

Gyro Survey Report

Client: Santos Ltd

Well: West Mereenie 21

Field: Mereenie

Latitude: 023° 56' 07.32" S.

Longitude: 131° 24' 43.65" E.

Survey Date: 1-Oct-13

Survey Engineer: J. Hollingworth

Report Date: 1/10/2013

Event Summary Report



Well Information			
Client	Well Name	Field	Country
Santos Ltd	West Mereenie 21	Mereenie	Australia
State	Survey Tool	Latitude	Longitude
Northern Territory	North Seeking Gyro	023° 56' 07.32" S.	131° 24' 43.65" E.
Map Northing	Map Easting	Datum	Zone
7 350 831.735 N	745 511.188 E	GDA94	52
Survey Information			
Ref Datum	Ground Level	Depth Reference	Depth Above Reference
Ground Level	749.4 m	ОКВ	5.15 m
Survey Date	Survey Reference	Survey From	Survey To
1-Oct-13	True North	0	540 m MD
Comp Rep	Survey Engineer	Wireline Company	Conveyance Tools SN
G. Nairn	J. Hollingworth	Huracan	Wireline 1307

Comments

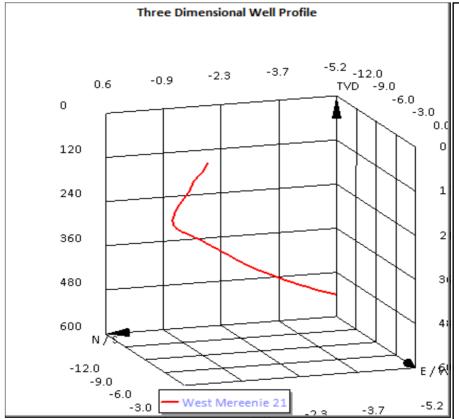
Profile computed using minimum curvature method.

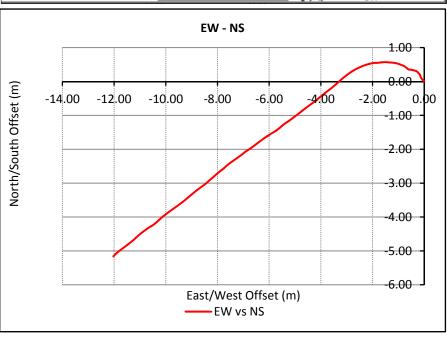
Date	Time	Comments
1-Oct-13	7:00	Depart Mereenie for Ensign rig.
	7:30	Arrive Ensign, perform rig induction.
	8:00	PTW and start to rig up on WM 19.
	9:00	Operational check on Gyro.
	9:15	Start to RIH performing surveys.
	10:10	Tagged HUD @512m. Start Gyro out-run.
	11:05	OOH, start to rig down.
	12:30	Depart location for West Mereenie 21.
	12:45	Arrive West Mereenie 21, start to rig up.
	13:00	Start to RIH performing surveys.
	13:50	Tagged HUD @541m. Start Gyro out-run.
	14:30	OOH, start to rig down.
	14:45	Depart location for West Mereenie 22.

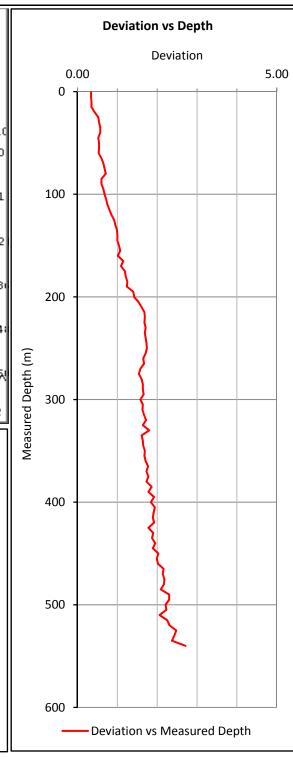
Three Dimensional Well Profile / NS - EW Plot



