.74	190.99	0.14	1.73 S	1.03 E
192.00	0.18	168.34	191.99	0.13	1.73 S	1.03 E
193.00	0.17	168.78	192.99	0.12	1.73 S	1.03 E
194.00	0.17	169.21	193.99	0.11	1.74 S	1.03 E
195.00	0.16	169.78	194.99	0.09	1.74 S	1.03 E
196.00	0.16	169.60	195.99	0.08	1.74 S	1.03 E
197.00	0.15	169.31	196.99	0.08	1.74 S	1.03 E
198.00	0.15	169.13	197.99	0.07	1.75 S	1.03 E
199.00	0.14	168.74	198.99	0.07	1.75 S	1.03 E
200.00	0.14	168.85	199.99	0.07	1.75 S	1.03 E
201.00	0.14	168.72	200.99	0.06	1.75 S	1.04 E
202.00	0.13	168.55	201.99	0.05	1.76 S	1.04 E
203.00	0.13	168.38	202.99	0.05	1.76 S	1.04 E
204.00	0.13	168.36	203.99	0.05	1.76 S	1.04 E
205.00	0.13	168.36	204.99	0.04	1.76 S	1.04 E
206.00	0.13	167.98	205.99	0.04	1.77 S	1.04 E
207.00	0.12	167.72	206.99	0.04	1.77 S	1.04 E
208.00	0.12	167.70	207.99	0.03	1.77 S	1.04 E


DNF/AL  
Fis. 7.246  
01

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
209.00	0.12	167.70	208.99	0.03	1.77 S	1.04 E
210.00	0.13	167.32	209.99	0.03	1.77 S	1.04 E
211.00	0.13	167.54	210.99	0.02	1.78 S	1.04 E
212.00	0.13	167.31	211.99	0.02	1.78 S	1.04 E
213.00	0.13	167.46	212.99	0.02	1.78 S	1.04 E
214.00	0.13	167.47	213.99	0.02	1.78 S	1.04 E
215.00	0.13	167.47	214.99	0.02	1.78 S	1.04 E
216.00	0.13	167.63	215.99	0.02	1.79 S	1.04 E
217.00	0.14	168.04	216.99	0.02	1.79 S	1.04 E
218.00	0.14	168.30	217.99	0.03	1.79 S	1.04 E
219.00	0.14	168.30	218.99	0.03	1.79 S	1.04 E
220.00	0.14	167.65	219.99	0.03	1.80 S	1.04 E
221.00	0.14	168.30	220.99	0.04	1.80 S	1.05 E
222.00	0.14	168.30	221.99	0.04	1.80 S	1.05 E
223.00	0.14	168.54	222.99	0.04	1.80 S	1.05 E
224.00	0.14	168.13	223.99	0.04	1.81 S	1.05 E
225.00	0.14	167.88	224.99	0.03	1.81 S	1.05 E
226.00	0.13	167.59	225.99	0.03	1.81 S	1.05 E
227.00	0.13	166.01	226.99	0.03	1.81 S	1.05 E
228.00	0.13	164.05	227.99	0.03	1.82 S	1.05 E
229.00	0.13	162.23	228.99	0.04	1.82 S	1.05 E
230.00	0.13	159.98	229.99	0.03	1.82 S	1.05 E
231.00	0.13	159.22	230.99	0.03	1.82 S	1.05 E
232.00	0.13	158.26	231.99	0.03	1.82 S	1.05 E
233.00	0.13	157.27	232.99	0.02	1.83 S	1.05 E
234.00	0.13	155.87	233.99	0.03	1.83 S	1.05 E
235.00	0.14	154.32	234.99	0.04	1.83 S	1.05 E
236.00	0.14	152.83	235.99	0.04	1.83 S	1.06 E
237.00	0.15	152.14	236.99	0.05	1.83 S	1.06 E
238.00	0.15	152.98	237.99	0.06	1.84 S	1.06 E
239.00	0.15	154.78	238.99	0.07	1.84 S	1.06 E
240.00	0.15	156.56	239.99	0.07	1.84 S	1.06 E
241.00	0.15	158.11	240.99	0.09	1.84 S	1.06 E
242.00	0.15	158.40	241.99	0.10	1.85 S	1.06 E
243.00	0.16	157.61	242.99	0.11	1.85 S	1.06 E
244.00	0.16	157.28	243.99	0.13	1.85 S	1.06 E



DNF/MAL  
Fls. 7-247  


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
245.00	0.16	157.77	244.99	0.14	1.85 S	1.07 E
246.00	0.15	158.61	245.99	0.15	1.86 S	1.07 E
247.00	0.15	159.28	246.99	0.17	1.86 S	1.07 E
248.00	0.14	158.66	247.99	0.18	1.86 S	1.07 E
249.00	0.14	156.14	248.99	0.19	1.86 S	1.07 E
250.00	0.15	153.22	249.99	0.20	1.87 S	1.07 E
251.00	0.15	151.11	250.99	0.21	1.87 S	1.07 E
252.00	0.15	148.74	251.99	0.21	1.87 S	1.07 E
253.00	0.16	146.58	252.99	0.22	1.87 S	1.07 E
254.00	0.16	144.08	253.99	0.22	1.87 S	1.08 E
255.00	0.16	140.63	254.99	0.23	1.88 S	1.08 E
256.00	0.17	136.82	255.99	0.23	1.88 S	1.08 E
257.00	0.18	132.94	256.99	0.23	1.88 S	1.08 E
258.00	0.19	128.69	257.99	0.22	1.88 S	1.08 E
259.00	0.21	124.86	258.99	0.22	1.89 S	1.09 E
260.00	0.22	122.74	259.99	0.22	1.89 S	1.09 E
261.00	0.23	120.15	260.99	0.22	1.89 S	1.09 E
262.00	0.24	116.14	261.99	0.22	1.89 S	1.10 E
263.00	0.25	113.02	262.99	0.22	1.89 S	1.10 E
264.00	0.26	110.27	263.99	0.21	1.90 S	1.10 E
265.00	0.27	109.26	264.99	0.21	1.90 S	1.11 E
266.00	0.28	108.48	265.99	0.20	1.90 S	1.11 E
267.00	0.29	107.55	266.99	0.20	1.90 S	1.12 E
268.00	0.29	106.66	267.99	0.19	1.90 S	1.12 E
269.00	0.29	106.43	268.99	0.19	1.90 S	1.13 E
270.00	0.29	106.65	269.99	0.18	1.90 S	1.13 E
271.00	0.29	106.19	270.99	0.17	1.91 S	1.14 E
272.00	0.29	106.03	271.99	0.16	1.91 S	1.14 E
273.00	0.28	106.64	272.99	0.15	1.91 S	1.15 E
274.00	0.28	107.31	273.99	0.13	1.91 S	1.15 E
275.00	0.28	107.84	274.99	0.12	1.91 S	1.16 E
276.00	0.28	106.97	275.99	0.10	1.91 S	1.16 E
277.00	0.27	106.37	276.99	0.08	1.91 S	1.17 E
278.00	0.27	106.16	277.99	0.07	1.92 S	1.17 E
279.00	0.28	106.60	278.99	0.05	1.92 S	1.18 E
280.00	0.28	106.70	279.99	0.04	1.92 S	1.18 E

