

Relatório de Amostragem Mina 20



A Gyrodata Directional Survey

BRASKEM
Well: Mina 20, 7"
Location: NO RIG
Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
80.38	4.90	233.39	80.29	2.59	2.44 S	1.61W
82.38	5.06	233.75	82.29	2.68	2.54 S	1.75W
84.37	5.27	233.37	84.27	2.75	2.65 S	1.90W
86.37	5.56	234.00	86.26	2.71	2.76 S	2.05W
88.37	5.79	234.73	88.25	2.68	2.87 S	2.21W
90.00	5.86	235.04	89.87	2.59	2.97 S	2.35W
92.36	6.02	235.47	92.22	2.68	3.11 S	2.55W
94.35	6.12	236.15	94.20	2.81	3.22 S	2.72W
96.35	6.28	236.80	96.19	2.89	3.34 S	2.90W
98.35	6.49	238.57	98.17	2.86	3.46 S	3.09W
100.34	6.66	239.26	100.15	2.79	3.58 S	3.28W
102.34	6.74	240.57	102.14	2.57	3.70 S	3.49W
104.34	6.86	241.64	104.12	2.43	3.81 S	3.69W
106.33	6.92	243.57	106.10	2.40	3.92 S	3.91W
108.33	7.10	246.60	108.08	2.31	4.02 S	4.13W
110.33	7.31	248.48	110.07	2.15	4.12 S	4.36W
112.32	7.43	250.08	112.04	1.96	4.21 S	4.60W
114.32	7.50	250.75	114.02	1.63	4.30 S	4.84W
116.32	7.49	251.55	116.01	1.49	4.38 S	5.09W
118.31	7.50	251.22	117.98	1.53	4.46 S	5.34W
120.31	7.60	250.75	119.96	1.55	4.55 S	5.58W
122.31	7.69	250.73	121.95	1.73	4.64 S	5.83W
124.30	7.71	250.63	123.92	1.92	4.73 S	6.09W
126.30	7.75	249.61	125.90	2.17	4.82 S	6.34W
128.29	7.83	248.29	127.87	2.62	4.91 S	6.59W
130.29	7.96	245.87	129.85	2.87	5.02 S	6.84W
132.29	8.18	242.88	131.83	3.04	5.14 S	7.10W
134.28	8.37	241.00	133.80	3.08	5.28 S	7.35W
136.28	8.50	240.15	135.78	3.11	5.42 S	7.61W
138.28	8.67	239.32	137.76	3.32	5.57 S	7.86W
140.27	8.85	238.90	139.72	3.60	5.73 S	8.12W
142.27	9.14	238.58	141.70	3.76	5.89 S	8.39W
144.27	9.59	238.01	143.67	3.75	6.06 S	8.67W
146.26	9.88	237.92	145.63	3.63	6.24 S	8.95W
148.26	10.04	238.26	147.60	3.50	6.42 S	9.25W
150.00	10.12	238.44	149.32	3.52	6.58 S	9.51W

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152.25	10.35	238.71	151.53	3.63	6.79 S	9.85W
154.25	10.70	238.98	153.50	3.65	6.98 S	10.16W
156.25	11.13	239.78	155.46	3.60	7.17 S	10.49W
158.24	11.43	239.94	157.41	3.47	7.37 S	10.82W
160.24	11.58	240.01	159.37	3.18	7.57 S	11.17W
162.23	11.69	239.85	161.32	3.16	7.77 S	11.51W
164.23	11.87	239.75	163.28	3.36	7.97 S	11.87W
165.23	11.99	239.38	164.26	3.55	8.08 S	12.05W
166.23	12.11	239.21	165.24	3.56	8.19 S	12.23W
167.23	12.23	238.77	166.21	3.54	8.29 S	12.41W
168.22	12.35	238.35	167.18	3.59	8.40 S	12.59W
169.22	12.45	238.08	168.16	3.53	8.52 S	12.77W
170.22	12.54	237.56	169.13	3.46	8.63 S	12.95W
171.22	12.62	237.22	170.11	3.40	8.75 S	13.13W
172.22	12.67	236.95	171.09	3.37	8.87 S	13.32W
173.22	12.74	236.54	172.06	3.28	8.99 S	13.50W
174.21	12.81	236.17	173.03	3.29	9.11 S	13.68W
175.21	12.86	235.82	174.00	3.34	9.24 S	13.87W
176.21	12.93	235.10	174.98	3.44	9.36 S	14.05W
177.21	13.02	234.74	175.95	3.38	9.49 S	14.24W
178.21	13.13	233.48	176.93	3.45	9.62 S	14.42W
179.20	13.24	232.46	177.89	3.33	9.76 S	14.60W
180.20	13.36	231.65	178.86	3.39	9.90 S	14.78W
181.20	13.49	231.00	179.83	3.27	10.05 S	14.96W
182.20	13.56	230.19	180.81	3.24	10.19 S	15.14W
183.20	13.63	229.86	181.78	3.06	10.35 S	15.32W
184.20	13.69	229.67	182.75	2.97	10.50 S	15.50W
185.19	13.73	229.52	183.71	2.90	10.65 S	15.68W
186.19	13.75	229.18	184.68	2.78	10.80 S	15.86W
187.19	13.79	228.98	185.66	2.71	10.96 S	16.04W
188.19	13.84	228.84	186.63	2.67	11.12 S	16.22W
189.19	13.92	229.20	187.60	2.60	11.27 S	16.40W
190.19	14.00	229.02	188.57	2.58	11.43 S	16.59W
191.18	14.09	228.43	189.53	2.56	11.59 S	16.77W
192.18	14.13	228.12	190.50	2.48	11.75 S	16.95W
193.18	14.16	227.92	191.47	2.46	11.92 S	17.13W