Well Information							
Client		Well Name		Field			
Santos Ltd		West Mereenie	21	Mereenie	Mereenie		
Country		State		Survey Tool			
Australia		Northern Territo	ry	North Seeking (North Seeking Gyro		
Survey Information	on						
Reference Datum	Ground Level	Depth Reference	Elevation	Survey From	Survey To		
Ground Level	749.4 m	ОКВ	5.15 m	0 m MD	540 m MD		
Survey Date	Survey Reference	Latitude	Longitude	Datum	Zone		
1-Oct-13	True North	023° 56' 07.32" S.	131° 24' 43.65" E.	GDA94	52		
	Map Easting	Conveyance Type	Wireline Company	Survey Engineer	Tool Serial Number		
Map Northing			Huracan	J. Hollingworth	1307		







Survey Data / 5 m Intervals



Well Information						
Client	Well Name	Field	Country			
Santos Ltd	West Mereenie 21	Mereenie	Australia			
State	Survey Tool	Latitude	Longitude			
Northern Territory	North Seeking Gyro	023° 56' 07.32" S.	131° 24' 43.6	55" E.		
Map Northing	Map Easting	Datum	Zone			
7 350 831.735 N	745 511.188 E	GDA94	52	52		
Survey Information						
Ref Datum	Ground Level	Depth Reference	Depth Above Refer	ence		
Ground Level	749.4 m	ОКВ	5.15 m			
Survey Date	Survey Reference	Survey From	Survey To			
1-Oct-13	True North	0	540 m MD			
Santos Ltd Rep	Survey Engineer	Wireline Company	Conveyance	Tools SN		
G. Nairn	J. Hollingworth	Huracan	Wireline	1307		

Profile comput	Profile computed using minimum curvature method.									
Measured	Inclination	Azimuth [deg]	Closure	True Vertical	Northing	Easting	Closure			
Depth [m]	[deg]		Direction	Depth [m]	(Latitude) [m]	(Departure)	Distance			
						[m]				
0.0	0.34	319.10	0.00	0	0.00	0.00	0.00			
5.0	0.34	320.16	315.00	5.00	0.02	-0.02	0.03			
10.0	0.35	294.42	312.80	10.00	0.04	-0.04	0.06			
15.0	0.35	306.47	311.95	15.00	0.06	-0.07	0.09			
20.0	0.43	311.62	308.13	20.00	0.07	-0.09	0.12			
25.0	0.52	323.90	312.51	25.00	0.11	-0.12	0.16			
30.0	0.54	340.28	315.00	30.00	0.15	-0.15	0.21			
35.0	0.57	328.03	319.78	35.00	0.19	-0.16	0.25			
40.0	0.57	314.76	319.24	40.00	0.23	-0.20	0.30			
45.0	0.52	300.25	317.78	45.00	0.26	-0.24	0.35			
50.0	0.54	302.46	317.05	50.00	0.29	-0.27	0.40			
55.0	0.54	285.36	314.09	54.99	0.31	-0.32	0.45			
60.0	0.53	284.49	311.59	60.00	0.32	-0.36	0.48			
65.0	0.60	280.19	308.83	65.00	0.33	-0.41	0.53			
70.0	0.65	283.82	306.19	70.00	0.34	-0.46	0.58			
75.0	0.68	270.26	303.90	75.00	0.35	-0.52	0.63			
80.0	0.71	269.52	300.99	80.00	0.35	-0.58	0.68			
85.0	0.60	319.27	299.92	85.00	0.37	-0.64	0.73			
90.0	0.60	306.24	300.36	90.00	0.40	-0.68	0.78			
95.0	0.65	298.77	300.58	95.00	0.42	-0.72	0.83			
100.0	0.68	295.82	300.33	100.00	0.45	-0.77	0.89			
105.0	0.72	288.01	299.95	105.00	0.47	-0.82	0.95			
110.0	0.75	286.43	299.02	109.99	0.49	-0.89	1.02			
115.0	0.80	283.35	297.93	115.27	0.51	-0.96	1.08			
120.0	0.85	281.17	297.12	120.00	0.53	-1.03	1.15			
125.0	0.92	278.52	296.15	124.99	0.54	-1.10	1.22			
130.0	0.95	277.56	294.98	129.99	0.55	-1.18	1.30			
135.0	0.99	274.96	293.83	135.00	0.56	-1.27	1.38			
140.0	1.00	272.29	292.54	139.99	0.56	-1.35	1.46			
145.0	1.00	272.98	291.57	144.99	0.57	-1.44	1.55			
150.0	1.04	270.60	290.42	149.98	0.57	-1.53	1.63			
155.0	1.07	268.10	289.31	154.99	0.57	-1.62	1.72			
160.0	1.01	266.82	288.10	159.99	0.56	-1.71	1.80			
165.0	1.15	264.84	286.90	164.99	0.55	-1.81	1.89			
170.0	1.09	264.66	286.06	169.98	0.55	-1.91	1.99			
175.0	1.19	263.93	284.99	174.98	0.54	-2.01	2.08			

