

Results of Directional Survey

API number:	30-025-41371		
OGRID:		Operator:	COG OPERATING LLC
		Property:	BRINNINSTOOL UNIT # 3H

surface	ULSTR:	O	20	T	23S	R	33E
				330	FSL	2260	FEL

BH Loc	ULSTR:	B	20	T	23S	R	33E
15415	MD	11044.2	TVD	370	FNL	2291	FEL
				4910	FSL		

Top Perf/OH	ULSTR:	O	20	T	23S	R	33E
11284	MD	11077.9	TVD	787	FSL	2272	FEL

Bot Perf/OH	ULSTR:	B	20	T	23S	R	33E
15307	MD	11048.9	TVD	478	FNL	2287	FEL
				4802	FSL		

	MD	N/S	E/W	VD
	11252	426.80	-16.92	11067.78
TOP PERFS/OH	11284	456.71	-11.83	11077.93
	11284	456.71	-11.83	11077.93
	15280	4444.71	-25.94	11049.72
BOT PERFS/OH	15307	4471.68	-26.90	11048.85
	15359	4523.61	-28.76	11047.17

NEXT TO LAST	15359	4523.61	-28.76	11047.17
LAST READING	15405	4569.52	-30.44	11044.76
TD	15415	4579.50	-30.81	11044.24

Surface Location	330	FS	2260	FE
Projected BHL	4910	FS	2291	FE
Location of				
Top Perfs/OH	787	FS	2272	FE
Bottom Perfs/OH	4802	FS	2287	FE

SUMMARY of Subsurface Locations

Surface Location	O-20-23S-33E	330	FS	2260	FE	Vert. Depth
Top Perfs/OH	O-20-23S-33E	787	FS	2272	FE	11077.93
Bottom Perfs/OH	B-20-23S-33E	4802	FS	2287	FE	11048.85
Projected TD	B-20-23S-33E	4910	FS	2291	FE	11044.24

APR 07 2014

HOBBS OCD

FEB 04 2014

OPERATOR COG Operating LLC
WELL/LEASE Brinningstool unit 3-H
COUNTY Lea, NM

RECEIVED

STATE OF NEW MEXICO
DEVIATION REPORT

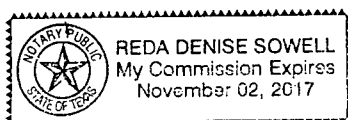
120	0.25
320	0.25
664	0.38
908	0.68
1348	0.25
1516	0.10
1913	1.40
2197	1.20
2481	1.20
2764	1.20
3047	1.40
3331	1.40
3614	1.30
3897	2.10
4181	1.70
4464	1.30
4748	3.20
5045	2.00
5308	1.30
5623	1.00
5937	0.50
6351	1.10
6792	1.20
7258	0.37
7702	1.60
8141	1.10
8614	0.80
9043	0.88
9495	1.10
9968	2.50
10236	2.25
10461	2.10
10497	1.90
10530	2.10
10594	5.00

SIGNED BY: *Ron Scandolari*
RON SCNADOLARI, VP-CONTRACT DRILLING

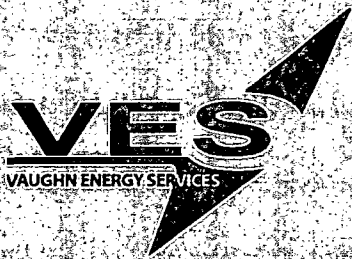
STATE OF TEXAS
COUNTY OF MIDLAND

ON THIS 5 DAY OF December, 2013, BEFORE ME, R SOWELL, A NOTARY PUBLIC, PERSONALLY APPEARED RON SCANDOLARI, WHO ACKNOWLEDGED AND EXECUTED THIS DOCUMENT. WITNESS MY HAND AND OFFICIAL SEAL.