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194.18	14.19	227.76	192.44	2.23	12.08 S	17.31W
195.18	14.19	227.82	193.41	2.07	12.25 S	17.49W
196.17	14.21	227.48	194.37	1.87	12.41 S	17.67W
197.17	14.19	227.43	195.34	1.73	12.58 S	17.85W
198.17	14.20	227.09	196.31	1.59	12.74 S	18.03W
199.17	14.22	227.47	197.27	1.51	12.91 S	18.21W
200.17	14.22	227.20	198.24	1.45	13.08 S	18.39W
201.17	14.27	227.24	199.21	1.43	13.24 S	18.57W
202.16	14.27	227.14	200.17	1.38	13.41 S	18.75W
203.16	14.27	227.01	201.14	1.37	13.58 S	18.93W
204.16	14.27	226.86	202.11	1.34	13.74 S	19.11W
205.16	14.31	226.76	203.08	1.30	13.91 S	19.29W
206.16	14.40	226.60	204.05	1.25	14.08 S	19.47W
207.16	14.54	226.73	205.02	1.15	14.25 S	19.66W
208.15	14.70	226.90	205.98	1.12	14.43 S	19.84W
209.15	14.84	226.91	206.94	1.11	14.60 S	20.02W
210.15	14.92	227.02	207.91	1.09	14.78 S	20.21W
211.15	14.98	226.90	208.87	1.11	14.95 S	20.40W
212.15	15.03	227.19	209.84	1.12	15.13 S	20.59W
213.14	15.06	227.07	210.80	1.16	15.30 S	20.78W
214.14	15.07	227.05	211.76	1.19	15.48 S	20.97W
215.14	15.10	227.22	212.73	1.16	15.66 S	21.16W
216.14	15.11	227.27	213.69	1.17	15.83 S	21.35W
217.14	15.14	227.22	214.66	1.13	16.01 S	21.54W
218.14	15.15	227.35	215.62	1.15	16.19 S	21.73W
219.13	15.19	227.33	216.58	1.15	16.36 S	21.93W
220.13	15.21	227.31	217.54	1.14	16.54 S	22.12W
221.13	15.23	227.41	218.51	1.10	16.72 S	22.31W
222.13	15.27	227.46	219.47	1.05	16.90 S	22.51W
223.13	15.30	227.71	220.44	0.87	17.07 S	22.70W
224.13	15.32	227.64	221.40	0.77	17.25 S	22.89W
225.12	15.34	227.77	222.36	0.66	17.43 S	23.09W
226.12	15.35	227.97	223.32	0.59	17.61 S	23.28W
227.12	15.37	228.01	224.29	0.58	17.78 S	23.48W
228.12	15.40	227.98	225.25	0.55	17.96 S	23.68W
229.12	15.40	228.31	226.21	0.56	18.14 S	23.88W

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230.11	15.43	228.20	227.17	0.59	18.31 S	24.07W
231.11	15.44	228.14	228.13	0.58	18.49 S	24.27W
232.11	15.44	228.23	229.10	0.67	18.67 S	24.47W
233.11	15.45	228.23	230.06	0.71	18.85 S	24.67W
234.11	15.45	228.37	231.02	0.73	19.02 S	24.87W
235.11	15.42	228.60	231.99	0.77	19.20 S	25.07W
236.10	15.40	228.56	232.94	0.80	19.37 S	25.26W
237.10	15.37	228.66	233.91	0.82	19.55 S	25.46W
238.10	15.35	228.88	234.87	0.82	19.72 S	25.66W
239.10	15.32	228.66	235.84	0.84	19.90 S	25.86W
240.00	15.32	228.93	236.70	0.89	20.05 S	26.04W
241.09	15.29	228.99	237.76	0.92	20.24 S	26.26W
242.09	15.28	229.01	238.72	1.00	20.42 S	26.46W
243.09	15.27	229.01	239.68	1.11	20.59 S	26.65W
244.09	15.26	229.26	240.65	1.17	20.76 S	26.85W
245.09	15.21	229.26	241.61	1.23	20.93 S	27.05W
246.09	15.13	229.44	242.58	1.27	21.10 S	27.25W
247.08	15.05	229.59	243.54	1.30	21.27 S	27.45W
248.08	14.91	229.90	244.50	1.31	21.44 S	27.64W
249.08	14.85	229.93	245.47	1.31	21.60 S	27.84W
250.08	14.81	230.04	246.43	1.31	21.77 S	28.04W
251.08	14.75	230.03	247.40	1.25	21.93 S	28.23W
252.08	14.74	230.08	248.37	1.22	22.09 S	28.43W
253.07	14.70	230.12	249.33	1.25	22.26 S	28.62W
254.07	14.68	229.95	250.29	1.21	22.42 S	28.82W
255.07	14.66	230.10	251.26	1.24	22.58 S	29.01W
256.07	14.57	230.10	252.23	1.22	22.74 S	29.20W
257.07	14.53	229.91	253.20	1.18	22.91 S	29.40W
258.06	14.47	230.30	254.15	1.14	23.06 S	29.59W
259.06	14.39	230.60	255.12	1.12	23.22 S	29.78W
260.06	14.34	230.54	256.09	1.03	23.38 S	29.97W
261.06	14.24	230.67	257.06	1.02	23.54 S	30.16W
262.06	14.22	230.56	258.03	0.96	23.69 S	30.35W
263.06	14.20	230.55	259.00	0.92	23.85 S	30.54W
264.05	14.20	230.69	259.96	0.88	24.00 S	30.73W
265.05	14.19	230.55	260.93	0.90	24.16 S	30.92W

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266.05	14.18	230.59	261.90	0.90	24.31 S	31.11W
267.05	14.20	230.63	262.87	0.88	24.47 S	31.30W
268.05	14.19	230.46	263.84	0.84	24.63 S	31.48W
269.05	14.19	231.04	264.81	0.81	24.78 S	31.67W
270.04	14.17	230.91	265.77	0.78	24.93 S	31.86W
271.04	14.15	231.04	266.74	0.75	25.09 S	32.05W
272.04	14.14	231.12	267.71	0.63	25.24 S	32.24W
273.04	14.16	231.13	268.68	0.56	25.39 S	32.43W
274.04	14.17	230.90	269.65	0.47	25.55 S	32.62W
275.03	14.20	231.09	270.61	0.37	25.70 S	32.81W
276.03	14.22	230.65	271.57	0.31	25.86 S	33.00W
277.03	14.18	230.61	272.54	0.23	26.01 S	33.19W
278.03	14.13	230.32	273.51	0.22	26.17 S	33.38W
279.03	14.08	230.15	274.48	0.18	26.32 S	33.57W
280.03	13.97	229.89	275.45	0.19	26.48 S	33.75W
281.02	13.89	229.75	276.41	0.18	26.63 S	33.94W
282.02	13.85	229.77	277.39	0.14	26.79 S	34.12W
283.02	13.81	229.79	278.36	0.19	26.94 S	34.30W
284.02	13.85	230.30	279.33	0.20	27.10 S	34.48W
285.02	13.85	230.60	280.30	0.17	27.25 S	34.67W
286.02	13.87	230.69	281.27	0.15	27.40 S	34.85W
287.01	13.87	230.54	282.23	0.13	27.55 S	35.04W
288.01	13.92	230.77	283.20	0.11	27.70 S	35.22W
289.01	13.95	230.46	284.17	0.14	27.86 S	35.41W
290.01	13.97	230.37	285.14	0.08	28.01 S	35.60W
291.01	14.00	230.81	286.11	0.10	28.16 S	35.78W
292.00	14.02	230.89	287.07	0.11	28.31 S	35.97W
293.00	14.00	230.70	288.04	0.09	28.47 S	36.16W
294.00	13.99	230.80	289.01	0.19	28.62 S	36.34W
295.00	14.01	230.75	289.98	0.19	28.77 S	36.53W
296.00	14.01	230.92	290.95	0.24	28.93 S	36.72W
297.00	14.01	230.82	291.92	0.31	29.08 S	36.91W
297.99	14.03	230.73	292.88	0.34	29.23 S	37.09W
298.99	14.01	230.94	293.86	0.34	29.38 S	37.28W
299.99	14.02	231.01	294.83	0.26	29.54 S	37.47W
300.99	14.01	230.86	295.80	0.20	29.69 S	37.66W