DNP VIAL  
No. 7.248  


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
281.00	0.28	106.21	280.99	0.03	1.92 S	1.18 E
282.00	0.28	106.14	281.99	0.02	1.92 S	1.19 E
283.00	0.28	106.07	282.99	0.02	1.92 S	1.19 E
284.00	0.29	106.32	283.99	0.03	1.92 S	1.20 E
285.00	0.29	106.22	284.99	0.03	1.93 S	1.20 E
286.00	0.30	105.92	285.99	0.05	1.93 S	1.21 E
287.00	0.30	106.21	286.99	0.06	1.93 S	1.21 E
288.00	0.30	106.67	287.99	0.07	1.93 S	1.22 E
289.00	0.31	106.77	288.99	0.08	1.93 S	1.22 E
290.00	0.31	105.95	289.99	0.10	1.93 S	1.23 E
291.00	0.31	105.70	290.99	0.13	1.93 S	1.23 E
292.00	0.31	106.10	291.99	0.15	1.94 S	1.24 E
293.00	0.31	106.41	292.99	0.17	1.94 S	1.24 E
294.00	0.31	106.62	293.99	0.19	1.94 S	1.25 E
295.00	0.31	106.38	294.99	0.21	1.94 S	1.25 E
296.00	0.31	106.70	295.99	0.23	1.94 S	1.26 E
297.00	0.31	107.87	296.99	0.25	1.94 S	1.27 E
298.00	0.30	109.26	297.99	0.28	1.94 S	1.27 E
299.00	0.30	110.68	298.99	0.29	1.95 S	1.28 E
300.00	0.30	112.67	299.99	0.31	1.95 S	1.28 E
301.00	0.30	115.50	300.99	0.32	1.95 S	1.28 E
302.00	0.30	118.10	301.99	0.33	1.95 S	1.29 E
303.00	0.29	120.89	302.99	0.34	1.96 S	1.29 E
304.00	0.29	124.29	303.99	0.34	1.96 S	1.30 E
305.00	0.29	127.95	304.99	0.35	1.96 S	1.30 E
306.00	0.30	132.28	305.99	0.36	1.96 S	1.31 E
307.00	0.30	136.68	306.99	0.36	1.97 S	1.31 E
308.00	0.30	140.63	307.99	0.37	1.97 S	1.31 E
309.00	0.30	144.65	308.99	0.37	1.98 S	1.32 E
310.00	0.31	148.85	309.99	0.38	1.98 S	1.32 E
311.00	0.31	152.64	310.99	0.38	1.99 S	1.32 E
312.00	0.32	155.90	311.99	0.37	1.99 S	1.32 E
313.00	0.33	159.17	312.99	0.37	2.00 S	1.33 E
314.00	0.33	161.93	313.99	0.37	2.00 S	1.33 E
315.00	0.34	164.17	314.99	0.36	2.01 S	1.33 E
316.00	0.34	166.34	315.99	0.35	2.01 S	1.33 E



A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
317.00	0.35	167.56	316.99	0.34	2.02 S	1.33 E
318.00	0.35	168.11	317.99	0.32	2.02 S	1.33 E
319.00	0.36	168.74	318.99	0.31	2.03 S	1.34 E
320.00	0.36	169.37	319.99	0.29	2.04 S	1.34 E
321.00	0.36	169.92	320.99	0.26	2.04 S	1.34 E
322.00	0.37	170.40	321.99	0.24	2.05 S	1.34 E
323.00	0.37	170.77	322.99	0.22	2.06 S	1.34 E
324.00	0.38	171.11	323.99	0.19	2.06 S	1.34 E
325.00	0.38	171.48	324.99	0.17	2.07 S	1.34 E
326.00	0.38	171.60	325.99	0.15	2.07 S	1.34 E
327.00	0.39	171.94	326.99	0.13	2.08 S	1.34 E
328.00	0.39	172.42	327.99	0.11	2.09 S	1.34 E
329.00	0.40	172.56	328.99	0.09	2.09 S	1.35 E
330.00	0.40	172.92	329.99	0.08	2.10 S	1.35 E
331.00	0.40	173.54	330.99	0.07	2.11 S	1.35 E
332.00	0.40	174.00	331.99	0.07	2.12 S	1.35 E
333.00	0.40	174.34	332.99	0.06	2.12 S	1.35 E
334.00	0.39	174.68	333.99	0.06	2.13 S	1.35 E
335.00	0.39	174.80	334.99	0.05	2.14 S	1.35 E
336.00	0.39	174.78	335.99	0.05	2.14 S	1.35 E
337.00	0.39	174.62	336.99	0.04	2.15 S	1.35 E
338.00	0.40	174.11	337.99	0.04	2.16 S	1.35 E
339.00	0.40	173.41	338.99	0.04	2.16 S	1.35 E
340.00	0.40	173.18	339.99	0.04	2.17 S	1.35 E
341.00	0.40	173.00	340.99	0.03	2.18 S	1.35 E
342.00	0.40	172.67	341.99	0.04	2.18 S	1.36 E
343.00	0.40	172.32	342.99	0.04	2.19 S	1.36 E
344.00	0.40	172.01	343.99	0.03	2.20 S	1.36 E
345.00	0.41	171.51	344.98	0.03	2.20 S	1.36 E
346.00	0.41	171.08	345.98	0.03	2.21 S	1.36 E
347.00	0.41	170.74	346.98	0.04	2.22 S	1.36 E
348.00	0.41	170.85	347.98	0.04	2.23 S	1.36 E
349.00	0.41	171.21	348.98	0.05	2.23 S	1.36 E
350.00	0.41	171.59	349.98	0.04	2.24 S	1.36 E
351.00	0.41	171.71	350.98	0.04	2.25 S	1.36 E
352.00	0.41	171.68	351.98	0.04	2.25 S	1.37 E

