



Gyrodata Incorporated  
10504 WCR 72  
Midland, TX 79707

Main: 432-561-8458  
Fax: 432-563-7982

May 10, 2017

**Railroad Commission of Texas  
Oil & Gas Division  
P.O. Box 12967  
Capitol Station  
Austin, Texas 78711**

Attn: Ms. Pamela Johns

**RE:  
QEP ENERGY COMPANY  
UNIVERSITY 7-2730-S #07MA  
Permit No. 820022  
UL /Abstract/A-U27  
SPRABERRY (Trend Area)  
MARTIN County, Texas  
API No. 42-317-40596**

Ms. Johns:

Enclosed, please find the original and one copy of the survey performed on the referenced well by Gyrodata, Inc (P-5 No. 339711). Other information required by your office is as follows:

Name & Title Of Surveyor	Drainhole Number	Surveyed Depths	Dates Performed	Type of Survey
Chester Stearns Surveyor	Original Hole	0'-8230.50'	03/09/17-03/09/17	Gyroscopic Multishot

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in the case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Sincerely,

Heather Weidemann  
Operations Assistant

Enclosure

A Gyrodata Directional Survey

**FINAL DEFINITIVE COPY**

for

**QEP ENERGY COMPANY**

Lease: University 7-2730-S Well: 07MA, 5" Drillpipe  
Location: Unit 410, Martin County, Texas

Job Number: MD0317GDM232

Run Date: 09 Mar 2017  
Report Generated: 10 May 2017 11:16

Surveyor: Chester Stearns

Calculation Method: MINIMUM CURVATURE

Survey surface coordinates obtained from: Well Plan/Plot  
Survey Latitude: 32.393347 deg. N  
Longitude: 102.177631 deg. W

Well Head Location -  
From Local Horizontal Reference: N 0.00 ft. E 0.00 ft.

Azimuth Correction:  
Gyro: 2.55000 deg to Grid North

Depth Reference: Rotary Table

Air Gap (RKB to Ground / RKB to MSL): 21.00

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Local Horizontal Reference

# A Gyrodata Directional Survey

QEP Energy Company

Lease: University 7-2730-S Well: 07MA, 5" Drillpipe

Location: Unit 410, Martin County, Texas

Job Number: MD0317GDM232

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
0.00	0.00	0.00	0.00	0.00	0.0 0.0	0.00 N 0.00 E
0 - 8230.50 FT. RATE-GYROSCOPIC MULTISHOT SURVEY RUN INSIDE 5" DRILLPIPE. ALL MEASURED DEPTHS AND COORDINATES REFERENCED TO UNIT 410 RKB HEIGHT OF 21 FT.						
80.30	0.72	165.95	0.89	80.30	0.5 166.0	0.49 S 0.12 E
173.84	0.71	156.91	0.12	173.83	1.7 162.8	1.59 S 0.49 E
267.18	0.95	196.42	0.65	267.16	2.9 170.1	2.86 S 0.50 E
360.76	1.41	203.94	0.52	360.72	4.7 182.3	4.66 S 0.19 W
457.06	1.39	208.66	0.12	456.99	6.9 190.3	6.76 S 1.23 W
551.67	1.27	216.56	0.23	551.58	8.9 195.6	8.61 S 2.40 W
646.28	1.58	215.59	0.33	646.16	11.2 199.8	10.52 S 3.79 W
740.94	2.64	217.29	1.12	740.75	14.5 203.8	13.31 S 5.87 W
835.51	3.96	217.56	1.40	835.16	19.9 207.5	17.64 S 9.18 W
930.09	4.18	219.39	0.27	929.50	26.5 210.3	22.89 S 13.36 W
1024.62	3.98	229.17	0.76	1023.80	33.0 213.1	27.70 S 18.03 W
1119.17	3.84	245.05	1.15	1118.13	39.0 216.9	31.18 S 23.39 W
1213.73	4.33	250.60	0.66	1212.45	44.9 221.3	33.70 S 29.62 W
1308.25	4.40	251.04	0.08	1306.69	51.2 225.3	36.06 S 36.41 W
1402.73	4.54	252.64	0.20	1400.89	57.9 228.5	38.36 S 43.41 W
1497.35	4.51	253.45	0.07	1495.21	64.8 231.3	40.53 S 50.55 W
1591.88	4.59	252.19	0.13	1589.44	71.8 233.5	42.75 S 57.72 W