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301.99	14.01	230.97	296.77	0.19	29.84 S	37.84W
302.99	14.01	230.95	297.74	0.23	29.99 S	38.03W
303.98	14.04	230.89	298.70	0.18	30.14 S	38.22W
304.98	14.05	230.70	299.67	0.26	30.30 S	38.41W
305.98	14.09	230.97	300.64	0.33	30.45 S	38.59W
306.98	14.12	230.81	301.61	0.26	30.61 S	38.78W
307.98	14.13	230.94	302.58	0.32	30.76 S	38.97W
308.97	14.14	230.96	303.54	0.41	30.91 S	39.16W
309.97	14.12	231.13	304.51	0.45	31.07 S	39.35W
310.97	14.09	231.00	305.48	0.54	31.22 S	39.54W
311.97	14.05	230.88	306.45	0.55	31.37 S	39.73W
312.97	14.04	230.95	307.42	0.61	31.52 S	39.92W
313.97	14.01	231.11	308.39	0.68	31.68 S	40.11W
314.96	14.00	231.09	309.35	0.68	31.83 S	40.29W
315.96	13.99	231.28	310.32	0.70	31.98 S	40.48W
316.96	14.00	231.22	311.29	0.75	32.13 S	40.67W
317.96	13.99	231.37	312.26	0.72	32.28 S	40.86W
318.96	13.98	231.46	313.23	0.71	32.43 S	41.05W
319.96	13.95	231.54	314.20	0.71	32.58 S	41.24W
320.95	13.94	231.60	315.16	0.73	32.73 S	41.42W
321.95	13.87	231.78	316.13	0.72	32.88 S	41.61W
322.95	13.83	231.73	317.10	0.76	33.03 S	41.80W
323.95	13.80	232.00	318.07	0.76	33.18 S	41.99W
324.95	13.74	232.14	319.04	0.77	33.32 S	42.17W
325.94	13.69	232.38	320.00	0.72	33.47 S	42.36W
326.94	13.64	232.62	320.98	0.73	33.61 S	42.55W
327.94	13.59	232.64	321.95	0.70	33.75 S	42.73W
328.94	13.53	232.69	322.92	0.66	33.89 S	42.92W
329.94	13.48	232.74	323.89	0.59	34.04 S	43.11W
330.94	13.43	232.78	324.87	0.61	34.18 S	43.29W
331.93	13.38	232.63	325.83	0.55	34.32 S	43.48W
332.93	13.36	232.79	326.80	0.58	34.46 S	43.66W
333.93	13.35	232.63	327.77	0.59	34.60 S	43.84W
334.93	13.35	232.50	328.75	0.60	34.74 S	44.03W
335.93	13.38	232.49	329.72	0.59	34.88 S	44.21W
336.93	13.41	232.55	330.69	0.58	35.02 S	44.39W

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337.92	13.43	232.65	331.66	0.52	35.16 S	44.58W
338.92	13.45	232.74	332.63	0.49	35.30 S	44.76W
339.92	13.45	232.81	333.60	0.44	35.44 S	44.95W
340.92	13.46	232.85	334.57	0.38	35.58 S	45.13W
341.92	13.46	232.76	335.55	0.30	35.72 S	45.32W
342.91	13.46	232.91	336.51	0.23	35.86 S	45.50W
343.91	13.48	232.89	337.48	0.20	36.00 S	45.69W
344.91	13.50	232.83	338.45	0.13	36.14 S	45.87W
345.91	13.52	232.75	339.43	0.07	36.28 S	46.06W
346.91	13.51	232.85	340.40	0.05	36.42 S	46.24W
347.91	13.51	232.66	341.37	0.03	36.56 S	46.43W
348.90	13.48	232.62	342.33	0.06	36.70 S	46.61W
349.90	13.44	232.66	343.31	0.11	36.85 S	46.80W
350.90	13.41	232.69	344.28	0.15	36.99 S	46.98W
351.90	13.40	232.78	345.25	0.13	37.13 S	47.17W
352.90	13.37	232.65	346.22	0.10	37.27 S	47.35W
353.90	13.37	232.76	347.20	0.04	37.41 S	47.54W
354.89	13.36	232.70	348.16	0.02	37.55 S	47.72W
355.89	13.36	232.63	349.13	0.02	37.69 S	47.90W
356.89	13.36	232.75	350.11	0.05	37.83 S	48.09W
357.89	13.38	232.63	351.08	0.05	37.97 S	48.27W
358.89	13.40	232.78	352.05	0.07	38.11 S	48.45W
359.88	13.38	232.56	353.02	0.08	38.25 S	48.64W
360.88	13.40	232.46	353.99	0.09	38.39 S	48.82W
361.88	13.41	232.59	354.96	0.06	38.53 S	49.00W
362.88	13.40	232.59	355.93	0.08	38.67 S	49.19W
363.88	13.41	232.72	356.91	0.06	38.81 S	49.37W
364.88	13.42	232.74	357.88	0.09	38.95 S	49.56W
365.87	13.44	232.96	358.84	0.14	39.09 S	49.74W
366.87	13.45	233.06	359.81	0.23	39.23 S	49.93W
367.87	13.45	232.99	360.79	0.31	39.37 S	50.11W
368.87	13.45	232.99	361.76	0.35	39.51 S	50.30W
369.87	13.46	232.77	362.73	0.44	39.65 S	50.48W
370.86	13.44	232.65	363.70	0.48	39.79 S	50.67W
371.86	13.45	232.72	364.67	0.50	39.93 S	50.85W
372.86	13.48	232.62	365.64	0.54	40.07 S	51.04W