(SEAL)



Reda Denise Sowell
NOTARY PUBLIC



A GYRO-TECHNOLOGIES INC. COMPANY

P.O. Box 261021
Corpus Christi, Texas 78426
(361) 767-0602 • (800) 606-GYRO • Fax (361) 767-0612

HOBBS OCD

FEB 04 2014

December 5, 2013

RECEIVED

COG Operating LLC (Concho)
One Concho Center
600 W. Illinois Avenue
Midland, TX 79701

Attn: Kanicia Castillo

Re: **Brinninstool Unit No 003H**

Please find enclosed a copy of the survey from 0' to 10,435' ran on the above referenced well.

If I can be of any further service, please do not hesitate to call me at 800-606-4976.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §

COUNTY OF NUECES §

This instrument was acknowledged before me on the 5th day of December A.D., 2013, by Keith Havelka.



Meredith Darden
Notary Public, State of Texas

Company: COG Operating LLC-Concho

Lease/Well: Brinninstool Unit/No 003H



Rig Name: Basic 46

State/County: New Mexico/Lea

Latitude: 32.28, Longitude: -103.59

GRID North is 0.40 Degrees East of True North

VS-Azi: 0.00 Degrees



HOBBS OGD

FEB 04 2014

RECEIVED

Depth Reference : RBK: 22'

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: gyro survey.ut

Minimum Curvature Method

Report Date/Time: 12/5/2013 / 09:52

Vaughn Energy Services

Midland, Texas

432-563-5444

Surveyor: Tim Dillon

Brinninstool Unit No 003H / API 30-025-41371

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.09	283.66	100.00	0.02	-0.08	0.08	283.66	0.09
200.00	0.13	269.36	200.00	0.04	-0.27	0.28	277.90	0.04
300.00	0.14	266.60	300.00	0.03	-0.50	0.51	273.35	0.01
400.00	0.17	261.84	400.00	0.00	-0.77	0.77	270.14	0.03
500.00	0.25	272.26	500.00	-0.01	-1.13	1.13	269.49	0.10
600.00	0.32	282.69	600.00	0.06	-1.63	1.63	272.13	0.09
700.00	0.32	285.86	700.00	0.20	-2.18	2.19	275.25	0.02
800.00	0.34	289.03	799.99	0.38	-2.73	2.76	277.81	0.03
900.00	0.36	284.12	899.99	0.55	-3.32	3.37	279.39	0.03
1000.00	0.39	279.22	999.99	0.68	-3.96	4.02	279.75	0.05
1100.00	0.54	277.60	1099.99	0.80	-4.76	4.83	279.50	0.15
1200.00	0.67	275.97	1199.98	0.92	-5.81	5.88	279.00	0.13
1300.00	0.75	281.07	1299.97	1.11	-7.03	7.12	278.94	0.10
1400.00	0.83	286.17	1399.96	1.44	-8.38	8.50	279.72	0.11
1500.00	1.12	293.47	1499.95	2.03	-9.97	10.18	281.50	0.31
1600.00	1.41	300.77	1599.92	3.05	-11.93	12.32	284.34	0.33
1700.00	1.39	295.72	1699.89	4.21	-14.09	14.70	286.63	0.13
1800.00	1.38	292.66	1799.87	5.20	-16.29	17.10	287.70	0.08