# A Gyrodata Directional Survey

QEP Energy Company

Lease: University 7-2730-S Well: 07MA, 5" Drillpipe

Location: Unit 410, Martin County, Texas

Job Number: MD0317GDM232

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
1686.46	5.04	246.22	0.71	1683.69	79.5 235.0	45.58 S 65.12 W
1781.01	5.82	243.49	0.87	1777.82	88.3 236.0	49.40 S 73.21 W
1875.52	5.75	243.85	0.08	1871.84	97.8 236.7	53.62 S 81.75 W
1970.06	5.55	245.53	0.28	1965.93	107.0 237.4	57.60 S 90.16 W
2064.57	5.68	246.09	0.16	2059.98	116.1 238.1	61.39 S 98.60 W
2159.14	6.24	252.66	0.93	2154.04	125.8 239.0	64.82 S 107.79 W
2253.69	6.63	251.27	0.44	2247.99	136.1 240.0	68.11 S 117.87 W
2348.25	6.87	250.67	0.27	2341.90	147.1 240.8	71.73 S 128.37 W
2442.74	6.93	250.26	0.08	2435.70	158.3 241.5	75.53 S 139.08 W
2537.19	7.07	250.24	0.15	2529.45	169.7 242.1	79.42 S 149.91 W
2631.67	7.13	247.84	0.32	2623.21	181.2 242.5	83.60 S 160.82 W
2726.12	7.07	243.12	0.62	2716.93	192.9 242.7	88.44 S 171.43 W
2820.58	6.95	241.85	0.21	2810.69	204.4 242.7	93.76 S 181.66 W
2915.02	5.98	244.00	1.06	2904.52	215.1 242.7	98.62 S 191.12 W
3009.52	5.80	244.18	0.19	2998.52	224.8 242.8	102.86 S 199.84 W
3103.97	5.59	243.57	0.24	3092.51	234.1 242.8	106.98 S 208.25 W
3198.42	5.53	243.83	0.07	3186.51	243.3 242.8	111.03 S 216.45 W
3292.86	5.51	244.14	0.04	3280.52	252.3 242.9	115.01 S 224.61 W
3387.44	5.76	246.40	0.36	3374.64	261.6 243.0	118.89 S 233.05 W
3482.04	5.76	250.79	0.47	3468.76	271.1 243.2	122.36 S 241.88 W
3576.57	6.08	250.62	0.33	3562.79	280.7 243.4	125.58 S 251.08 W
3671.08	6.57	251.66	0.53	3656.72	291.1 243.7	128.94 S 260.93 W



# A Gyrodata Directional Survey

QEP Energy Company

Lease: University 7-2730-S Well: 07MA, 5" Drillpipe

Location: Unit 410, Martin County, Texas

Job Number: MD0317GDM232

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
3765.68	6.78	251.43	0.22	3750.68	301.9 244.0	132.42 S 271.36 W
3860.22	6.60	252.74	0.25	3844.58	312.8 244.3	135.81 S 281.83 W
3954.79	6.41	252.42	0.20	3938.54	323.5 244.5	139.02 S 292.06 W
4049.38	6.22	251.63	0.22	4032.56	333.8 244.8	142.23 S 301.96 W
4143.95	6.18	248.77	0.33	4126.57	343.9 244.9	145.69 S 311.56 W
4238.54	6.21	247.04	0.20	4220.61	354.1 245.0	149.52 S 321.02 W
4333.12	6.28	246.35	0.11	4314.63	364.4 245.1	153.60 S 330.48 W
4427.73	5.91	245.50	0.41	4408.70	374.5 245.1	157.69 S 339.65 W
4522.27	6.06	245.02	0.16	4502.73	384.3 245.1	161.82 S 348.60 W
4616.85	5.89	245.01	0.18	4596.79	394.2 245.1	165.98 S 357.52 W
4711.43	5.23	246.16	0.71	4690.93	403.3 245.1	169.77 S 365.87 W
4805.98	4.95	246.88	0.31	4785.11	411.7 245.1	173.11 S 373.56 W
4900.52	4.74	247.12	0.22	4879.31	419.7 245.2	176.23 S 380.91 W
4995.10	4.66	246.93	0.08	4973.57	427.4 245.2	179.26 S 388.04 W
5089.66	4.85	247.52	0.20	5067.81	435.3 245.2	182.29 S 395.27 W
5184.21	5.67	250.46	0.92	5161.96	443.9 245.3	185.38 S 403.37 W
5278.74	6.41	251.95	0.80	5255.96	453.8 245.4	188.58 S 412.79 W
5373.27	6.96	252.44	0.59	5349.85	464.8 245.6	191.94 S 423.27 W
5467.80	6.84	251.47	0.18	5443.69	476.1 245.8	195.46 S 434.07 W
5562.38	7.03	250.58	0.23	5537.58	487.4 245.9	199.18 S 444.88 W
5656.87	6.83	249.84	0.23	5631.38	498.8 246.0	203.04 S 455.61 W

# A Gyrodata Directional Survey

QEP Energy Company

Lease: University 7-2730-S Well: 07MA, 5" Drillpipe

Location: Unit 410, Martin County, Texas

Job Number: MD0317GDM232

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
5751.35	6.57	250.35	0.29	5725.21	509.8 246.1	206.79 S 465.97 W
5845.83	6.29	250.88	0.30	5819.10	520.4 246.2	210.31 S 475.96 W
5940.28	5.95	251.36	0.37	5913.01	530.4 246.3	213.57 S 485.49 W
6034.75	6.08	250.01	0.20	6006.96	540.3 246.3	216.84 S 494.82 W
6129.18	6.09	249.53	0.05	6100.86	550.2 246.4	220.30 S 504.21 W
6223.67	5.83	250.10	0.28	6194.84	560.0 246.5	223.69 S 513.42 W
6318.22	5.96	247.78	0.29	6288.89	569.7 246.5	227.18 S 522.48 W
6412.75	5.26	245.64	0.77	6382.96	579.0 246.5	230.82 S 530.97 W
6507.31	4.72	249.48	0.67	6477.17	587.2 246.5	233.97 S 538.56 W
6601.91	3.95	251.10	0.82	6571.49	594.3 246.6	236.39 S 545.29 W
6696.44	3.17	246.00	0.90	6665.84	600.2 246.6	238.51 S 550.76 W
6790.99	2.76	238.29	0.60	6760.27	605.1 246.6	240.77 S 555.08 W
6885.52	1.97	233.46	0.86	6854.71	608.9 246.5	242.93 S 558.32 W
6980.05	1.43	230.83	0.58	6949.20	611.6 246.4	244.65 S 560.54 W
7074.46	0.79	241.20	0.71	7043.59	613.4 246.4	245.70 S 562.03 W
7168.94	0.48	245.62	0.33	7138.07	614.4 246.4	246.18 S 562.96 W
7263.58	0.37	262.07	0.17	7232.71	615.1 246.4	246.39 S 563.62 W
7358.07	0.39	334.56	0.48	7327.19	615.4 246.4	246.14 S 564.06 W
7452.64	0.62	358.05	0.32	7421.76	615.2 246.5	245.34 S 564.22 W
7547.20	0.48	356.32	0.15	7516.32	614.9 246.6	244.43 S 564.26 W
7641.75	0.37	348.12	0.13	7610.86	614.7 246.6	243.74 S 564.35 W
7736.25	0.37	339.41	0.06	7705.36	614.7 246.7	243.15 S 564.52 W