Relatório de Amostragem Mina 20

A Gyrodata Directional Survey

BRASKEM
Well: Mina 20, 7"
Location: NO RIG
Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
373.86	13.49	232.58	366.61	0.54	40.21 S	51.22W
374.86	13.52	232.72	367.59	0.53	40.35 S	51.41W
375.86	13.54	232.60	368.56	0.48	40.50 S	51.59W
376.85	13.54	232.48	369.52	0.44	40.64 S	51.78W
377.85	13.54	232.50	370.49	0.44	40.78 S	51.96W
378.85	13.52	232.47	371.46	0.37	40.92 S	52.15W
379.85	13.51	232.39	372.44	0.38	41.06 S	52.33W
380.85	13.49	232.22	373.41	0.34	41.21 S	52.52W
381.85	13.50	232.09	374.38	0.36	41.35 S	52.70W
382.84	13.44	231.65	375.34	0.35	41.49 S	52.88W
383.84	13.40	231.36	376.32	0.32	41.64 S	53.07W
384.84	13.33	231.03	377.29	0.32	41.78 S	53.25W
385.84	13.25	230.78	378.26	0.31	41.93 S	53.42W
386.84	13.24	230.55	379.24	0.23	42.07 S	53.60W
387.83	13.21	230.40	380.20	0.24	42.22 S	53.78W
388.83	13.21	230.33	381.17	0.26	42.36 S	53.95W
389.83	13.22	230.25	382.15	0.31	42.51 S	54.13W
390.83	13.22	230.45	383.12	0.42	42.65 S	54.30W
391.83	13.22	230.47	384.09	0.53	42.80 S	54.48W
392.83	13.22	230.60	385.07	0.61	42.94 S	54.66W
393.82	13.22	230.75	386.03	0.62	43.09 S	54.83W
394.82	13.23	231.05	387.00	0.61	43.23 S	55.01W
395.82	13.24	231.12	387.98	0.61	43.38 S	55.19W
396.82	13.24	231.39	388.95	0.58	43.52 S	55.37W
397.82	13.25	231.51	389.93	0.56	43.66 S	55.55W
398.82	13.24	231.73	390.90	0.53	43.80 S	55.73W
399.81	13.24	231.85	391.86	0.48	43.94 S	55.90W
400.81	13.22	231.89	392.84	0.48	44.09 S	56.08W
401.81	13.20	231.89	393.81	0.44	44.23 S	56.26W
402.81	13.23	232.07	394.78	0.47	44.37 S	56.44W
403.81	13.22	232.21	395.76	0.53	44.51 S	56.62W
404.80	13.22	232.23	396.72	0.55	44.65 S	56.80W
405.80	13.16	232.45	397.69	0.59	44.79 S	56.98W
406.80	13.09	232.17	398.67	0.55	44.93 S	57.16W
407.80	12.99	232.02	399.64	0.55	45.06 S	57.34W
408.80	12.90	232.01	400.62	0.52	45.20 S	57.52W

A Gyrodata Directional Survey

BRASKEM
Well: Mina 20, 7"
Location: NO RIG
Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
409.80	12.89	231.98	401.59	0.53	45.34 S	57.69W
410.79	12.88	232.13	402.56	0.51	45.48 S	57.87W
411.79	12.86	232.08	403.53	0.50	45.61 S	58.04W
412.79	12.87	232.28	404.51	0.54	45.75 S	58.22W
413.79	12.90	232.19	405.48	0.54	45.89 S	58.40W
414.79	12.90	232.30	406.46	0.55	46.02 S	58.57W
415.79	12.91	231.96	407.43	0.60	46.16 S	58.75W
416.78	12.91	232.30	408.40	0.55	46.29 S	58.92W
417.78	12.90	232.19	409.37	0.54	46.43 S	59.10W
418.78	12.89	232.15	410.34	0.54	46.57 S	59.28W
419.78	12.90	232.48	411.32	0.51	46.70 S	59.45W
420.78	12.91	232.56	412.29	0.50	46.84 S	59.63W
421.77	12.88	232.58	413.26	0.41	46.97 S	59.81W
422.77	12.89	232.57	414.23	0.36	47.11 S	59.98W
423.77	12.87	232.57	415.21	0.27	47.25 S	60.16W
424.77	12.87	232.50	416.18	0.20	47.38 S	60.34W
425.77	12.85	232.63	417.16	0.19	47.52 S	60.51W
426.77	12.83	232.69	418.13	0.18	47.65 S	60.69W
427.76	12.82	232.54	419.10	0.16	47.78 S	60.86W
428.76	12.74	232.68	420.07	0.09	47.92 S	61.04W
429.76	12.74	232.68	421.05	0.10	48.05 S	61.22W
430.76	12.69	232.64	422.03	0.11	48.19 S	61.39W
431.76	12.64	232.84	423.00	0.20	48.32 S	61.56W
432.76	12.67	232.80	423.98	0.15	48.45 S	61.74W
433.75	12.66	232.80	424.94	0.14	48.58 S	61.91W
434.75	12.68	232.81	425.92	0.17	48.72 S	62.09W
435.75	12.69	232.83	426.89	0.14	48.85 S	62.26W
436.75	12.70	232.71	427.87	0.15	48.98 S	62.44W
437.75	12.72	232.61	428.84	0.14	49.11 S	62.61W
438.74	12.72	232.65	429.81	0.16	49.25 S	62.79W
439.74	12.73	232.59	430.79	0.14	49.38 S	62.96W
440.74	12.75	232.66	431.76	0.17	49.51 S	63.14W
441.74	12.79	232.76	432.74	0.20	49.65 S	63.31W
442.74	12.78	232.86	433.71	0.17	49.78 S	63.49W
443.74	12.81	232.80	434.69	0.22	49.92 S	63.66W
444.73	12.81	232.63	435.65	0.20	50.05 S	63.84W

A Gyrodata Directional Survey

BRASKEM
Well: Mina 20, 7"
Location: NO RIG
Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
445.73	12.81	232.44	436.63	0.21	50.18 S	64.01W
446.73	12.82	232.68	437.60	0.24	50.32 S	64.19W
447.73	12.81	232.78	438.58	0.25	50.45 S	64.37W
448.73	12.81	232.84	439.55	0.25	50.59 S	64.54W
449.73	12.81	232.73	440.53	0.25	50.72 S	64.72W
450.72	12.79	232.81	441.49	0.26	50.85 S	64.90W
451.72	12.78	232.85	442.47	0.23	50.99 S	65.07W
452.72	12.77	232.86	443.44	0.28	51.12 S	65.25W
453.72	12.78	233.05	444.42	0.30	51.25 S	65.42W
454.72	12.76	233.05	445.39	0.24	51.39 S	65.60W
455.71	12.77	233.06	446.36	0.20	51.52 S	65.78W
456.71	12.78	233.18	447.33	0.21	51.65 S	65.95W
457.71	12.76	233.49	448.31	0.22	51.78 S	66.13W
458.71	12.76	233.43	449.29	0.18	51.91 S	66.31W
459.71	12.75	233.55	450.26	0.15	52.05 S	66.48W
460.71	12.76	233.65	451.24	0.23	52.18 S	66.66W
461.70	12.74	233.70	452.20	0.29	52.31 S	66.84W
462.70	12.75	233.76	453.18	0.31	52.44 S	67.02W
463.70	12.74	233.94	454.15	0.28	52.57 S	67.19W
464.70	12.76	233.96	455.13	0.33	52.70 S	67.37W
465.70	12.77	233.90	456.10	0.37	52.83 S	67.55W
466.70	12.76	233.99	457.08	0.35	52.96 S	67.73W
467.69	12.78	233.88	458.04	0.35	53.09 S	67.91W
468.69	12.79	234.02	459.02	0.33	53.22 S	68.09W
469.69	12.78	234.04	459.99	0.31	53.35 S	68.27W
470.69	12.78	233.79	460.97	0.31	53.48 S	68.44W
471.69	12.75	233.54	461.94	0.33	53.61 S	68.62W
472.68	12.74	233.68	462.91	0.34	53.74 S	68.80W
473.68	12.71	233.75	463.89	0.34	53.87 S	68.98W
474.68	12.73	233.72	464.86	0.37	54.00 S	69.15W
475.68	12.71	233.35	465.84	0.38	54.13 S	69.33W
476.68	12.71	233.63	466.81	0.39	54.26 S	69.51W
477.68	12.68	233.70	467.79	0.37	54.39 S	69.68W
478.67	12.63	233.93	468.75	0.39	54.52 S	69.86W
479.67	12.60	233.77	469.73	0.38	54.65 S	70.04W
480.67	12.54	233.89	470.71	0.40	54.77 S	70.21W