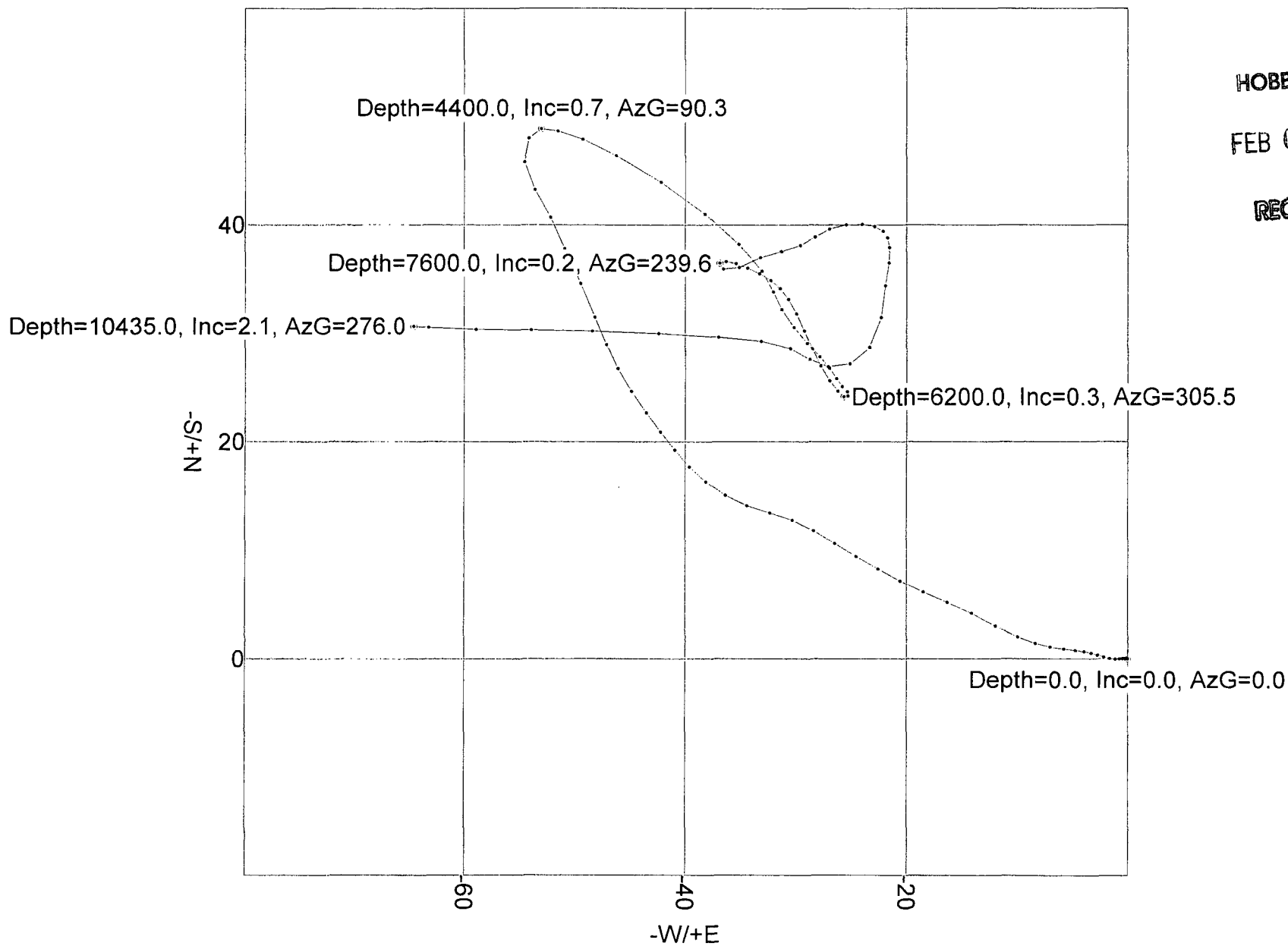
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	1.35	294.25	1899.84	6.14	-18.47	19.47	288.40	0.05
2000.00	1.32	297.85	1999.81	7.17	-20.57	21.78	289.21	0.09
2100.00	1.32	299.39	2099.78	8.27	-22.59	24.06	290.11	0.04
2200.00	1.33	300.93	2199.76	9.43	-24.58	26.33	290.99	0.04
2300.00	1.28	301.50	2299.73	10.61	-26.53	28.57	291.80	0.05
2400.00	1.25	302.07	2399.71	11.77	-28.41	30.75	292.51	0.03
2500.00	1.24	292.02	2499.68	12.76	-30.34	32.92	292.81	0.22
2600.00	1.23	283.98	2599.66	13.43	-32.39	35.06	292.52	0.17
2700.00	1.24	292.38	2699.64	14.10	-34.44	37.21	292.27	0.18
2800.00	1.26	300.78	2799.61	15.08	-36.38	39.38	292.51	0.18
2900.00	1.20	309.42	2899.59	16.30	-38.14	41.48	293.15	0.19
3000.00	1.14	318.06	2999.57	17.71	-39.61	43.39	294.09	0.19
3100.00	1.19	320.83	3099.55	19.26	-40.93	45.24	295.19	0.07
3200.00	1.21	323.59	3199.53	20.91	-42.22	47.11	296.35	0.06
3300.00	1.32	324.92	3299.50	22.70	-43.50	49.07	297.56	0.11
3400.00	1.41	326.25	3399.47	24.66	-44.85	51.18	298.81	0.09
3500.00	1.40	333.05	3499.44	26.77	-46.08	53.29	300.15	0.17
3600.00	1.40	337.84	3599.41	28.99	-47.10	55.30	301.62	0.12
3700.00	1.75	337.23	3699.38	31.53	-48.15	57.55	303.22	0.35
3800.00	2.09	336.62	3799.32	34.61	-49.46	60.37	304.98	0.33
3900.00	1.91	336.02	3899.26	37.80	-50.86	63.37	306.62	0.18
4000.00	1.72	335.42	3999.21	40.69	-52.16	66.16	307.96	0.19
4100.00	1.66	324.77	4099.17	43.24	-53.62	68.88	308.88	0.32
4200.00	1.60	356.12	4199.13	45.82	-54.55	71.24	310.03	0.88
4300.00	1.13	32.19	4299.10	48.05	-54.12	72.38	311.60	0.96
4400.00	0.66	90.27	4399.09	48.89	-53.02	72.12	312.68	0.96
4500.00	1.12	101.89	4499.08	48.68	-51.48	70.85	313.40	0.49
4600.00	1.59	113.52	4599.05	47.93	-49.25	68.72	314.22	0.54
4700.00	2.33	118.69	4698.99	46.40	-46.20	65.48	315.12	0.76
4800.00	3.07	123.87	4798.88	43.93	-42.19	60.91	316.16	0.78
4900.00	2.60	129.55	4898.76	41.00	-38.22	56.05	317.01	0.55
5000.00	2.12	135.23	4998.67	38.24	-35.17	51.96	317.39	0.53
5100.00	1.55	147.15	5098.62	35.79	-33.14	48.78	317.21	0.68
5200.00	0.99	159.07	5198.59	33.85	-32.10	46.65	316.53	0.62
5300.00	1.09	150.43	5298.58	32.22	-31.32	44.94	315.81	0.19
5400.00	1.19	141.80	5398.56	30.59	-30.21	42.99	315.35	0.20
5500.00	1.03	139.64	5498.54	29.09	-28.99	41.07	315.10	0.17
5600.00	0.87	137.47	5598.53	27.85	-27.90	39.42	314.95	0.16
5700.00	0.74	143.44	5698.52	26.77	-27.00	38.03	314.75	0.16