# A Gyrodata Directional Survey

QEP Energy Company

Lease: University 7-2730-S Well: 07MA, 5" Drillpipe

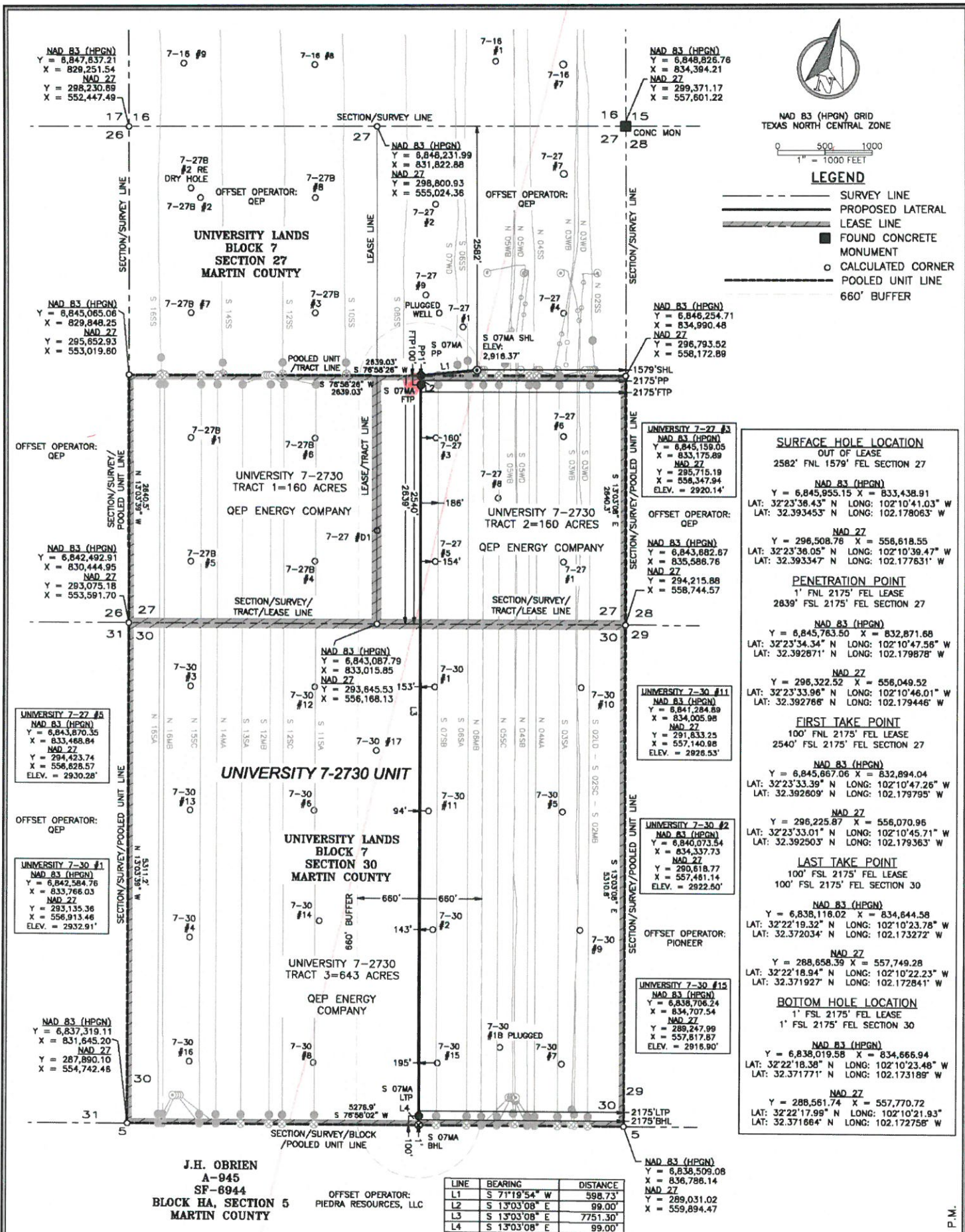
Location: Unit 410, Martin County, Texas

Job Number: MD0317GDM232

MEASURED DEPTH feet	INCL deg.	AZIMUTH deg.	DOGLEG SEVERITY deg./ 100 ft.	VERTICAL DEPTH feet	CLOSURE DIST. AZIMUTH feet deg.	HORIZONTAL COORDINATES feet
7830.77	0.20	303.20	0.25	7799.88	614.7 246.7	242.78 S 564.76 W
7925.24	0.58	203.18	0.68	7894.35	615.2 246.7	243.12 S 565.09 W
8019.80	1.17	185.60	0.68	7988.90	616.0 246.6	244.53 S 565.37 W
8114.36	1.46	166.38	0.55	8083.43	616.7 246.4	246.66 S 565.18 W
8208.84	1.45	137.65	0.76	8177.88	616.5 246.2	248.71 S 564.10 W
8230.50	1.48	129.79	0.94	8199.54	616.3 246.2	249.09 S 563.70 W

Final Station Closure: Distance: 616.28 ft Az: 246.16 deg.





I HEREBY STATE THAT THIS PLAT SHOWS THE SUBJECT SURFACE LOCATION AS STAKED ON THE GROUND.