Relatório de Amostragem Mina 20

A Gyrodata Directional Survey

BRASKEM
Well: Mina 20, 7"
Location: NO RIG
Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
481.67	12.53	234.02	471.68	0.41	54.90 S	70.39W
482.67	12.52	233.98	472.66	0.39	55.03 S	70.56W
483.67	12.51	234.02	473.63	0.40	55.16 S	70.74W
484.66	12.51	233.95	474.60	0.40	55.28 S	70.91W
485.66	12.51	233.88	475.58	0.39	55.41 S	71.09W
486.66	12.49	233.88	476.55	0.41	55.54 S	71.26W
487.66	12.48	233.96	477.53	0.40	55.67 S	71.44W
488.66	12.46	233.93	478.51	0.40	55.79 S	71.61W
489.65	12.42	233.99	479.47	0.39	55.92 S	71.78W
490.65	12.40	234.20	480.45	0.39	56.04 S	71.96W
491.65	12.36	234.10	481.43	0.41	56.17 S	72.13W
492.65	12.35	234.01	482.40	0.37	56.30 S	72.30W
493.65	12.35	233.99	483.38	0.33	56.42 S	72.48W
494.65	12.34	233.93	484.36	0.31	56.55 S	72.65W
495.64	12.34	234.01	485.32	0.28	56.67 S	72.82W
496.64	12.33	234.03	486.30	0.23	56.80 S	72.99W
497.64	12.33	233.87	487.28	0.26	56.92 S	73.17W
498.64	12.35	234.03	488.25	0.32	57.05 S	73.34W
499.64	12.35	234.02	489.23	0.35	57.17 S	73.51W
500.64	12.36	234.10	490.21	0.39	57.30 S	73.68W
501.63	12.36	234.11	491.18	0.41	57.42 S	73.86W
502.63	12.35	234.18	492.15	0.38	57.55 S	74.03W
503.63	12.34	234.13	493.13	0.36	57.67 S	74.20W
504.63	12.33	234.21	494.11	0.35	57.80 S	74.38W
505.63	12.31	234.20	495.08	0.32	57.92 S	74.55W
506.62	12.33	234.29	496.05	0.32	58.05 S	74.72W
507.62	12.33	234.30	497.03	0.27	58.17 S	74.89W
508.62	12.33	234.19	498.00	0.26	58.30 S	75.07W
509.62	12.34	234.08	498.98	0.26	58.42 S	75.24W
510.62	12.31	234.24	499.96	0.25	58.55 S	75.41W
511.62	12.31	234.05	500.93	0.27	58.67 S	75.59W
512.61	12.29	233.92	501.90	0.27	58.80 S	75.76W
513.61	12.26	234.22	502.88	0.25	58.92 S	75.93W
514.61	12.18	234.25	503.86	0.26	59.04 S	76.10W
515.61	12.14	234.04	504.83	0.26	59.17 S	76.27W
516.61	12.10	233.92	505.81	0.26	59.29 S	76.44W

A Gyrodata Directional Survey

BRASKEM
 Well: Mina 20, 7"
 Location: NO RIG
 Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
517.60	12.07	233.78	506.78	0.26	59.41 S	76.61W
518.60	12.09	233.92	507.76	0.24	59.54 S	76.78W
519.60	12.10	233.78	508.74	0.25	59.66 S	76.95W
520.60	12.09	233.81	509.71	0.24	59.78 S	77.12W
521.60	12.08	233.77	510.69	0.20	59.91 S	77.29W
522.60	12.07	233.91	511.67	0.20	60.03 S	77.45W
523.59	12.08	233.89	512.64	0.17	60.15 S	77.62W
524.59	12.07	233.86	513.62	0.15	60.28 S	77.79W
525.59	12.08	233.73	514.59	0.15	60.40 S	77.96W
526.59	12.08	233.67	515.57	0.14	60.52 S	78.13W
527.59	12.07	233.56	516.55	0.15	60.65 S	78.30W
528.59	12.05	233.64	517.53	0.13	60.77 S	78.46W
529.58	12.06	233.85	518.49	0.16	60.89 S	78.63W
530.58	12.07	233.91	519.47	0.13	61.02 S	78.80W
531.58	12.07	234.01	520.45	0.10	61.14 S	78.97W
532.58	12.08	234.01	521.43	0.04	61.26 S	79.14W
533.58	12.08	233.97	522.41	0.08	61.39 S	79.31W
534.57	12.09	234.12	523.37	0.14	61.51 S	79.48W
535.57	12.08	233.90	524.35	0.22	61.63 S	79.64W
536.57	12.08	233.92	525.33	0.18	61.76 S	79.81W
537.57	12.10	233.93	526.31	0.21	61.88 S	79.98W
538.57	12.13	233.94	527.29	0.20	62.00 S	80.15W
539.57	12.17	233.93	528.26	0.26	62.13 S	80.32W
540.56	12.18	233.93	529.23	0.29	62.25 S	80.49W
541.56	12.19	233.89	530.21	0.36	62.37 S	80.66W
542.56	12.18	233.95	531.19	0.43	62.50 S	80.83W
543.56	12.15	233.92	532.16	0.53	62.62 S	81.00W
544.56	12.15	233.83	533.14	0.64	62.75 S	81.17W
545.56	12.14	233.67	534.12	0.74	62.87 S	81.34W
546.55	12.10	233.71	535.09	0.86	62.99 S	81.51W
547.55	12.07	233.68	536.06	0.94	63.12 S	81.68W
548.55	12.06	233.95	537.04	1.02	63.24 S	81.85W
549.55	12.01	234.06	538.02	1.08	63.36 S	82.02W
550.55	12.00	234.49	539.00	1.14	63.48 S	82.19W
551.54	11.97	234.72	539.97	1.20	63.60 S	82.35W
552.54	11.94	234.38	540.95	1.24	63.72 S	82.52W