180.0	1.21	260.38	283.93	179.99	0.52	-2.11	2.17
185.0	1.25	257.46	282.73	184.98	0.50	-2.21	2.27
190.0	1.24	252.89	281.65	189.99	0.48	-2.32	2.37
195.0	1.40	253.44	280.26	194.98	0.44	-2.43	2.47
200.0	1.42	249.36	278.92	199.97	0.40	-2.54	2.57
205.0	1.53	246.96	277.68	204.97	0.36	-2.66	2.69
210.0	1.61	245.01	276.11	209.98	0.30	-2.79	2.81
215.0	1.68	242.72	274.57	214.97	0.23	-2.92	2.93
220.0	1.69	238.87	273.12	219.97	0.17	-3.04	3.05
225.0	1.68	236.61	271.61	224.97	0.09	-3.16	3.16
230.0	1.71	235.41	270.00	229.96	0.00	-3.29	3.29
235.0	1.69	236.62	268.71	234.96	-0.08	-3.41	3.41
240.0	1.71	236.25	267.40	239.96	-0.16	-3.54	3.54
245.0	1.73	240.33	266.26	244.96	-0.24	-3.66	3.67
250.0	1.74	239.32	265.27	249.96	-0.31	-3.79	3.81
255.0	1.71	237.27	264.27	254.96	-0.39	-3.92	3.94
260.0	1.65	237.84	263.36	259.95	-0.47	-4.05	4.07
265.0	1.67	239.62	262.50	264.95	-0.55	-4.17	4.20
270.0	1.58	240.94	261.81	269.95	-0.62	-4.29	4.33
275.0	1.54	239.77	261.17	274.95	-0.68	-4.40	4.46
280.0	1.61	241.18	260.59	279.94	-0.75	-4.53	4.59
285.0	1.64	239.59	259.95	284.94	-0.82	-4.64	4.72
290.0	1.64	242.65	259.42	289.95	-0.82	-4.77	4.72
295.0	1.66	238.99	258.80	294.94	-0.89	-4.77	4.83
300.0	1.58	242.72	258.30	294.94	-1.04	-5.02	5.13
							5.15
305.0 310.0	1.64	241.37	257.85	304.94	-1.11	-5.14	5.40
	1.63	240.98	257.38	309.93	-1.18	-5.27	
315.0	1.67	240.48	257.01	314.93	-1.24	-5.39	5.54
320.0	1.72	237.77	256.56	319.93	-1.32	-5.52	5.67
325.0	1.64	239.88	256.10	324.93	-1.40	-5.64	5.81
330.0	1.80	244.28	255.75	329.93	-1.47	-5.77	5.96
335.0	1.61	243.72	255.49	334.92	-1.53	-5.91	6.11
340.0	1.64	242.94	255.19	339.92	-1.60	-6.04	6.25
345.0	1.65	242.08	254.94	344.92	-1.66	-6.17	6.39
350.0	1.69	240.51	254.60	349.92	-1.73	-6.29	6.53
355.0	1.68	240.18	254.32	354.91	-1.80	-6.42	6.67
360.0	1.71	241.45	254.00	359.91	-1.88	-6.55	6.81
365.0	1.77	242.66	253.75	364.91	-1.95	-6.68	6.96
370.0	1.73	240.74	253.48	369.90	-2.02	-6.82	7.11
375.0	1.78	240.41	253.26	374.91	-2.09	-6.95	7.26
380.0	1.73	238.44	252.94	379.90	-2.17	-7.08	7.41
385.0	1.86	240.16	252.70	384.90	-2.25	-7.22	7.56
390.0	1.78	243.20	252.50	389.90	-2.32	-7.36	7.72
395.0	1.92	238.55	252.25	394.90	-2.40	-7.50	7.87
400.0	1.84	234.57	251.98	399.89	-2.48	-7.64	8.03
405.0	1.94	238.41	251.64	404.89	-2.58	-7.78	8.20
410.0	1.91	239.42	251.41	409.89	-2.66	-7.92	8.36
415.0	1.89	237.46	251.18	414.88	-2.75	-8.06	8.52
420.0	1.92	235.03	250.86	419.88	-2.84	-8.19	8.67
425.0	1.78	235.84	250.62	424.88	-2.93	-8.33	8.83
430.0	1.90	239.71	250.35	429.87	-3.02	-8.46	8.98
435.0	1.87	240.18	250.19	434.87	-3.10	-8.60	9.14
440.0	1.95	240.14	250.02	439.87	-3.18	-8.75	9.31
445.0	1.89	238.79	249.83	444.87	-3.27	-8.90	9.48