*John E. Kowalik*

JOHN E. KOWALIK  
REGISTERED PROFESSIONAL LAND SURVEYOR  
STATE OF TEXAS NO. 6408



**FSC INC**  
SURVEYORS + ENGINEERS  
550 Bailey Ave., 205 - Fort Worth, TX 76107  
Ph: 817.349.9800 - Fax: 979.732.5271  
TBPB Firm 17927 | TBPB Firm 10193887  
www.fscinc.net

PLAT OF:  
A PROPOSED WELL LOCATION FOR:  
**QEP ENERGY COMPANY**  
**UNIVERSITY 7-2730 UNIT**  
**UNIVERSITY 7-2730 S 07MA**  
SITUATED IN THE UNIVERSITY LANDS, BLOCK 7, SECTIONS 27 AND 30, AND BEING APPROXIMATELY 21.6 MILES NORTHEAST OF ANDREWS IN MARTIN COUNTY, TEXAS.



**GENERAL NOTES**

- COORDINATES SHOWN ARE BASED ON TEXAS COORDINATE SYSTEM OF NAD 83 (HPGN) "TEXAS NORTH CENTRAL ZONE", AND BASED ON "GLASS" NG5 MONUMENT (Y = 6,817,164.36, X = 834,131.39)
- VERTICAL DATUM IS NAVD 88
- LATITUDE AND LONGITUDE ARE NAD 83 (HPGN) AS SHOWN
- AREA, DISTANCES, AND COORDINATES ARE "GRID"
- UNITS ARE UNITED STATES SURVEY FOOT
- ALL LEASE AND TRACT INFORMATION SHOWN HERE ON IS DONE SO BY LIMITED DEED RECORD INFORMATION ONLY. ALL ACRESAGES SHOWN ARE BY DEED AND LEASE CALL, EXCEPT WHERE NOTED. THIS IS NOT IN ANY WAY A "BOUNDARY SURVEY".

**DATE:** 10-26-2016  
**DRAWN BY:** GG  
**CHECKED BY:** JK  
**FIELD CREW:** RE  
**PROJECT NO:** 2016090809  
**SCALE:** 1" = 1000'  
**SHEET:** 1 OF 1  
**REVISION:** 3

PLOT DATE: 11/07/16 1:30 P.M.





Gyrodata Incorporated  
10504 WCR 72  
Midland, TX 79707

Main: 432-561-8458  
Fax: 432-563-7982

State of Texas  
County of Harris

I, Kevin Willard, certify that; I am employed by Gyrodata Inc.; that I am authorized and qualified to review the Gyroscopic Multishot survey from a depth of 0 feet to a depth of 8230.50 feet conducted on the day(s) of 03/09/17 through 03/09/17; that this survey was conducted at the request QEP Energy Company for the University 7-2730-S #07MA Well API No. 42-317-40596 in Martin County, Texas; that the data is true, correct, complete, and within the limitations of the tool as set forth by Gyrodata Inc.; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Gyrodata Inc.

A handwritten signature in blue ink, appearing to read "Kevin Willard", is written over a horizontal line.

Kevin Willard  
Operations Coordinator



**DIRECTIONAL SERVICES, LLC.**

12074 FM 3083 Rd., Conroe, TX 77304 | P: 936-756-2400 | F: 936-756-2401

March 27, 2017

The Railroad Commission of Texas  
Oil & Gas Division  
P.O. Drawer 12967  
Capital Station  
Austin, TX 78711-2967

Attention: Pam Johns

RE: QEP Resources  
Well: University 7-2730S 07MA  
Field: Spraberry (Trend Area)  
Martin County, TX  
API Number: 42-317-40596

Dear Ms. Johns,

Please find the attached surveys performed on the above referenced well by VON Directional Services, LLC. Other information required by your office is as follows:

Name of surveyor: Chuck Ortego

Original Hole:

Surveyed depths: 8265'–16,387'MD

Job #170007 - Date performed: 01/27/17–2/3/17

Job #170032 - Date performed: 03/9/17-03/22/17

Type of Survey: Directional Survey – EVO

A certified plat on which the bottom hole location is oriented both to the surface location and the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required, please contact the undersigned at the letterhead address and phone number.

Sincerely,

Chuck Ortego  
MWD Manager

# SURVEY DATA CERTIFICATION



**Job #:** 170007 & 170032  
**Client:** QEP Resources  
**County & State:** Martin County, TX.  
**Well:** University 7-2730S 07MA  
**API No:** 42-317-40596  
**Proposed Direction:** 171.75°

## TIE-IN DATA

MD	TVD	INC	AZM	N/-S	E/-W	DATA SOURCE
8,230.50'	8,199.54'	1.48°	129.79°	-249.09'	-563.70	Gyro
<b>Data Source Company:</b>						GyroData

## SURVEY DATA

First Survey Date	First Survey Depth	INC	AZM
27-Jan-17	8,265 ft	2.82°	135.90°

Last Survey Date	Last Survey Depth	INC	AZM
22-Mar-17	16,331 ft	91.28°	167.82°

### Survey Instrument Type

EVO-TOOL

Projected TD Survey Date	Projected TD Survey Depth	INC	AZM
22-Mar-17	16,387 ft	91.28°	167.82°

## CORRECTION INFORMATION

<b>Magnetic Declination Used</b>	6.34	degrees
<b>Grid Convergence Used</b>	2.55	degrees

### Corrected to True/Grid North

Grid North

<b>Total Correction</b>	8.89	degrees
-------------------------	------	---------

TO THE BEST OF MY KNOWLEDGE, I CERTIFY THIS SURVEY DATA TO BE TRUE AND CORRECT.