Relatório de Amostragem Mina 20

A Gyrodata Directional Survey

BRASKEM
 Well: Mina 20, 7"
 Location: NO RIG
 Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
553.54	11.91	234.49	541.92	1.31	63.84 S	82.69W
554.54	11.89	234.43	542.90	1.38	63.96 S	82.86W
555.54	11.83	234.48	543.88	1.45	64.08 S	83.02W
556.54	11.79	234.43	544.86	1.53	64.20 S	83.19W
557.53	11.73	234.49	545.83	1.62	64.32 S	83.36W
558.53	11.64	234.28	546.81	1.65	64.44 S	83.52W
559.53	11.52	234.25	547.79	1.67	64.55 S	83.68W
560.53	11.38	234.26	548.77	1.73	64.67 S	83.84W
561.53	11.28	234.47	549.75	1.73	64.79 S	84.00W
562.53	11.16	234.38	550.73	1.72	64.90 S	84.16W
563.52	11.07	234.44	551.70	1.73	65.01 S	84.32W
564.52	11.00	234.50	552.68	1.75	65.12 S	84.47W
565.52	10.94	234.68	553.66	1.74	65.23 S	84.63W
566.52	10.89	234.90	554.65	1.75	65.34 S	84.78W
567.52	10.81	234.82	555.63	1.81	65.45 S	84.94W
568.51	10.78	235.10	556.60	1.86	65.55 S	85.09W
569.51	10.73	235.23	557.58	1.93	65.66 S	85.24W
570.51	10.69	235.32	558.57	2.00	65.77 S	85.39W
571.51	10.65	235.41	559.55	2.00	65.87 S	85.55W
572.51	10.58	235.52	560.53	2.05	65.98 S	85.70W
573.51	10.50	235.72	561.51	2.04	66.08 S	85.85W
574.50	10.45	235.57	562.49	1.99	66.18 S	86.00W
575.50	10.40	235.67	563.47	1.94	66.28 S	86.15W
576.50	10.36	235.95	564.45	1.86	66.39 S	86.30W
577.50	10.36	236.16	565.44	1.78	66.49 S	86.45W
578.50	10.34	236.24	566.42	1.76	66.59 S	86.60W
579.50	10.31	236.47	567.41	1.77	66.68 S	86.74W
580.49	10.27	236.54	568.38	1.78	66.78 S	86.89W
581.49	10.22	236.60	569.36	1.81	66.88 S	87.04W
582.49	10.20	236.98	570.35	1.82	66.98 S	87.19W
583.49	10.08	236.65	571.33	1.82	67.07 S	87.34W
584.49	10.02	236.92	572.32	1.89	67.17 S	87.48W
585.48	9.92	237.26	573.29	1.84	67.26 S	87.63W
586.48	9.83	237.29	574.28	1.83	67.36 S	87.77W
587.48	9.78	237.61	575.26	1.86	67.45 S	87.91W
588.48	9.71	237.90	576.25	1.83	67.54 S	88.06W

A Gyrodata Directional Survey

BRASKEM
Well: Mina 20, 7"
Location: NO RIG
Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
589.48	9.65	237.92	577.23	1.80	67.63 S	88.20W
590.48	9.63	238.01	578.22	1.81	67.72 S	88.34W
591.47	9.59	238.25	579.20	1.82	67.80 S	88.48W
592.47	9.55	238.41	580.18	1.85	67.89 S	88.62W
593.47	9.52	238.41	581.17	1.95	67.98 S	88.76W
594.47	9.43	238.45	582.16	2.02	68.06 S	88.90W
595.47	9.33	238.60	583.14	2.08	68.15 S	89.04W
596.47	9.24	238.58	584.13	2.11	68.23 S	89.18W
597.46	9.14	238.67	585.11	2.12	68.31 S	89.32W
598.46	9.07	238.84	586.09	2.11	68.40 S	89.45W
599.46	9.00	238.84	587.08	2.03	68.48 S	89.59W
600.00	8.91	239.06	587.61	2.03	68.52 S	89.66W
601.46	8.88	239.10	589.06	1.96	68.64 S	89.85W
602.45	8.85	239.17	590.03	1.94	68.72 S	89.98W
603.45	8.79	239.51	591.02	1.94	68.79 S	90.11W
604.45	8.76	239.66	592.01	1.98	68.87 S	90.25W
605.45	8.71	239.86	593.00	2.05	68.95 S	90.38W
606.45	8.66	239.95	593.99	2.15	69.02 S	90.51W
607.45	8.59	239.85	594.98	2.24	69.10 S	90.64W
608.44	8.50	239.93	595.96	2.31	69.17 S	90.76W
609.44	8.37	239.76	596.95	2.32	69.25 S	90.89W
610.44	8.27	239.81	597.93	2.33	69.32 S	91.02W
611.44	8.16	239.75	598.92	2.32	69.39 S	91.14W
612.44	8.08	239.76	599.91	2.30	69.46 S	91.26W
613.44	8.03	239.98	600.90	2.28	69.53 S	91.38W
614.43	8.00	239.99	601.88	2.28	69.60 S	91.50W
615.43	7.98	240.02	602.88	2.24	69.67 S	91.62W
616.43	7.93	240.16	603.87	2.24	69.74 S	91.74W
617.43	7.88	240.25	604.86	2.34	69.81 S	91.86W
618.43	7.82	240.35	605.85	2.40	69.88 S	91.98W
619.42	7.75	240.15	606.83	2.43	69.94 S	92.10W
620.42	7.63	240.12	607.82	2.46	70.01 S	92.21W
621.42	7.49	239.86	608.81	2.51	70.07 S	92.33W
622.42	7.36	239.90	609.80	2.54	70.14 S	92.44W
623.42	7.22	239.79	610.79	2.56	70.20 S	92.55W
624.42	7.10	239.56	611.79	2.54	70.27 S	92.66W