455.0 1.99 236.54 249.39 454.86 -3.46 -9.19 9.82 460.0 2.02 239.00 249.21 459.86 -3.55 -9.34 10.00 465.0 2.16 237.20 249.03 464.85 -3.64 -9.50 10.17 470.0 2.14 241.51 248.90 469.85 -3.73 -9.66 10.35 475.0 2.18 240.06 248.77 474.85 -3.82 -9.82 10.54 480.0 2.17 240.43 248.60 479.85 -3.91 -9.99 10.73 485.0 2.09 238.34 248.44 484.84 -4.01 -10.15 10.91 490.0 2.30 233.81 248.23 489.83 -4.12 -10.31 11.10 495.0 2.30 240.41 248.00 494.83 -4.23 -10.48 11.30 500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40								
460.0 2.02 239.00 249.21 459.86 -3.55 -9.34 10.00 465.0 2.16 237.20 249.03 464.85 -3.64 -9.50 10.17 470.0 2.14 241.51 248.90 469.85 -3.73 -9.66 10.35 475.0 2.18 240.06 248.77 474.85 -3.82 -9.82 10.54 480.0 2.17 240.43 248.60 479.85 -3.91 -9.99 10.73 485.0 2.09 238.34 248.44 484.84 -4.01 -10.15 10.91 490.0 2.30 233.81 248.23 489.83 -4.12 -10.31 11.10 495.0 2.30 240.41 248.00 494.83 -4.23 -10.48 11.30 500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50	450.0	2.03	239.33	249.59	449.87	-3.36	-9.04	9.65
465.0 2.16 237.20 249.03 464.85 -3.64 -9.50 10.17 470.0 2.14 241.51 248.90 469.85 -3.73 -9.66 10.35 475.0 2.18 240.06 248.77 474.85 -3.82 -9.82 10.54 480.0 2.17 240.43 248.60 479.85 -3.91 -9.99 10.73 485.0 2.09 238.34 248.44 484.84 -4.01 -10.15 10.91 490.0 2.30 233.81 248.23 489.83 -4.12 -10.31 11.10 495.0 2.30 240.41 248.00 494.83 -4.23 -10.48 11.30 500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60	455.0	1.99	236.54	249.39	454.86	-3.46	-9.19	9.82
470.0 2.14 241.51 248.90 469.85 -3.73 -9.66 10.35 475.0 2.18 240.06 248.77 474.85 -3.82 -9.82 10.54 480.0 2.17 240.43 248.60 479.85 -3.91 -9.99 10.73 485.0 2.09 238.34 248.44 484.84 -4.01 -10.15 10.91 490.0 2.30 233.81 248.23 489.83 -4.12 -10.31 11.10 495.0 2.30 240.41 248.00 494.83 -4.23 -10.48 11.30 500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72	460.0	2.02	239.00	249.21	459.86	-3.55	-9.34	10.00
475.0 2.18 240.06 248.77 474.85 -3.82 -9.82 10.54 480.0 2.17 240.43 248.60 479.85 -3.91 -9.99 10.73 485.0 2.09 238.34 248.44 484.84 -4.01 -10.15 10.91 490.0 2.30 233.81 248.23 489.83 -4.12 -10.31 11.10 495.0 2.30 240.41 248.00 494.83 -4.23 -10.48 11.30 500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.66 530.0 2.48 240.30 247.23 524.81 -4.93	465.0	2.16	237.20	249.03	464.85	-3.64	-9.50	10.17
480.0 2.17 240.43 248.60 479.85 -3.91 -9.99 10.73 485.0 2.09 238.34 248.44 484.84 -4.01 -10.15 10.91 490.0 2.30 233.81 248.23 489.83 -4.12 -10.31 11.10 495.0 2.30 240.41 248.00 494.83 -4.23 -10.48 11.30 500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.26 525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 <td>470.0</td> <td>2.14</td> <td>241.51</td> <td>248.90</td> <td>469.85</td> <td>-3.73</td> <td>-9.66</td> <td>10.35</td>	470.0	2.14	241.51	248.90	469.85	-3.73	-9.66	10.35