**Signature**

Chuck Ortego

**Printed Name**

March 27, 2017

**Date**

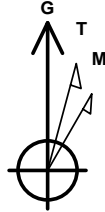


# QEP ENERGY

**Project:** Martin County, TX (NAD27)  
**Site:** University 7-2730 S  
**Well:** 07MA  
**Wellbore:** Lateral  
**Design:** Lateral

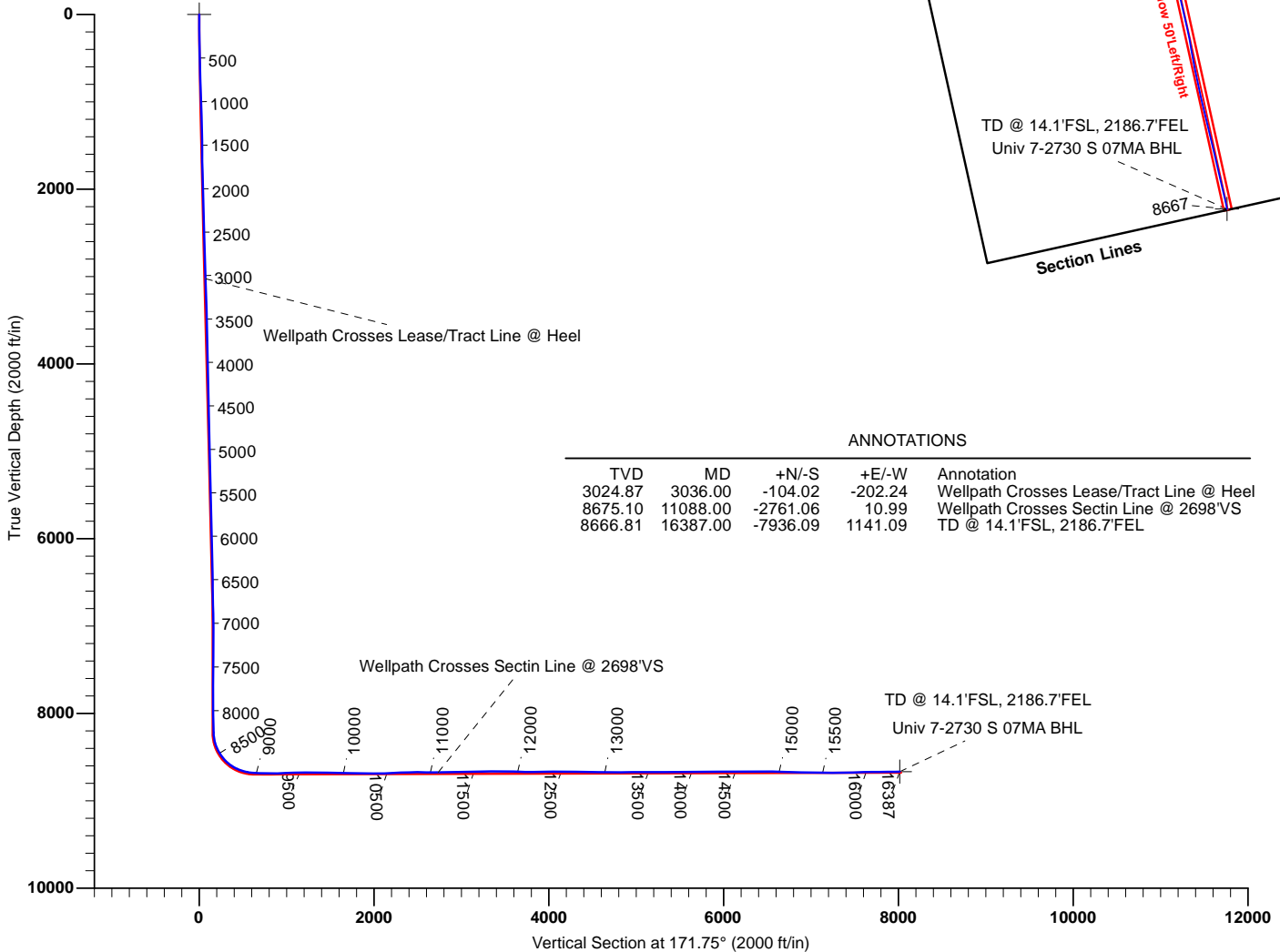
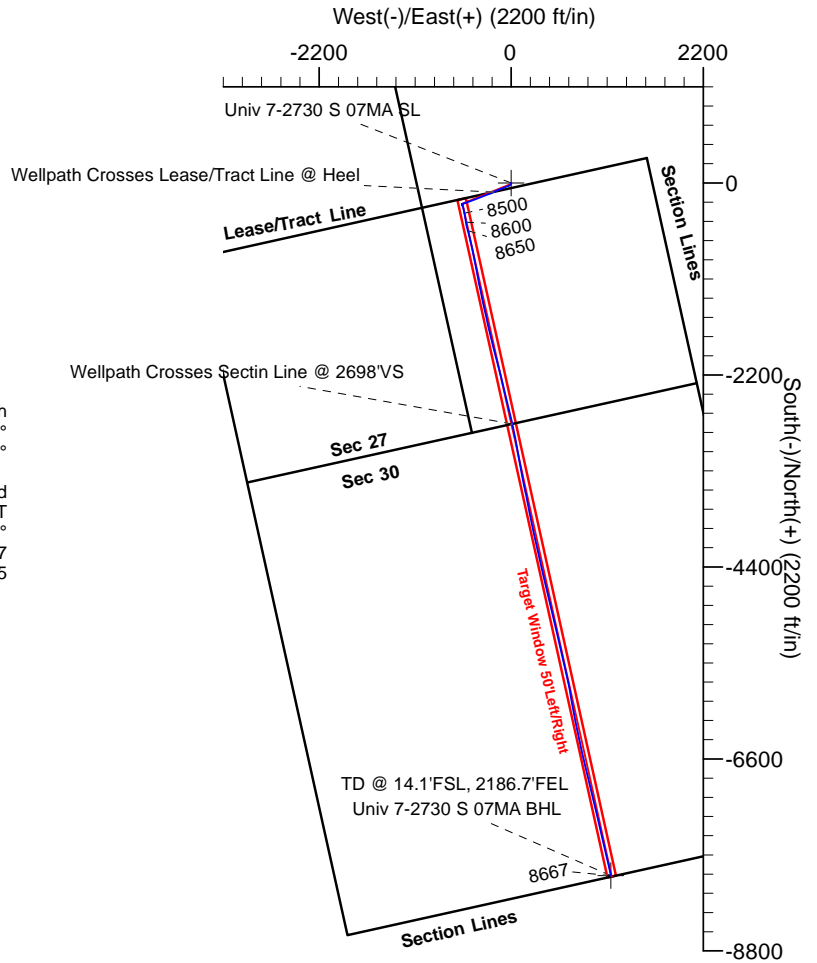