Relatório de Amostragem Mina 20

A Gyrodata Directional Survey

BRASKEM
Well: Mina 20, 7"
Location: NO RIG
Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
625.41	7.05	239.35	612.77	2.45	70.33 S	92.76W
626.41	6.95	239.49	613.76	2.38	70.39 S	92.87W
627.41	6.86	239.36	614.75	2.29	70.45 S	92.97W
628.41	6.80	239.57	615.75	2.24	70.51 S	93.07W
629.41	6.72	239.56	616.74	2.25	70.57 S	93.17W
630.41	6.64	239.55	617.73	2.25	70.63 S	93.27W
631.40	6.57	239.59	618.72	2.30	70.69 S	93.37W
632.40	6.49	239.77	619.71	2.27	70.75 S	93.47W
633.40	6.39	239.92	620.70	2.23	70.80 S	93.57W
634.40	6.30	240.43	621.70	2.17	70.86 S	93.66W
635.40	6.21	240.54	622.69	2.09	70.91 S	93.76W
636.39	6.14	240.53	623.68	1.99	70.96 S	93.85W
637.39	6.04	240.63	624.67	1.92	71.01 S	93.94W
638.39	5.96	240.62	625.66	1.87	71.07 S	94.03W
639.39	5.87	240.79	626.66	1.80	71.12 S	94.12W
640.39	5.80	241.05	627.65	1.76	71.17 S	94.21W
641.39	5.76	240.69	628.65	1.77	71.21 S	94.30W
642.38	5.74	240.58	629.63	1.68	71.26 S	94.39W
643.38	5.72	240.45	630.63	1.65	71.31 S	94.47W
644.38	5.70	240.34	631.62	1.67	71.36 S	94.56W
645.38	5.64	240.43	632.62	1.60	71.41 S	94.65W
646.38	5.60	240.25	633.61	1.54	71.46 S	94.73W
647.37	5.53	240.23	634.60	1.52	71.51 S	94.82W
648.37	5.51	240.02	635.59	1.50	71.55 S	94.90W
649.37	5.51	240.06	636.59	1.45	71.60 S	94.98W
650.37	5.51	239.88	637.59	1.41	71.65 S	95.07W
651.37	5.52	239.76	638.58	1.37	71.70 S	95.15W
653.36	5.45	239.23	640.56	1.32	71.80 S	95.31W
655.36	5.31	238.91	642.55	1.29	71.89 S	95.47W
657.36	5.17	238.38	644.54	1.25	71.99 S	95.63W
659.35	5.11	237.87	646.53	1.23	72.08 S	95.78W
660.00	5.05	237.81	647.17	1.25	72.11 S	95.83W
661.35	5.03	237.60	648.52	1.18	72.18 S	95.93W
663.35	4.97	237.12	650.51	1.19	72.27 S	96.08W
665.34	4.87	236.99	652.49	1.31	72.36 S	96.22W
667.34	4.77	237.90	654.49	1.33	72.45 S	96.36W

Relatório de Amostragem Mina 20

A Gyrodata Directional Survey

BRASKEM
Well: Mina 20, 7"
Location: NO RIG
Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
669.34	4.65	238.28	656.48	1.32	72.54 S	96.50W
671.33	4.52	238.03	658.46	1.29	72.62 S	96.64W
673.33	4.46	237.73	660.46	1.20	72.71 S	96.77W
675.33	4.43	237.60	662.45	1.18	72.79 S	96.90W
677.32	4.39	238.48	664.44	1.25	72.87 S	97.03W
679.32	4.27	238.52	666.43	1.28	72.95 S	97.16W
681.31	4.13	238.07	668.41	1.27	73.03 S	97.28W
683.31	4.11	238.23	670.41	1.28	73.10 S	97.40W
685.31	4.05	237.75	672.40	1.24	73.18 S	97.52W
687.30	3.94	237.00	674.39	1.16	73.25 S	97.64W
689.30	3.90	237.36	676.38	1.16	73.33 S	97.76W
691.30	3.82	237.92	678.38	1.19	73.40 S	97.87W
693.29	3.70	237.53	680.37	1.23	73.47 S	97.98W
695.29	3.61	236.97	682.36	1.19	73.54 S	98.09W
697.29	3.52	237.61	684.36	1.12	73.60 S	98.19W
699.28	3.41	238.30	686.34	1.16	73.67 S	98.29W
701.28	3.33	238.70	688.34	1.13	73.73 S	98.39W
703.28	3.28	238.16	690.34	1.07	73.79 S	98.49W
705.27	3.23	237.99	692.32	1.05	73.85 S	98.59W
707.27	3.16	237.87	694.32	0.98	73.91 S	98.68W
709.27	3.08	237.70	696.32	0.89	73.97 S	98.77W
711.26	3.00	237.95	698.31	0.83	74.02 S	98.86W
713.26	2.94	237.87	700.30	0.74	74.08 S	98.95W
715.25	2.88	238.08	702.29	0.65	74.13 S	99.04W
717.25	2.85	238.26	704.29	0.61	74.18 S	99.12W
719.25	2.80	238.20	706.29	0.65	74.24 S	99.21W
721.24	2.78	238.30	708.27	0.70	74.29 S	99.29W
723.24	2.78	239.86	710.27	0.68	74.34 S	99.37W
725.24	2.76	239.57	712.27	0.66	74.39 S	99.46W
727.23	2.73	238.08	714.26	0.63	74.43 S	99.54W
729.23	2.73	237.54	716.25	0.65	74.49 S	99.62W
731.23	2.72	237.47	718.25	0.67	74.54 S	99.70W
733.22	2.68	237.60	720.24	0.69	74.59 S	99.78W
735.22	2.59	236.49	722.24	0.68	74.64 S	99.85W
737.22	2.50	235.23	724.24	0.68	74.69 S	99.93W
739.21	2.45	234.56	726.22	0.74	74.74 S	100.00W

Relatório de Amostragem Mina 20

A Gyrodata Directional Survey

BRASKEM

Well: Mina 20, 7"

Location: NO RIG

Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
741.21	2.40	234.34	728.22	0.77	74.79 S	100.07W
743.21	2.35	234.23	730.22	0.77	74.83 S	100.13W
745.20	2.28	233.55	732.21	0.74	74.88 S	100.20W
747.20	2.22	232.03	734.21	0.75	74.93 S	100.26W
749.19	2.18	231.10	736.20	0.74	74.98 S	100.32W
750.03	2.15	231.39	737.03	0.74	75.00 S	100.35W
751.19	2.14	231.35	738.19	0.67	75.02 S	100.38W
753.19	2.12	231.34	740.19	0.68	75.07 S	100.44W
755.18	2.09	230.92	742.18	0.74	75.12 S	100.49W
757.18	2.05	229.75	744.18	0.79	75.16 S	100.55W
759.18	2.03	227.62	746.18	0.87	75.21 S	100.60W
761.17	2.05	227.67	748.17	1.07	75.26 S	100.66W
763.17	2.02	228.10	750.17	1.34	75.30 S	100.71W
765.17	1.98	228.46	752.16	1.42	75.35 S	100.76W
767.16	1.93	229.22	754.15	1.18	75.39 S	100.81W
769.16	1.84	226.94	756.15	0.92	75.44 S	100.86W
771.16	1.77	223.81	758.15	0.77	75.48 S	100.91W
773.15	1.64	223.91	760.14	0.68	75.53 S	100.95W
775.15	1.51	222.02	762.14	0.61	75.57 S	100.98W
777.15	1.27	215.37	764.14	0.62	75.60 S	101.01W
779.14	0.99	203.58	766.13	0.58	75.64 S	101.03W
781.14	0.88	199.96	768.13	0.55	75.67 S	101.05W
783.13	1.01	210.24	770.12	0.55	75.70 S	101.06W
785.13	1.21	217.88	772.12	0.50	75.73 S	101.08W
787.13	1.33	220.55	774.12	0.44	75.76 S	101.11W
789.12	1.37	221.63	776.11	0.38	75.80 S	101.14W
791.12	1.40	221.80	778.11	0.33	75.83 S	101.17W
793.12	1.43	219.98	780.11	0.11	75.87 S	101.21W
795.11	1.43	221.49	782.09	0.20	75.91 S	101.24W
797.11	1.42	222.55	784.09	0.24	75.95 S	101.27W
799.11	1.38	222.08	786.09	0.04	75.98 S	101.30W
801.10	1.34	220.50	788.08	0.18	76.02 S	101.34W
803.10	1.31	221.09	790.08	0.31	76.05 S	101.37W
805.10	1.25	219.34	792.08	0.41	76.09 S	101.39W
807.09	1.17	218.25	794.07	0.46	76.12 S	101.42W
809.09	1.15	216.38	796.07	0.45	76.15 S	101.45W