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.58	149.41	5798.51	25.82	-26.36	36.90	314.40	0.17
5900.00	0.45	139.60	5898.51	25.08	-25.85	36.02	314.14	0.16
6000.00	0.31	129.79	5998.50	24.61	-25.39	35.36	314.11	0.15
6100.00	0.30	217.65	6098.50	24.22	-25.34	35.05	313.71	0.43
6200.00	0.29	305.50	6198.50	24.16	-25.70	35.28	313.23	0.41
6300.00	0.57	316.01	6298.50	24.67	-26.26	36.02	313.21	0.28
6400.00	0.84	326.53	6398.49	25.63	-27.00	37.23	313.51	0.30
6500.00	0.96	332.04	6498.48	26.99	-27.80	38.74	314.15	0.15
6600.00	1.08	337.55	6598.46	28.60	-28.55	40.41	315.05	0.16
6700.00	1.01	336.10	6698.45	30.28	-29.27	42.11	315.97	0.08
6800.00	0.96	334.65	6798.43	31.84	-29.99	43.74	316.72	0.06
6900.00	0.80	326.38	6898.42	33.17	-30.73	45.22	317.19	0.21
7000.00	0.63	318.11	6998.41	34.16	-31.48	46.46	317.34	0.19
7100.00	0.67	306.40	7098.41	34.92	-32.32	47.58	317.21	0.14
7200.00	0.70	296.68	7198.40	35.54	-33.34	48.73	316.83	0.12
7300.00	0.66	293.13	7298.39	36.04	-34.42	49.83	316.32	0.06
7400.00	0.63	291.58	7398.39	36.47	-35.46	50.87	315.81	0.04
7500.00	0.44	265.60	7498.38	36.64	-36.35	51.61	315.23	0.30
7600.00	0.24	239.62	7598.38	36.51	-36.91	51.92	314.68	0.24
7700.00	0.74	129.87	7698.38	35.99	-36.60	51.33	314.51	0.85
7800.00	1.23	60.12	7798.36	36.11	-35.17	50.41	315.75	1.20
7900.00	1.18	69.10	7898.34	37.01	-33.28	49.77	318.04	0.20
8000.00	1.12	78.07	7998.32	37.58	-31.36	48.95	320.15	0.19
8100.00	0.97	65.67	8098.31	38.13	-29.64	48.29	322.14	0.27
8200.00	0.82	53.27	8198.29	38.91	-28.29	48.11	323.98	0.24
8300.00	0.88	68.32	8298.28	39.62	-27.00	47.95	325.73	0.23
8400.00	0.94	83.37	8398.27	40.00	-25.47	47.42	327.51	0.24
8500.00	0.75	94.77	8498.26	40.04	-24.01	46.69	329.05	0.25
8600.00	0.56	106.18	8598.25	39.85	-22.89	45.95	330.13	0.23
8700.00	0.47	132.98	8698.25	39.43	-22.12	45.21	330.71	0.25
8800.00	0.38	159.78	8798.25	38.84	-21.70	44.49	330.80	0.22
8900.00	0.68	174.44	8898.24	37.94	-21.53	43.62	330.42	0.32
9000.00	0.97	189.09	8998.23	36.52	-21.61	42.43	329.39	0.36
9100.00	1.46	187.99	9098.21	34.42	-21.92	40.81	327.51	0.49
9200.00	1.92	186.89	9198.17	31.49	-22.30	38.59	324.70	0.47
9300.00	1.58	217.06	9298.12	28.72	-23.33	37.01	320.92	0.97
9400.00	1.25	247.23	9398.09	27.20	-25.17	37.06	317.22	0.81
9500.00	1.12	278.25	9498.07	26.92	-27.14	38.23	314.77	0.64
9600.00	1.00	309.26	9598.05	27.61	-28.78	39.88	313.81	0.58