To convert a Magnetic Direction to a Grid Direction, Add 8.89°



Azimuths to Grid North  
 True North: 2.55°  
 Magnetic North: 8.89°

Magnetic Field  
 Strength: 48223.2snT  
 Dip Angle: 60.44°  
 Date: 01/27/2017  
 Model: IGRF2015



## ANNOTATIONS

TVD	MD	+N/-S	+E/-W	Annotation
3024.87	3036.00	-104.02	-202.24	Wellpath Crosses Lease/Tract Line @ Heel
8675.10	11088.00	-2761.06	10.99	Wellpath Crosses Section Line @ 2698°VS
8666.81	16387.00	-7936.09	1141.09	TD @ 14.1°FSL, 2186.7°FEL

## TARGET DETAILS

Name	TVD	+N/-S	+E/-W	Northing	Easting	Shape
Univ 7-2730 S 07MA SL	0.00	0.00	0.00	296508.76	556618.55	Point
Univ 7-2730 S 07MA BHL	8666.81	-7936.09	1141.09	288572.67	557759.64	Point



Job Number: 170032  
 Company: QEP  
 Lease/Well: University 7-2730 S 07MA  
 Location: Martin Co.  
 Rig Name: Unit 410  
 RKB: 2937'  
 G.L. or M.S.L.: 2916'

State/Country: TX/ USA  
 Declination:  
 Grid: 8.91  
 File name: C:\USERS\VON\DESKTOP\UNIVER~3\SVY&MDB\170032  
 Date/Time: 21-Mar-17 / 12:06  
 Curve Name: University 7-2730 S 07MA

## VON Directional

WINSERVE SURVEY CALCULATIONS  
 Minimum Curvature Method  
 Vertical Section Plane 171.75  
 Vertical Section Referenced to Wellhead  
 Rectangular Coordinates Referenced to Wellhead

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	CLOSURE Distance FT	Direction Deg	Dogleg Severity Deg/100
<b>Gyrodata Gyro Tie-In</b>										
8230.50	1.48	129.79	8199.54	-8199.54	-249.09	-563.70	165.63	616.28	246.16	.00
<b>KOP</b>										
8265.00	2.82	135.90	8234.01	-8234.01	-249.98	-562.77	166.64	615.79	246.05	3.93
8296.00	6.85	149.57	8264.90	-8264.90	-252.13	-561.30	168.98	615.33	245.81	13.43
8328.00	10.52	156.62	8296.53	-8296.53	-256.46	-559.17	173.56	615.18	245.36	11.92
8359.00	14.00	160.46	8326.82	-8326.82	-262.59	-556.79	179.98	615.61	244.75	11.52
8391.00	18.12	163.58	8357.56	-8357.56	-271.01	-554.09	188.70	616.82	243.94	13.15
8422.00	22.52	165.52	8386.63	-8386.63	-281.39	-551.24	199.38	618.91	242.96	14.36
8454.00	26.50	165.44	8415.74	-8415.74	-294.24	-547.92	212.57	621.92	241.76	12.44
8485.00	30.54	166.03	8442.97	-8442.97	-308.58	-544.27	227.29	625.67	240.45	13.06
8517.00	33.70	166.95	8470.07	-8470.07	-325.13	-540.31	244.23	630.58	238.96	9.99
8549.00	36.47	168.80	8496.25	-8496.25	-343.11	-536.45	262.58	636.79	237.40	9.27
8580.00	40.51	170.55	8520.51	-8520.51	-362.08	-533.01	281.85	644.36	235.81	13.50
8611.00	44.46	171.36	8543.37	-8543.37	-382.76	-529.72	302.79	653.54	234.15	12.86
8643.00	48.31	171.77	8565.44	-8565.44	-405.67	-526.33	325.95	664.52	232.38	12.07
8674.00	52.88	171.04	8585.11	-8585.11	-429.35	-522.74	349.89	676.46	230.60	14.85
8706.00	57.25	170.09	8603.43	-8603.43	-455.22	-518.44	376.12	689.93	228.72	13.87
8737.00	61.25	167.98	8619.28	-8619.28	-481.36	-513.36	402.72	703.74	226.84	14.17
8769.00	65.22	165.72	8633.69	-8633.69	-509.18	-506.86	431.18	718.45	224.87	13.92
8800.00	68.90	165.35	8645.77	-8645.77	-536.81	-499.72	459.55	733.41	222.95	11.92
8832.00	72.26	165.16	8656.41	-8656.41	-566.00	-492.04	489.53	749.97	221.00	10.51
8864.00	75.93	165.16	8665.18	-8665.18	-595.74	-484.16	520.10	767.67	219.10	11.47
8895.00	79.40	165.37	8671.80	-8671.80	-625.02	-476.46	550.19	785.92	217.32	11.21