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
353.00	0.41	171.70	352.98	0.03	2.26 S	1.37 E
354.00	0.42	171.56	353.98	0.03	2.27 S	1.37 E
355.00	0.42	171.27	354.98	0.03	2.28 S	1.37 E
356.00	0.42	171.43	355.98	0.03	2.28 S	1.37 E
357.00	0.42	172.05	356.98	0.05	2.29 S	1.37 E
358.00	0.43	172.78	357.98	0.09	2.30 S	1.37 E
359.00	0.43	173.21	358.98	0.15	2.30 S	1.37 E
360.00	0.43	173.32	359.98	0.22	2.31 S	1.37 E
361.00	0.43	173.33	360.98	0.31	2.32 S	1.37 E
362.00	0.43	173.10	361.98	0.40	2.33 S	1.38 E
363.00	0.43	172.85	362.98	0.49	2.33 S	1.38 E
364.00	0.44	172.60	363.98	0.59	2.34 S	1.38 E
365.00	0.43	172.70	364.98	0.68	2.35 S	1.38 E
366.00	0.43	173.00	365.98	0.78	2.36 S	1.38 E
367.00	0.43	173.04	366.98	0.85	2.36 S	1.38 E
368.00	0.43	172.77	367.98	0.89	2.37 S	1.38 E
369.00	0.43	172.43	368.98	0.89	2.38 S	1.38 E
370.00	0.43	171.79	369.98	0.85	2.39 S	1.38 E
371.00	0.43	173.31	370.98	0.78	2.39 S	1.38 E
372.00	0.44	176.54	371.98	0.68	2.40 S	1.38 E
373.00	0.46	181.09	372.98	0.58	2.41 S	1.39 E
374.00	0.50	186.53	373.98	0.48	2.42 S	1.38 E
375.00	0.54	192.53	374.98	0.38	2.43 S	1.38 E
376.00	0.61	198.44	375.98	0.29	2.44 S	1.38 E
377.00	0.67	204.39	376.98	0.20	2.45 S	1.38 E
378.00	0.74	210.36	377.98	0.13	2.46 S	1.37 E
379.00	0.80	216.32	378.98	0.08	2.47 S	1.36 E
380.00	0.87	222.37	379.98	0.05	2.48 S	1.35 E
381.00	0.93	228.66	380.98	0.06	2.49 S	1.34 E
382.00	0.97	232.44	381.98	0.07	2.50 S	1.33 E
383.00	1.00	234.09	382.98	0.08	2.51 S	1.32 E
384.00	1.00	234.15	383.98	0.07	2.52 S	1.30 E
385.00	0.97	232.20	384.98	0.07	2.53 S	1.29 E
386.00	0.93	227.90	385.98	0.07	2.54 S	1.28 E
387.00	0.87	222.29	386.98	0.08	2.55 S	1.26 E
388.00	0.81	215.91	387.98	0.09	2.57 S	1.26 E



A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
389.00	0.75	209.46	388.98	0.12	2.58 S	1.25 E
390.00	0.69	202.68	389.98	0.18	2.59 S	1.24 E
391.00	0.63	195.85	390.98	0.25	2.60 S	1.24 E
392.00	0.58	188.89	391.98	0.32	2.61 S	1.24 E
393.00	0.54	182.83	392.98	0.40	2.62 S	1.24 E
394.00	0.50	177.40	393.98	0.49	2.63 S	1.23 E
395.00	0.49	172.27	394.98	0.57	2.64 S	1.24 E
396.00	0.48	168.33	395.98	0.66	2.64 S	1.24 E
397.00	0.48	166.45	396.98	0.72	2.65 S	1.24 E
398.00	0.48	166.06	397.98	0.75	2.66 S	1.24 E
399.00	0.48	166.31	398.98	0.75	2.67 S	1.24 E
400.00	0.48	166.59	399.98	0.70	2.68 S	1.24 E
401.00	0.49	167.53	400.98	0.62	2.69 S	1.25 E
402.00	0.49	168.66	401.98	0.53	2.69 S	1.25 E
403.00	0.49	170.59	402.98	0.43	2.70 S	1.25 E
404.00	0.49	172.03	403.98	0.34	2.71 S	1.25 E
405.00	0.49	173.46	404.98	0.25	2.72 S	1.25 E
406.00	0.49	175.42	405.98	0.18	2.73 S	1.25 E
407.00	0.49	177.39	406.98	0.11	2.74 S	1.25 E
408.00	0.49	179.35	407.98	0.07	2.74 S	1.25 E
409.00	0.49	181.30	408.98	0.09	2.75 S	1.25 E
410.00	0.50	183.25	409.98	0.12	2.76 S	1.25 E
411.00	0.50	185.26	410.98	0.14	2.77 S	1.25 E
412.00	0.49	186.99	411.98	0.15	2.78 S	1.25 E
413.00	0.49	188.12	412.98	0.15	2.79 S	1.25 E
414.00	0.49	188.71	413.98	0.15	2.80 S	1.25 E
415.00	0.49	189.30	414.98	0.15	2.80 S	1.25 E
416.00	0.49	189.86	415.98	0.15	2.81 S	1.25 E
417.00	0.48	190.18	416.98	0.15	2.82 S	1.25 E
418.00	0.48	190.43	417.98	0.14	2.83 S	1.24 E
419.00	0.48	190.16	418.98	0.14	2.84 S	1.24 E
420.00	0.48	189.38	419.98	0.15	2.85 S	1.24 E
421.00	0.47	188.60	420.98	0.15	2.85 S	1.24 E
422.00	0.47	187.76	421.98	0.16	2.86 S	1.24 E
423.00	0.47	187.12	422.98	0.16	2.87 S	1.24 E
424.00	0.47	186.82	423.98	0.17	2.88 S	1.24 E