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
9700.00	1.37	293.11	9698.03	28.63	-30.55	41.87	313.14	0.50
9800.00	1.74	276.95	9798.00	29.28	-33.16	44.24	311.45	0.57
9900.00	2.66	274.94	9897.92	29.67	-36.97	47.40	308.74	0.92
10000.00	3.55	272.92	9997.77	30.02	-42.38	51.94	305.32	0.90
10100.00	3.32	271.52	10097.59	30.26	-48.36	57.05	302.03	0.25
10200.00	3.06	270.13	10197.44	30.34	-53.92	61.87	299.37	0.27
10300.00	2.66	271.63	10297.32	30.41	-58.90	66.29	297.31	0.41
10400.00	2.27	273.13	10397.22	30.59	-63.20	70.21	295.83	0.39
10435.00	2.08	276.02	10432.20	30.69	-64.52	71.45	295.44	0.64



Vaughn Energy Services
Midland, Texas
432-563-5444
Surveyor: Tim Dillon
Brinninstool Unit No 003H / API 30-025-41371



HOBBS OCD

FEB 04 2014

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VES Survey Date: 11/18/2013



Customer Name: COG Operating LLC
Well Name: Brinninstool Unit # 3H
API Number: 30-025-41371
County / Parish: Lea County

M.W.D. Operator: Stacy Ogle
Directional Driller: Chad Moore
Total Magnetic Correction: 6.92
Job #: NM-337

Vertical Section: 359.58

Tie In Survey(s) Provided By:

	Meas. Depth	Inc.	Azm.	T.V.D.	Ver. Sect.	+N / -S	+E / -W	Dist.	Angle	DLS
Tie - In										
0	10435.00	2.08	276.02	10432.20	31.16	30.69	-64.52	71.45	295.44	0.63
1	10566.00	1.90	328.10	10563.13	33.28	32.78	-68.03	75.52	295.73	1.34
2	10597.00	5.00	0.40	10594.07	35.07	34.57	-68.29	76.55	296.85	11.43
3	10629.00	8.40	6.60	10625.85	38.79	38.29	-68.02	78.05	299.38	10.85
4	10660.00	12.10	13.90	10656.35	44.18	43.69	-66.97	79.97	303.12	12.63
5	10692.00	15.70	14.10	10687.41	51.63	51.15	-65.11	82.80	308.15	11.25
6	10723.00	18.10	10.10	10717.07	60.42	59.96	-63.25	87.15	313.47	8.60
7	10755.00	20.90	8.60	10747.23	70.95	70.50	-61.52	93.57	318.89	8.89
8	10786.00	24.40	6.00	10775.84	82.78	82.34	-60.02	101.90	323.91	11.74
9	10818.00	28.30	6.40	10804.51	96.88	96.46	-58.49	112.80	328.77	12.20
10	10849.00	32.40	4.90	10831.25	112.46	112.04	-56.96	125.69	333.05	13.45
11	10881.00	36.00	4.40	10857.72	130.37	129.97	-55.50	141.32	336.87	11.28
12	10912.00	39.10	5.20	10882.29	149.18	148.79	-53.92	158.26	340.08	10.12
13	10944.00	42.50	4.60	10906.51	170.00	169.62	-52.14	177.45	342.91	10.70
14	10975.00	46.40	5.60	10928.64	191.60	191.24	-50.20	197.72	345.29	12.78
15	11007.00	50.50	6.70	10949.86	215.38	215.04	-47.63	220.25	347.51	13.07
16	11038.00	55.20	7.10	10968.57	239.89	239.56	-44.66	243.69	349.44	15.20
17	11067.00	59.00	7.30	10984.32	264.01	263.72	-41.61	266.98	351.03	13.12
18	11099.00	61.20	8.30	11000.27	291.47	291.20	-37.84	293.65	352.60	7.39
19	11130.00	62.20	8.50	11014.97	318.44	318.20	-33.85	320.00	353.93	3.28
20	11162.00	63.00	8.90	11029.70	346.49	346.28	-29.55	347.54	355.12	2.74
21	11189.00	64.10	8.90	11041.72	370.34	370.16	-25.81	371.06	356.01	4.07
22	11221.00	64.50	8.70	11055.60	398.81	398.66	-21.40	399.23	356.93	1.37
23	11252.00	69.20	9.40	11067.78	426.91	426.80	-16.92	427.14	357.73	15.30
24	11284.00	73.80	9.90	11077.93	456.78	456.71	-11.83	456.86	358.52	14.45
25	11315.00	78.40	10.50	11085.38	486.35	486.32	-6.50	486.36	359.23	14.96
26	11347.00	82.60	11.10	11090.66	517.30	517.31	-0.59	517.31	359.93	13.25
27	11378.00	87.10	11.00	11093.44	547.55	547.61	5.33	547.63	0.56	14.52
28	11410.00	91.60	10.30	11093.80	578.95	579.04	11.24	579.15	1.11	14.23
29	11505.00	90.30	7.40	11092.23	672.68	672.89	25.85	673.39	2.20	3.34
30	11599.00	90.80	4.90	11091.33	766.05	766.34	35.92	767.18	2.68	2.71
31	11693.00	90.00	2.10	11090.67	859.82	860.15	41.66	861.16	2.77	3.10
32	11788.00	91.60	1.80	11089.34	954.73	955.08	44.89	956.14	2.69	1.71
33	11882.00	89.00	0.20	11088.85	1048.68	1049.05	46.53	1050.09	2.54	3.25
34	11977.00	90.00	359.70	11089.68	1143.68	1144.05	46.45	1144.99	2.32	1.18
35	12071.00	91.10	360.00	11088.78	1237.67	1238.04	46.20	1238.90	2.14	1.21
36	12166.00	92.00	359.40	11086.21	1332.63	1333.01	45.70	1333.79	1.96	1.14
37	12260.00	93.20	359.40	11081.94	1426.54	1426.90	44.72	1427.60	1.80	1.28
38	12355.00	91.60	356.90	11077.97	1521.41	1521.76	41.66	1522.33	1.57	3.12
39	12449.00	91.10	357.10	11075.75	1615.29	1615.60	36.74	1616.02	1.30	0.57
40	12544.00	88.30	357.30	11076.25	1710.20	1710.48	32.10	1710.78	1.08	2.95
41	12638.00	89.40	357.10	11078.13	1804.10	1804.35	27.51	1804.56	0.87	1.19