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	C L O S U R E Distance FT	Direction Deg	Dogleg Severity Deg/100
8927.00	82.32	166.11	8676.88	-8676.88	-655.64	-468.68	581.60	805.93	215.56	9.41
8958.00	84.80	167.01	8680.36	-8680.36	-685.60	-461.52	612.28	826.47	213.95	8.50
<b>EOC</b>										
9054.00	90.15	169.61	8684.59	-8684.59	-779.47	-442.10	707.97	896.12	209.56	6.19
9149.00	89.08	168.11	8685.22	-8685.22	-872.68	-423.75	802.84	970.12	205.90	1.94
9243.00	89.00	167.61	8686.80	-8686.80	-964.56	-403.98	896.61	1045.75	202.73	.54
9338.00	94.99	169.57	8683.49	-8683.49	-1057.58	-385.21	991.36	1125.55	200.01	6.63
9433.00	91.57	168.90	8678.06	-8678.06	-1150.74	-367.50	1086.10	1208.00	197.71	3.67
9527.00	91.35	168.54	8675.66	-8675.66	-1242.90	-349.12	1179.94	1291.00	195.69	.45
9622.00	89.63	168.53	8674.85	-8674.85	-1335.99	-330.23	1274.78	1376.20	193.88	1.81
9716.00	86.95	167.64	8677.66	-8677.66	-1427.92	-310.84	1368.54	1461.36	192.28	3.00
9811.00	88.63	167.25	8681.32	-8681.32	-1520.57	-290.20	1463.20	1548.02	190.80	1.82
9906.00	89.91	167.25	8682.53	-8682.53	-1613.22	-269.24	1557.89	1635.54	189.48	1.35
10000.00	89.89	166.45	8682.69	-8682.69	-1704.76	-247.85	1651.55	1722.68	188.27	.85
10095.00	89.47	166.43	8683.22	-8683.22	-1797.11	-225.58	1746.14	1811.21	187.15	.44
10189.00	88.66	165.60	8684.76	-8684.76	-1888.31	-202.87	1839.66	1899.17	186.13	1.23
10284.00	88.71	165.73	8686.94	-8686.94	-1980.33	-179.35	1934.10	1988.43	185.17	.15
10378.00	89.70	165.55	8688.24	-8688.24	-2071.38	-156.04	2027.55	2077.25	184.31	1.07
10473.00	91.74	165.55	8687.05	-8687.05	-2163.36	-132.34	2121.98	2167.40	183.50	2.15
10567.00	93.03	165.58	8683.14	-8683.14	-2254.31	-108.93	2215.35	2256.94	182.77	1.37
10662.00	93.48	166.77	8677.74	-8677.74	-2346.41	-86.26	2309.75	2347.99	182.11	1.34
10756.00	90.78	166.60	8674.25	-8674.25	-2437.81	-64.63	2403.31	2438.67	181.52	2.88
10851.00	89.79	165.89	8673.78	-8673.78	-2530.08	-42.04	2497.87	2530.43	180.95	1.28
10953.00	89.20	167.16	8674.68	-8674.68	-2629.27	-18.28	2599.44	2629.33	180.40	1.37
11047.00	90.08	167.62	8675.27	-8675.27	-2721.00	2.24	2693.16	2721.00	179.95	1.06
11142.00	90.74	167.96	8674.59	-8674.59	-2813.85	22.34	2787.93	2813.94	179.55	.78
11236.00	91.28	167.79	8672.93	-8672.93	-2905.74	42.08	2881.70	2906.04	179.17	.60
11331.00	91.60	170.20	8670.54	-8670.54	-2998.95	60.20	2976.56	2999.56	178.85	2.56
11426.00	90.63	169.49	8668.69	-8668.69	-3092.44	76.95	3071.48	3093.40	178.57	1.27
11520.00	91.03	169.84	8667.33	-8667.33	-3184.91	93.81	3165.41	3186.29	178.31	.57
11615.00	91.45	169.59	8665.28	-8665.28	-3278.36	110.77	3260.33	3280.23	178.06	.51
11709.00	90.78	168.91	8663.45	-8663.45	-3370.69	128.30	3354.22	3373.13	177.82	1.02
11804.00	89.73	168.97	8663.02	-8663.02	-3463.93	146.52	3449.10	3467.02	177.58	1.11
11898.00	87.75	168.16	8665.09	-8665.09	-3556.03	165.16	3542.93	3559.87	177.34	2.28
11930.00	87.75	168.52	8666.35	-8666.35	-3587.35	171.62	3574.85	3591.45	177.26	1.12
11993.00	88.47	168.49	8668.42	-8668.42	-3649.05	184.17	3637.71	3653.69	177.11	1.14
12087.00	89.05	168.72	8670.46	-8670.46	-3741.18	202.73	3731.55	3746.66	176.90	.66
12182.00	90.95	169.77	8670.46	-8670.46	-3834.50	220.46	3826.45	3840.83	176.71	2.29
12277.00	89.89	167.80	8669.76	-8669.76	-3927.68	238.93	3921.32	3934.94	176.52	2.35
12371.00	90.11	167.02	8669.76	-8669.76	-4019.42	259.42	4015.05	4027.78	176.31	.86
12466.00	90.53	166.93	8669.23	-8669.23	-4111.97	280.83	4109.72	4121.55	176.09	.45
12560.00	89.43	167.28	8669.26	-8669.26	-4203.60	301.81	4203.41	4214.42	175.89	1.23
12655.00	90.53	167.61	8669.30	-8669.30	-4296.33	322.46	4298.14	4308.41	175.71	1.21
12749.00	90.53	166.68	8668.43	-8668.43	-4387.97	343.37	4391.83	4401.38	175.53	.99
12844.00	87.92	166.11	8669.71	-8669.71	-4480.28	365.72	4486.40	4495.18	175.33	2.81
12938.00	87.79	166.59	8673.23	-8673.23	-4571.56	387.88	4579.91	4587.99	175.15	.53



Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	Subsea TVD FT	N-S FT	E-W FT	Vertical Section FT	C L O S U R E Distance FT	Direction Deg	Dogleg Severity Deg/100
13033.00	89.56	166.82	8675.43	-8675.43	-4663.99	409.72	4674.52	4681.95	174.98	1.88
13128.00	90.86	167.72	8675.08	-8675.08	-4756.65	430.66	4769.22	4776.11	174.83	1.66
13222.00	90.11	167.63	8674.28	-8674.28	-4848.48	450.72	4862.98	4869.38	174.69	.80
13317.00	90.74	167.56	8673.58	-8673.58	-4941.26	471.13	4957.73	4963.67	174.55	.67
13411.00	89.60	166.71	8673.30	-8673.30	-5032.90	492.06	5051.42	5056.89	174.42	1.51
13506.00	90.15	166.37	8673.51	-8673.51	-5125.29	514.17	5146.03	5151.01	174.27	.68
13600.00	90.90	166.87	8672.65	-8672.65	-5216.73	535.92	5239.64	5244.19	174.13	.96
13695.00	89.73	166.81	8672.12	-8672.12	-5309.23	557.55	5334.29	5338.43	174.01	1.23
13789.00	89.98	166.61	8672.36	-8672.36	-5400.71	579.16	5427.93	5431.68	173.88	.34
13884.00	91.03	166.82	8671.52	-8671.52	-5493.17	600.99	5522.56	5525.95	173.76	1.13
13978.00	91.03	166.48	8669.84	-8669.84	-5584.61	622.69	5616.17	5619.22	173.64	.36
14073.00	90.11	167.50	8668.89	-8668.89	-5677.17	644.07	5710.84	5713.58	173.53	1.45
14167.00	90.40	168.38	8668.47	-8668.47	-5769.09	663.71	5804.63	5807.14	173.44	.99
14262.00	90.74	170.05	8667.53	-8667.53	-5862.40	681.49	5899.52	5901.88	173.37	1.79
14356.00	89.52	170.77	8667.31	-8667.31	-5955.09	697.15	5993.50	5995.76	173.32	1.51
14451.00	89.73	170.69	8667.94	-8667.94	-6048.85	712.45	6088.48	6090.66	173.28	.24
14546.00	90.36	169.34	8667.86	-8667.86	-6142.40	728.92	6183.43	6185.50	173.23	1.57
14640.00	90.19	167.29	8667.41	-8667.41	-6234.45	747.96	6277.26	6279.16	173.16	2.19
14735.00	91.45	167.61	8666.05	-8666.05	-6327.17	768.60	6371.98	6373.68	173.07	1.37
14829.00	90.57	167.28	8664.39	-8664.39	-6418.90	789.03	6465.70	6467.22	172.99	1.00
14924.00	87.75	167.11	8665.79	-8665.79	-6511.52	810.08	6560.38	6561.72	172.91	2.97
15019.00	88.09	167.33	8669.23	-8669.23	-6604.11	831.08	6655.02	6656.20	172.83	.43
15113.00	88.46	167.30	8672.06	-8672.06	-6695.77	851.71	6748.69	6749.72	172.75	.39
15208.00	88.47	166.75	8674.61	-8674.61	-6788.31	873.03	6843.34	6844.22	172.67	.58
15302.00	89.39	166.91	8676.36	-8676.36	-6879.82	894.45	6936.97	6937.72	172.59	.99
15334.00	89.47	166.74	8676.68	-8676.68	-6910.98	901.74	6968.85	6969.56	172.57	.59
15397.00	89.60	166.66	8677.19	-8677.19	-6972.29	916.23	7031.61	7032.23	172.51	.24
15491.00	89.64	166.09	8677.82	-8677.82	-7063.64	938.38	7125.19	7125.70	172.43	.61
15586.00	87.37	166.09	8680.29	-8680.29	-7155.82	961.21	7219.69	7220.09	172.35	2.39
15680.00	91.32	166.49	8681.37	-8681.37	-7247.11	983.48	7313.24	7313.54	172.27	4.22
15712.00	91.66	166.56	8680.54	-8680.54	-7278.22	990.93	7345.10	7345.37	172.25	1.08
15775.00	91.19	166.28	8678.97	-8678.97	-7339.44	1005.72	7407.80	7408.03	172.20	.87
15870.00	91.32	166.94	8676.89	-8676.89	-7431.84	1027.71	7502.40	7502.56	172.13	.71
15964.00	92.63	167.41	8673.65	-8673.65	-7523.44	1048.57	7596.04	7596.16	172.07	1.48
16059.00	90.99	166.93	8670.65	-8670.65	-7616.01	1069.65	7690.69	7690.76	172.01	1.80
16153.00	89.47	166.87	8670.27	-8670.27	-7707.56	1090.96	7784.35	7784.39	171.94	1.62
16248.00	91.11	167.82	8669.79	-8669.79	-7800.25	1111.77	7879.06	7879.08	171.89	2.00
16331.00	91.28	167.82	8668.06	-8668.06	-7881.37	1129.28	7961.85	7961.86	171.85	.20
<b>PTB</b>										
16387.00	91.28	167.82	8666.81	-8666.81	-7936.09	1141.09	8017.70	8017.71	171.82	.00