DNF/MAL  
No. 7.252  


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032


MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
425.00	0.47	186.24	424.98	0.18	2.89 S	1.24 E
426.00	0.47	185.68	425.98	0.18	2.89 S	1.23 E
427.00	0.47	185.11	426.98	0.19	2.90 S	1.23 E
428.00	0.47	184.60	427.98	0.19	2.91 S	1.23 E
429.00	0.46	184.71	428.98	0.20	2.92 S	1.23 E
430.00	0.47	185.02	429.98	0.20	2.93 S	1.23 E
431.00	0.47	185.59	430.98	0.19	2.94 S	1.23 E
432.00	0.48	186.64	431.98	0.18	2.94 S	1.23 E
433.00	0.48	187.78	432.98	0.17	2.95 S	1.23 E
434.00	0.48	189.07	433.98	0.16	2.96 S	1.23 E
435.00	0.48	190.87	434.98	0.15	2.97 S	1.23 E
436.00	0.48	193.15	435.98	0.15	2.98 S	1.22 E
437.00	0.49	195.68	436.98	0.14	2.98 S	1.22 E
438.00	0.49	198.57	437.98	0.14	2.99 S	1.22 E
439.00	0.49	201.46	438.98	0.14	3.00 S	1.22 E
440.00	0.49	203.70	439.98	0.13	3.01 S	1.21 E
441.00	0.49	206.36	440.98	0.13	3.02 S	1.21 E
442.00	0.48	209.08	441.98	0.13	3.02 S	1.21 E
443.00	0.47	211.09	442.98	0.13	3.03 S	1.20 E
444.00	0.46	212.87	443.98	0.12	3.04 S	1.20 E
445.00	0.45	213.60	444.98	0.12	3.04 S	1.19 E
446.00	0.44	213.13	445.98	0.13	3.05 S	1.19 E
447.00	0.43	212.14	446.98	0.14	3.06 S	1.19 E
448.00	0.41	210.47	447.98	0.14	3.06 S	1.18 E
449.00	0.39	208.17	448.98	0.15	3.07 S	1.18 E
450.00	0.38	206.01	449.98	0.15	3.08 S	1.17 E
451.00	0.37	203.56	450.98	0.17	3.08 S	1.17 E
452.00	0.36	200.43	451.98	0.19	3.09 S	1.17 E
453.00	0.35	197.22	452.98	0.20	3.09 S	1.17 E
454.00	0.35	194.25	453.98	0.22	3.10 S	1.17 E
455.00	0.34	191.40	454.98	0.23	3.11 S	1.16 E
456.00	0.34	189.20	455.98	0.24	3.11 S	1.16 E
457.00	0.34	187.59	456.98	0.24	3.12 S	1.16 E
458.00	0.34	186.27	457.98	0.24	3.12 S	1.16 E
459.00	0.34	185.13	458.98	0.23	3.13 S	1.16 E
460.00	0.34	184.20	459.98	0.23	3.14 S	1.16 E



A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
461.00	0.34	182.71	460.98	0.21	3.14 S	1.16 E
462.00	0.34	181.62	461.98	0.19	3.15 S	1.16 E
463.00	0.34	180.90	462.98	0.17	3.15 S	1.16 E
464.00	0.34	180.36	463.98	0.15	3.16 S	1.16 E
465.00	0.34	179.79	464.98	0.13	3.17 S	1.16 E
466.00	0.34	179.44	465.98	0.11	3.17 S	1.16 E
467.00	0.34	179.28	466.98	0.09	3.18 S	1.16 E
468.00	0.34	179.43	467.98	0.07	3.18 S	1.16 E
469.00	0.34	179.62	468.98	0.06	3.19 S	1.16 E
470.00	0.34	180.13	469.98	0.04	3.19 S	1.16 E
471.00	0.33	181.04	470.98	0.03	3.20 S	1.16 E
472.00	0.33	182.26	471.98	0.02	3.21 S	1.16 E
473.00	0.33	183.51	472.98	0.01	3.21 S	1.16 E
474.00	0.33	184.46	473.98	0.01	3.22 S	1.16 E
475.00	0.33	184.97	474.98	0.02	3.22 S	1.16 E
476.00	0.33	185.45	475.98	0.03	3.23 S	1.16 E
477.00	0.34	185.84	476.98	0.03	3.24 S	1.16 E
478.00	0.34	186.26	477.98	0.03	3.24 S	1.16 E
479.00	0.34	186.50	478.98	0.04	3.25 S	1.16 E
480.00	0.34	186.72	479.98	0.04	3.25 S	1.16 E
481.00	0.34	186.64	480.98	0.04	3.26 S	1.16 E
482.00	0.35	186.12	481.98	0.04	3.26 S	1.15 E
483.00	0.35	185.60	482.98	0.04	3.27 S	1.15 E
484.00	0.35	185.18	483.98	0.04	3.28 S	1.15 E
485.00	0.35	185.13	484.98	0.04	3.28 S	1.15 E
486.00	0.35	185.29	485.98	0.04	3.29 S	1.15 E
487.00	0.35	185.47	486.98	0.04	3.30 S	1.15 E
488.00	0.35	185.68	487.98	0.04	3.30 S	1.15 E
489.00	0.36	185.89	488.98	0.05	3.31 S	1.15 E
490.00	0.36	186.09	489.98	0.06	3.31 S	1.15 E
491.00	0.36	186.11	490.98	0.06	3.32 S	1.15 E
492.00	0.36	185.70	491.98	0.07	3.33 S	1.15 E
493.00	0.36	185.40	492.98	0.07	3.33 S	1.15 E
494.00	0.36	185.39	493.98	0.08	3.34 S	1.15 E
495.00	0.36	185.29	494.98	0.09	3.34 S	1.15 E
496.00	0.36	185.32	495.98	0.09	3.35 S	1.15 E