Relatório de Amostragem Mina 20

A Gyrodata Directional Survey

BRASKEM

Well: Mina 20, 7"

Location: NO RIG

Job Number: BZ0319GVC027

MEASURED DEPTH meters	INCL deg.	AZIMUTH deg.	VERTICAL DEPTH meters	NORMALIZED DOGLEG deg/30m	HORIZONTAL COORDINATES meters	
811.08	1.09	214.07	798.06	0.46	76.18	S 101.47 W
813.08	1.04	212.20	800.06	0.49	76.22	S 101.49W
815.08	1.03	212.42	802.06	0.50	76.25	S 101.51W
817.07	1.04	213.31	804.05	0.46	76.28	S 101.53W
819.07	1.04	212.34	806.05	0.41	76.31	S 101.55W
821.07	1.05	207.25	808.05	0.34	76.34	S 101.57W
823.06	1.05	205.40	810.04	0.30	76.37	S 101.58W
825.06	1.05	206.49	812.04	0.32	76.40	S 101.60W
827.06	1.03	207.92	814.04	0.30	76.44	S 101.61W
829.05	1.00	207.46	816.03	0.25	76.47	S 101.63W
831.05	0.97	205.37	818.03	0.24	76.50	S 101.65W
833.05	0.95	205.19	820.03	0.25	76.53	S 101.66W
835.04	0.99	205.76	822.02	0.21	76.56	S 101.67W
837.04	1.00	206.02	824.02	0.15	76.59	S 101.69W
839.04	1.00	203.86	826.02	0.11	76.62	S 101.70W
841.03	0.96	201.24	828.01	0.12	76.65	S 101.72W
843.03	0.92	198.40	830.01	0.09	76.68	S 101.73W
845.02	0.93	198.24	832.00	0.00	76.71	S 101.74W
847.02	0.95	198.38	834.00	0.00	76.75	S 101.75W
849.02	0.96	198.59	836.00	0.00	76.78	S 101.76W
851.01	0.96	200.06	837.98	0.00	76.81	S 101.77W
853.01	0.91	202.49	839.98	0.00	76.84	S 101.78W
855.01	0.94	206.88	841.98	0.00	76.87	S 101.80W
857.00	0.95	210.74	843.97	0.00	76.90	S 101.81W
859.00	0.95	210.59	845.97	0.00	76.93	S 101.83W

Final Station Closure: Distance: 127.62 m Az: 232.93 deg.

Parte 5
Controle de Qualidade

Survey QC - RGS-WB, BT & DP
Gyro Compass Specification Sheet

gyrodata

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	0.00018	0.00001
Tolerance	0.033	0.033	0.087	0.00591	0.00720

* For 3 accelerometer systems, a G-Total test is used. For 2 accelerometer systems, a gross error check is used.

GYRO VERIFICATION (MULTISTATION CORRECTION)

Gyro Compass Parameter	Gyro noise	dGx	dGy	dmbo	Max corr coef
Standard Deviation	0.036	0.002	0.001	0.000	0.18
Tolerance	0.141	0.033	0.033	0.087	0.42

ACCELEROMETER VERIFICATION (G-TOTAL TEST) - not applicable for 2 accelerometer systems

G-Total Test Parameter	Mean Gravity Error	Mean Gravity Error Standard Deviation
Error	-0.00021	0.00000
Tolerance	0.00592	0.06626

CALIBRATION DATA

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	From	63.05	To	64.24

In-Spec if -25 °C /+2.5 °C of Calibration

SAG CORRECTION

SAG Corrected	<input type="checkbox"/>	SAG Correction Source	
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DEPTH CONTROL

Wireline Company		Line type		Encoder SF	
Max Depth (TD)		CCL Corrected			
Zero Depth (Rig up)		Rezero Depth			
Given pup joint depth		Measured PJ			
Stretch cor. At TD divided by TD/1000					Spec' - 1.5/1000
Dif. Between rigup and rezero depths divided by TD/1000					Spec' - 2.0/1000
Dif. Between given and meas depth divided by meas/1000					Spec' - 2.0/1000

INDIVIDUAL STATION REPORT SUMMARY

% of Total stations accepted	Tolerance > 80%	100%
Consecutive Interval out of Specification	Tolerance < 100 m (300 ft)	0 meters
Average Survey Interval	Tolerance < 50 m (150 ft)	1.3 meters

SURVEY RUNNING TIME

Rig up	3/31/2019 08:00:00	Rig down	4/1/2019 11:38:00
Start Inrun	3/31/2019 13:45:00	Field Survey Presented	4/1/2019 11:38:00
End Outrun	4/1/2019 11:38:00	Lost Time	

Comments

ACCEPTANCE SUMMARY

	Accept Yes / No
Pre-job calibration verification (Roll Test)	YES
Gyro verification (Multistation Correction)	YES
Accelerometer verification (G-Total Test)	YES
Operating temp within calibration range (-25 °C /+2.5 °C)	YES
Depth Control (wireline only)	YES
Individual Station Report	YES

NAME AND DATE

Click here to enter text.

SIGNATURE

Click here to enter text.

Parte 6
Relatório Cronológico
da Operação

6.0 RELATÓRIO CRONOLÓGICO DA OPERAÇÃO

29 de março de 2019

16:00 Chegada na Braskem para primeiro contato e apresentação ao cliente
18:00 Saída da Braskem

30 de março de 2019

08:00 Ida no comércio para compra de parafusos de adaptação do encoder de profundidade
11:30 Chegada na Braskem para início do trabalho
11:40 Montagem de ferramenta Gyrodata
14:00 Conexão com caminhão Flodim
16:20 Calibração de giroscópio
21:00 Saída da Braskem

31 de março de 2019

07:30 Chegada na Mina 20
07:40 Conexão Gyrodata/Flodim e ajustando encoder de profundidade
13:45 Início de Corrida Multishot modo Compass

01 de abril de 2019

13:25 Fim de corrida Gyrodata Multishot
14:00 Desmontagem de equipamentos e saída da Mina 20
16:00 Pós calibração

Parte 7
Gráficos