42	12733.00	90.20	357.00	11078.47	1899.00	1899.22	22.62	1899.35	0.68	0.85
43	12828.00	91.30	356.60	11077.22	1993.88	1994.06	17.32	1994.14	0.50	1.23
44	12922.00	90.80	358.90	11075.50	2087.81	2087.97	13.63	2088.01	0.37	2.50
45	13017.00	90.60	359.80	11074.34	2182.80	2182.95	12.55	2182.99	0.33	0.97
46	13111.00	90.60	0.80	11073.36	2276.79	2276.94	13.04	2276.98	0.33	1.06
47	13206.00	92.10	0.50	11071.12	2371.74	2371.91	14.12	2371.95	0.34	1.61
48	13300.00	88.80	1.10	11070.38	2465.70	2465.88	15.43	2465.93	0.36	3.57
49	13394.00	90.10	0.80	11071.28	2559.67	2559.86	16.99	2559.92	0.38	1.42
50	13489.00	92.00	0.60	11069.54	2654.63	2654.84	18.15	2654.90	0.39	2.01
51	13583.00	91.60	359.50	11066.59	2748.58	2748.79	18.23	2748.85	0.38	1.24
52	13678.00	89.30	360.00	11065.84	2843.57	2843.78	17.82	2843.83	0.36	2.48
53	13771.00	91.10	359.70	11065.52	2936.57	2936.77	17.57	2936.83	0.34	1.96
54	13865.00	89.50	358.90	11065.02	3030.56	3030.76	16.42	3030.81	0.31	1.90
55	13959.00	92.00	358.80	11063.79	3124.54	3124.73	14.54	3124.76	0.27	2.66
56	14054.00	91.90	359.40	11060.56	3219.48	3219.66	13.05	3219.69	0.23	0.64
57	14148.00	90.10	358.30	11058.92	3313.45	3313.62	11.16	3313.64	0.19	2.24
58	14243.00	90.90	359.90	11058.09	3408.44	3408.60	9.67	3408.62	0.16	1.88
59	14337.00	91.50	359.20	11056.12	3502.42	3502.58	8.93	3502.59	0.15	0.98
60	14431.00	89.90	358.90	11054.98	3596.40	3596.55	7.37	3596.56	0.12	1.73
61	14526.00	89.90	359.40	11055.14	3691.40	3691.54	5.96	3691.55	0.09	0.53
62	14620.00	91.30	358.70	11054.16	3785.39	3785.52	4.40	3785.52	0.07	1.67
63	14715.00	89.80	357.70	11053.24	3880.35	3880.47	1.42	3880.47	0.02	1.90
64	14809.00	92.10	357.20	11051.69	3974.27	3974.35	-2.76	3974.36	359.96	2.50
65	14903.00	91.00	356.70	11049.14	4068.13	4068.19	-7.76	4068.19	359.89	1.29
66	14997.00	88.80	356.80	11049.31	4162.01	4162.03	-13.09	4162.05	359.82	2.34
67	15092.00	90.90	356.80	11049.56	4256.89	4256.87	-18.39	4256.91	359.75	2.21
68	15186.00	89.10	358.00	11049.56	4350.82	4350.77	-22.66	4350.83	359.70	2.30
69	15280.00	90.70	358.00	11049.72	4444.78	4444.71	-25.94	4444.79	359.67	1.70
70	15359.00	93.00	357.90	11047.17	4523.70	4523.61	-28.76	4523.71	359.64	2.91
PTB	15405.00	93.00	357.90	11044.76	4569.62	4569.52	-30.44	4569.62	359.62	0.00