DNPV/AL  
Fls. 7254  


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
497.00	0.36	185.37	496.98	0.10	3.36 S	1.15 E
498.00	0.36	185.12	497.98	0.10	3.36 S	1.15 E
499.00	0.36	184.50	498.98	0.10	3.37 S	1.14 E
500.00	0.37	183.82	499.98	0.11	3.38 S	1.14 E
501.00	0.37	182.92	500.98	0.12	3.38 S	1.14 E
502.00	0.37	182.00	501.98	0.12	3.39 S	1.14 E
503.00	0.37	181.63	502.98	0.13	3.40 S	1.14 E
504.00	0.37	181.04	503.98	0.14	3.40 S	1.14 E
505.00	0.38	180.08	504.98	0.15	3.41 S	1.14 E
506.00	0.38	179.55	505.98	0.16	3.42 S	1.14 E
507.00	0.39	179.20	506.98	0.16	3.42 S	1.14 E
508.00	0.39	178.52	507.98	0.17	3.43 S	1.14 E
509.00	0.39	177.52	508.98	0.17	3.44 S	1.14 E
510.00	0.40	176.72	509.98	0.18	3.44 S	1.14 E
511.00	0.41	176.06	510.98	0.18	3.45 S	1.14 E
512.00	0.41	175.22	511.98	0.19	3.46 S	1.14 E
513.00	0.42	174.63	512.98	0.20	3.46 S	1.15 E
514.00	0.42	174.38	513.98	0.20	3.47 S	1.15 E
515.00	0.43	173.96	514.98	0.20	3.48 S	1.15 E
516.00	0.44	173.42	515.98	0.19	3.49 S	1.15 E
517.00	0.44	172.88	516.98	0.18	3.49 S	1.15 E
518.00	0.45	172.37	517.98	0.18	3.50 S	1.15 E
519.00	0.46	171.92	518.98	0.18	3.51 S	1.15 E
520.00	0.46	171.47	519.98	0.18	3.52 S	1.15 E
521.00	0.47	171.05	520.98	0.17	3.53 S	1.15 E
522.00	0.48	170.61	521.98	0.17	3.53 S	1.15 E
523.00	0.49	170.35	522.98	0.17	3.54 S	1.16 E
524.00	0.49	170.02	523.98	0.16	3.55 S	1.16 E
525.00	0.50	169.52	524.98	0.14	3.56 S	1.16 E
526.00	0.50	168.86	525.98	0.14	3.57 S	1.16 E
527.00	0.51	168.49	526.98	0.13	3.58 S	1.16 E
528.00	0.51	168.18	527.98	0.13	3.58 S	1.16 E
529.00	0.52	167.59	528.98	0.12	3.59 S	1.17 E
530.00	0.52	167.32	529.98	0.11	3.60 S	1.17 E
531.00	0.52	167.32	530.98	0.10	3.61 S	1.17 E
532.00	0.52	167.29	531.98	0.10	3.62 S	1.17 E



DNF/AL  
Fls. 7.255  
[Signature]

A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
533.00	0.52	167.15	532.98	0.09	3.63 S	1.17 E
534.00	0.52	167.14	533.98	0.08	3.64 S	1.18 E
535.00	0.53	167.24	534.98	0.07	3.65 S	1.18 E
536.00	0.53	167.34	535.98	0.07	3.66 S	1.18 E
537.00	0.53	167.59	536.98	0.06	3.66 S	1.18 E
538.00	0.53	167.52	537.98	0.06	3.67 S	1.18 E
539.00	0.53	167.58	538.98	0.06	3.68 S	1.19 E
540.00	0.53	168.12	539.98	0.06	3.69 S	1.19 E
541.00	0.53	168.38	540.98	0.05	3.70 S	1.19 E
542.00	0.53	168.43	541.98	0.04	3.71 S	1.19 E
543.00	0.53	168.48	542.98	0.04	3.72 S	1.19 E
544.00	0.53	168.85	543.98	0.03	3.73 S	1.20 E
545.00	0.53	168.79	544.98	0.02	3.74 S	1.20 E
546.00	0.53	168.49	545.98	0.02	3.75 S	1.20 E
547.00	0.53	168.15	546.98	0.02	3.75 S	1.20 E
548.00	0.53	167.87	547.98	0.02	3.76 S	1.20 E
549.00	0.53	167.98	548.98	0.03	3.77 S	1.20 E
550.00	0.53	168.12	549.98	0.05	3.78 S	1.21 E
551.00	0.53	167.85	550.98	0.07	3.79 S	1.21 E
552.00	0.54	167.60	551.98	0.09	3.80 S	1.21 E
553.00	0.54	167.41	552.98	0.10	3.81 S	1.21 E
554.00	0.54	167.22	553.98	0.11	3.82 S	1.21 E
555.00	0.55	166.61	554.98	0.12	3.83 S	1.22 E
556.00	0.55	166.63	555.98	0.14	3.84 S	1.22 E
557.00	0.54	166.63	556.98	0.14	3.85 S	1.22 E
558.00	0.54	166.62	557.98	0.16	3.86 S	1.22 E
559.00	0.54	166.57	558.98	0.16	3.86 S	1.23 E
560.00	0.54	166.31	559.98	0.16	3.87 S	1.23 E
561.00	0.53	165.84	560.98	0.16	3.88 S	1.23 E
562.00	0.52	165.51	561.98	0.16	3.89 S	1.23 E
563.00	0.51	165.17	562.98	0.16	3.90 S	1.23 E
564.00	0.50	164.73	563.98	0.16	3.91 S	1.24 E
565.00	0.48	164.18	564.98	0.17	3.92 S	1.24 E
566.00	0.47	164.20	565.98	0.17	3.93 S	1.24 E
567.00	0.46	163.22	566.98	0.17	3.93 S	1.24 E
568.00	0.44	162.64	567.98	0.18	3.94 S	1.25 E