485.0 2.09 238.34 248.44 484.84 -4.01 -10.15 10.91 490.0 2.30 233.81 248.23 489.83 -4.12 -10.31 11.10 495.0 2.30 240.41 248.00 494.83 -4.23 -10.48 11.30 500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.26 525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 <td>475.0</td> <td>2.18</td> <td>240.06</td> <td>248.77</td> <td>474.85</td> <td>-3.82</td> <td>-9.82</td> <td>10.54</td>	475.0	2.18	240.06	248.77	474.85	-3.82	-9.82	10.54
490.0 2.30 233.81 248.23 489.83 -4.12 -10.31 11.10 495.0 2.30 240.41 248.00 494.83 -4.23 -10.48 11.30 500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.26 525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	480.0	2.17	240.43	248.60	479.85	-3.91	-9.99	10.73
495.0 2.30 240.41 248.00 494.83 -4.23 -10.48 11.30 500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.26 525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	485.0	2.09	238.34	248.44	484.84	-4.01	-10.15	10.91
500.0 2.21 244.22 247.95 499.83 -4.31 -10.65 11.49 505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.26 525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	490.0	2.30	233.81	248.23	489.83	-4.12	-10.31	11.10
505.0 2.23 240.67 247.86 504.82 -4.40 -10.82 11.68 510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.26 525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	495.0	2.30	240.41	248.00	494.83	-4.23	-10.48	11.30
510.0 2.06 237.23 247.72 509.82 -4.50 -10.99 11.88 515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.26 525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	500.0	2.21	244.22	247.95	499.83	-4.31	-10.65	11.49
515.0 2.25 234.98 247.56 514.82 -4.60 -11.14 12.05 520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.26 525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	505.0	2.23	240.67	247.86	504.82	-4.40	-10.82	11.68
520.0 2.31 238.43 247.35 519.81 -4.72 -11.31 12.26 525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	510.0	2.06	237.23	247.72	509.82	-4.50	-10.99	11.88
525.0 2.48 240.30 247.23 524.81 -4.82 -11.49 12.46 530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	515.0	2.25	234.98	247.56	514.82	-4.60	-11.14	12.05
530.0 2.43 239.14 247.10 529.81 -4.93 -11.67 12.67 535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	520.0	2.31	238.43	247.35	519.81	-4.72	-11.31	12.26
535.0 2.37 240.31 247.00 534.80 -5.03 -11.85 12.88	525.0	2.48	240.30	247.23	524.81	-4.82	-11.49	12.46
	530.0	2.43	239.14	247.10	529.81	-4.93	-11.67	12.67
540.0 2.71 229.93 246.78 539.80 -5.16 -12.03 13.09	535.0	2.37	240.31	247.00	534.80	-5.03	-11.85	12.88
	540.0	2.71	229.93	246.78	539.80	-5.16	-12.03	13.09