A Gyrodata Directional Survey

BRASKEM  
Well: Mina 01  
Location: RIGLESS, SAL GEMA  
Job Number: BZ0419GVC032

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
569.00	0.43	162.28	568.98	0.18	3.95 S	1.25 E
570.00	0.42	161.75	569.98	0.19	3.96 S	1.25 E
571.00	0.41	160.88	570.98	0.19	3.96 S	1.25 E
572.00	0.40	160.22	571.98	0.20	3.97 S	1.26 E
573.00	0.39	159.76	572.98	0.20	3.98 S	1.26 E
574.00	0.39	159.52	573.98	0.21	3.98 S	1.26 E
575.00	0.39	159.40	574.98	0.22	3.99 S	1.26 E
576.00	0.39	159.21	575.98	0.22	3.99 S	1.26 E
577.00	0.39	158.40	576.98	0.22	4.00 S	1.27 E
578.00	0.39	158.80	577.98	0.22	4.01 S	1.27 E
579.00	0.39	158.76	578.98	0.21	4.01 S	1.27 E
580.00	0.38	158.23	579.98	0.22	4.02 S	1.27 E
581.00	0.38	158.17	580.98	0.22	4.03 S	1.28 E
582.00	0.38	158.80	581.98	0.22	4.03 S	1.28 E
583.00	0.38	158.91	582.98	0.23	4.04 S	1.28 E
584.00	0.38	158.92	583.98	0.23	4.04 S	1.28 E
585.00	0.37	158.89	584.98	0.24	4.05 S	1.29 E
586.00	0.36	158.99	585.98	0.00	4.06 S	1.29 E
587.00	0.35	159.43	586.98	0.00	4.06 S	1.29 E
588.00	0.35	160.38	587.98	0.00	4.07 S	1.29 E
589.00	0.33	161.05	588.98	0.00	4.07 S	1.30 E
590.00	0.33	161.76	589.98	0.00	4.08 S	1.30 E
591.00	0.32	162.84	590.98	0.00	4.08 S	1.30 E
592.00	0.31	164.05	591.98	0.00	4.09 S	1.30 E
593.00	0.30	165.36	592.98	0.00	4.09 S	1.30 E
594.00	0.28	167.20	593.98	0.00	4.10 S	1.30 E
595.00	0.27	168.90	594.98	0.00	4.10 S	1.30 E
596.00	0.26	173.38	595.98	0.00	4.11 S	1.30 E
597.00	0.24	172.27	596.98	0.00	4.11 S	1.30 E
598.00	0.23	177.21	597.98	0.00	4.12 S	1.31 E
599.00	0.22	177.77	598.98	0.00	4.12 S	1.31 E
600.00	0.21	183.83	599.98	0.00	4.12 S	1.31 E


Final Station Closure: Distance: 4.33 m Az: 162.44 deg.




DNF VIAL  
Fis. 7.257  


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



DNFV/AL  
Fls. 7.259  


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


ORIGINAL  
Fls. 7260  


**6.0 RELATÓRIO CRONOLÓGICO DA OPERAÇÃO**

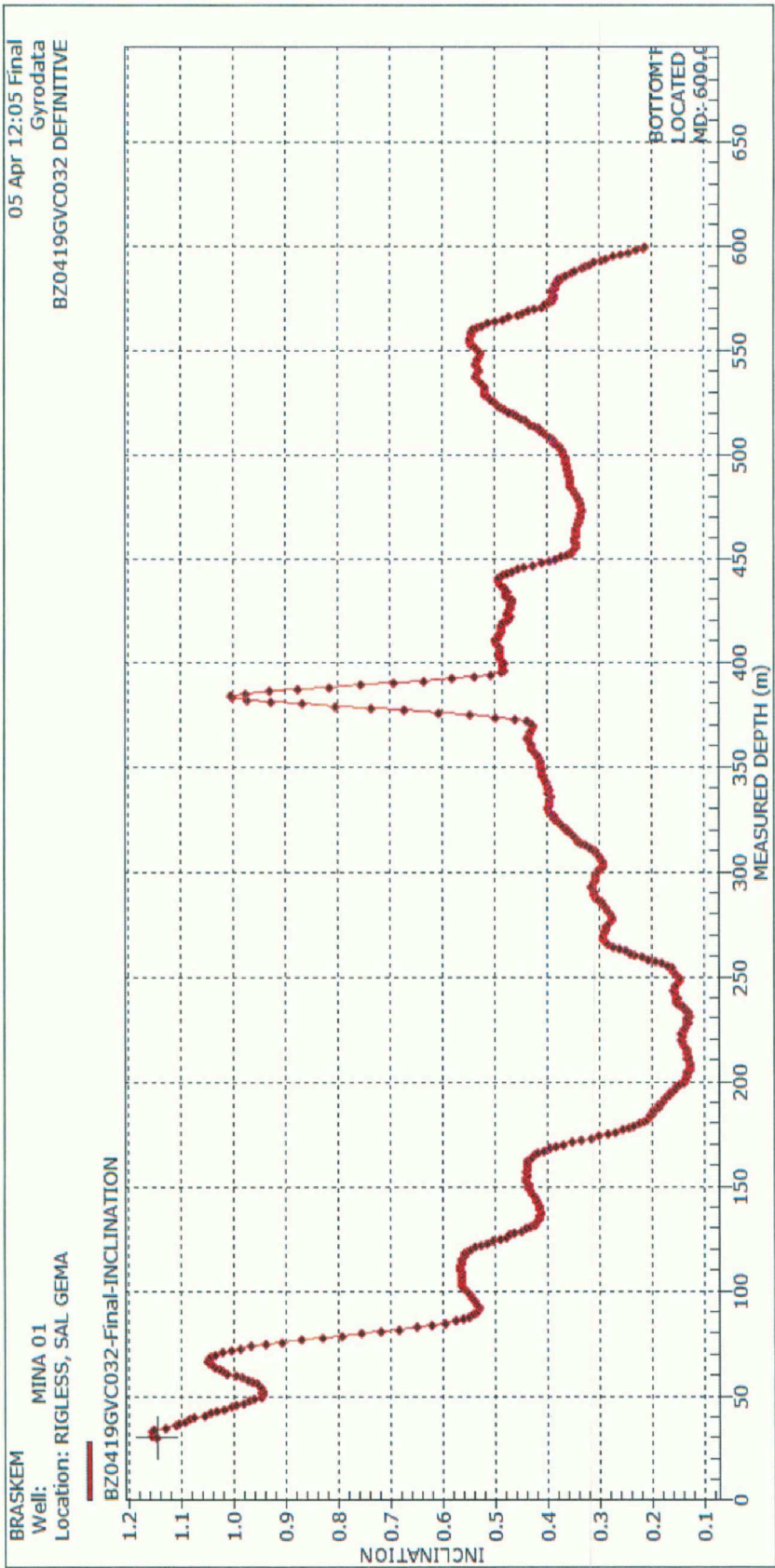
**04 de abril de 2019**


- 15:10 Chegada da equipe na mina 01
- 15:20 Conexão gyrodata/flodim
- 15:55 Inicio corrida mina 01
- 18:00 Desmontagem de equipamentos
- 18:30 Saída mina 01
- 19:00 pós calibração

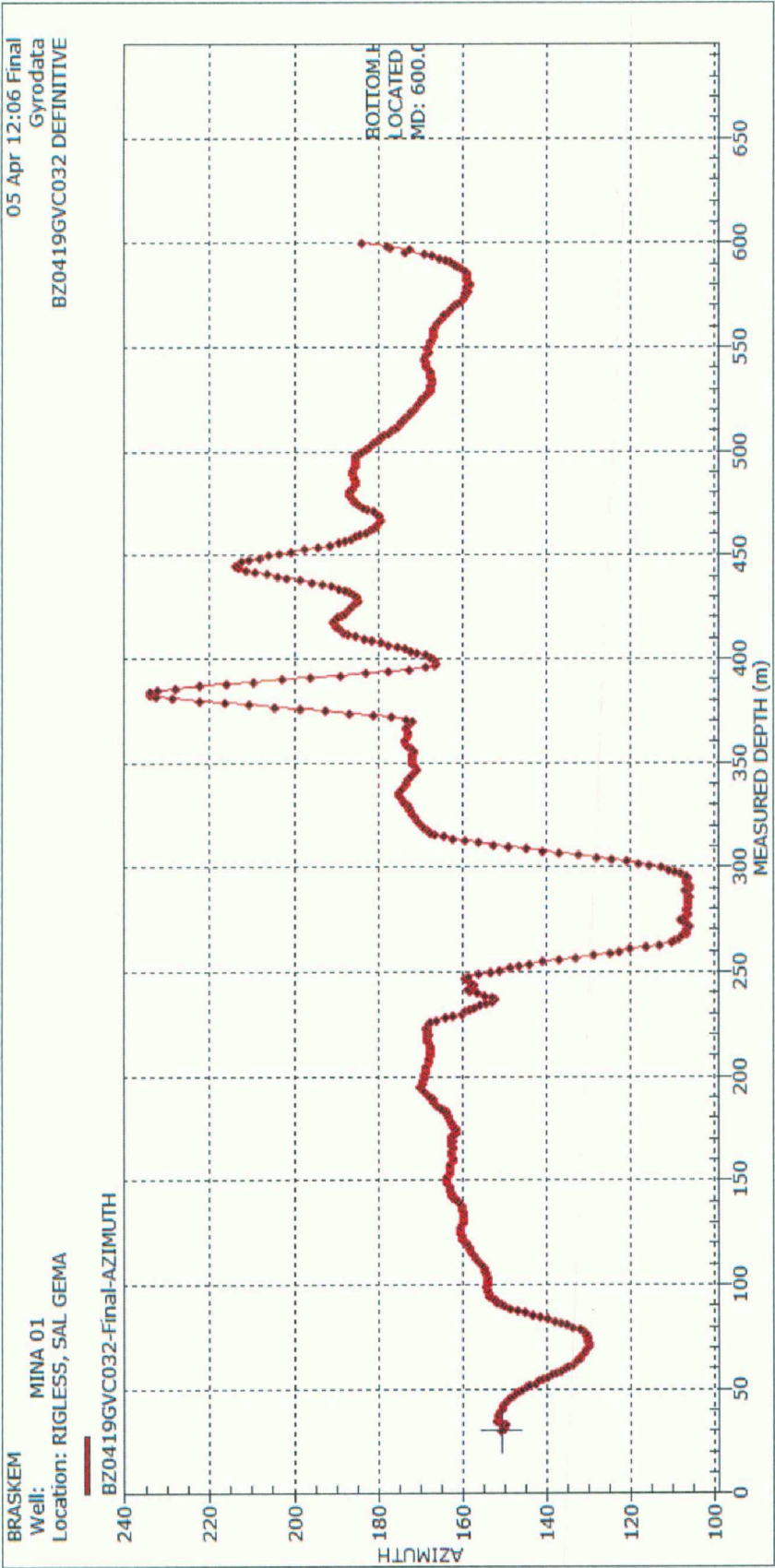


DNPM/AL  
Fls. 7.261  



**Parte 7**  
**Gráficos**

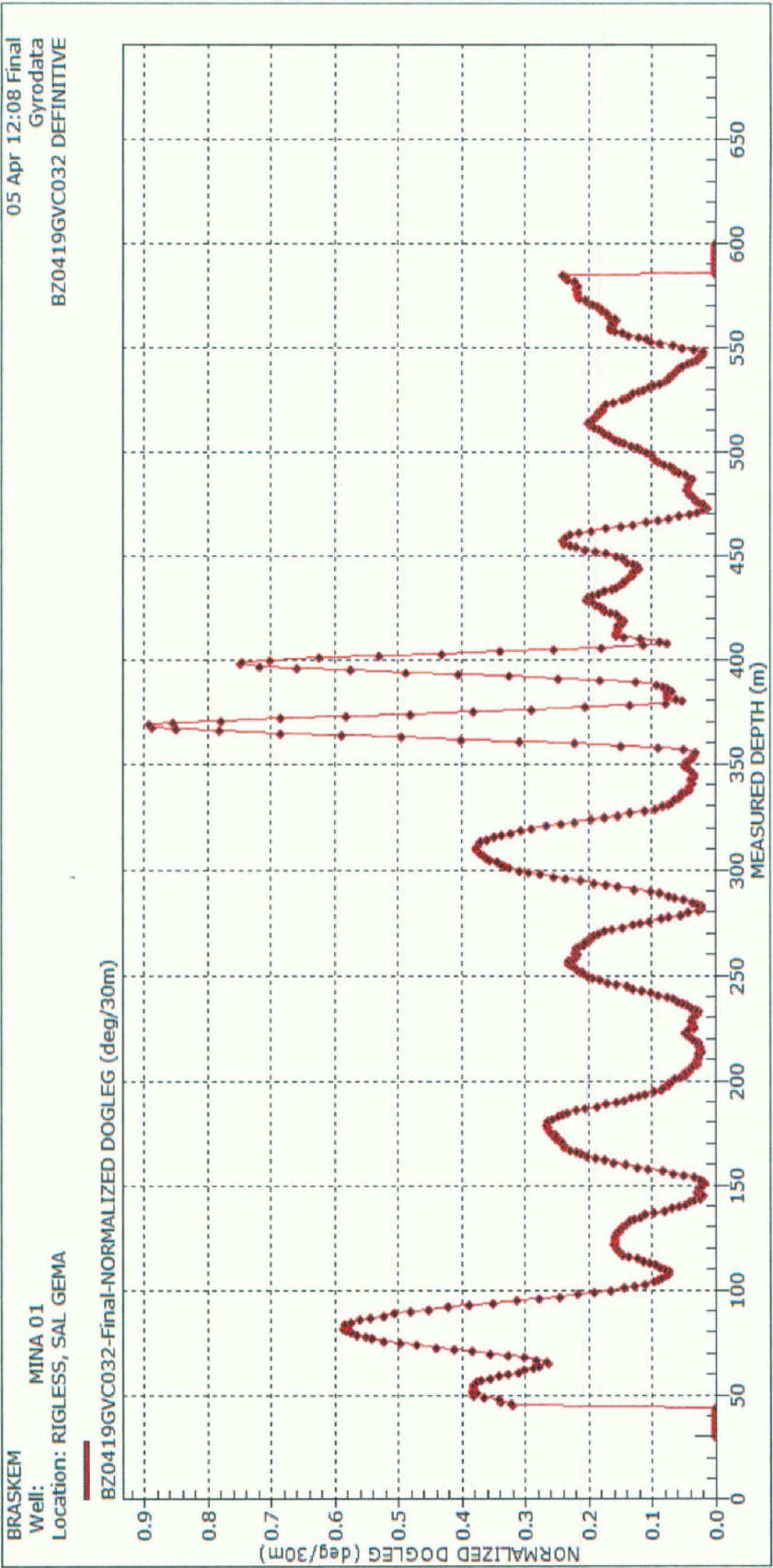


DNF VIAL  
Fig. 7.263  


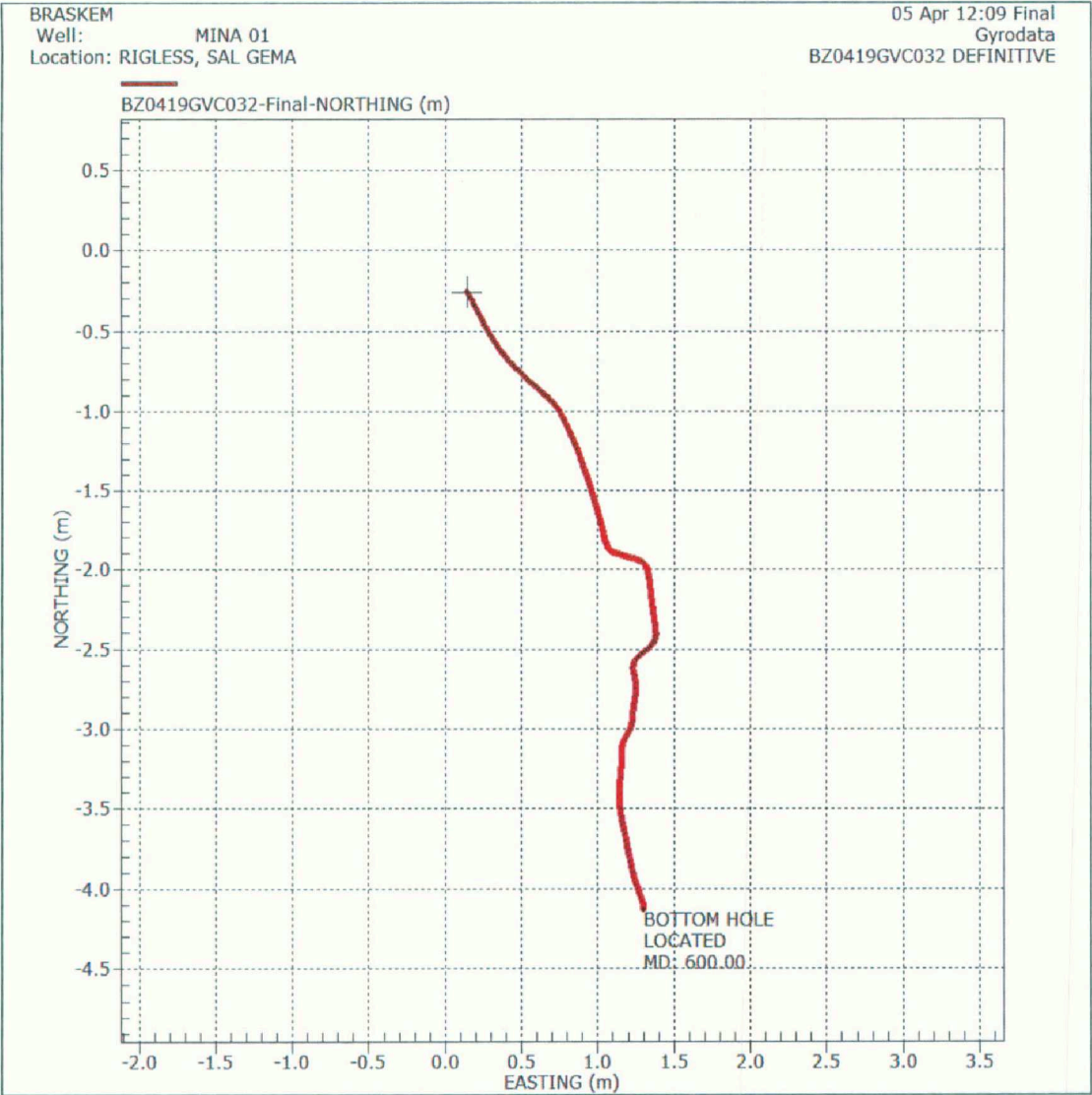




DNFVIAL  
Fis. 7264  




DNF VIAL  
Fls. 7-265



DNFVAL  
Fis. 7.266  
[assinatura]



**Braskem**

Campo: Sal Gema

Poço: Mina 16

Gyro Multshot Contínuo

Data da Amostragem: 5 de Abril de 2019

**Número de Trabalho: BZ0419GVC033**



ORIGINAL  
Fis. 7.267  
*[Signature]*

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