

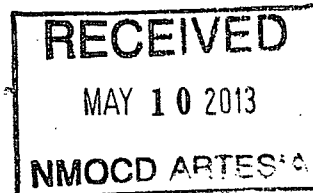


A GYRO TECHNOLOGIES INC. COMPANY

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

30-015-40954

March 13, 2013



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

Attn: Kanicia Castillo

Re: **Birdseye 32 State No 002H**

Please find enclosed a copy of the survey from 0' to 8,445' ran on the above referenced well.

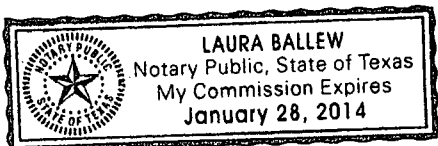
If I can be of any further service, please do not hesitate to call me at 800-606-4976.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 13th day of March
A.D., 2013, by Keith Havelka.

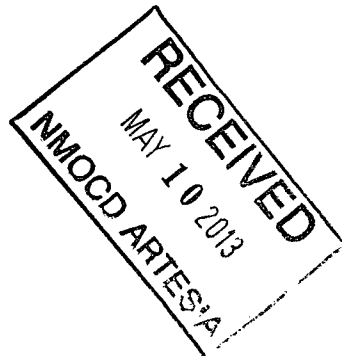


Laura Balley
Notary Public, State of Texas

Company: COG Operating LLC (Concho)
Lease/Well: Birdseye 32 State/No 002H



Rig Name: Patriot #6
State/County: New Mexico/Eddy
Latitude: 32.61, Longitude: -103.88
GRID North is 0.24 Degrees East of True North
VS-Azi: 0.00 Degrees



Depth Reference : RKB=17 Feet

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: birdseye 32 state com #2h.ut

Minimum Curvature Method

Report Date/Time: 3/13/2013 / 14:39

Vaughn Energy Services

Midland, Texas

432-563-5444

Surveyor: Logan Henry

Birdseye 32 State No 002H / API 30-015-40954

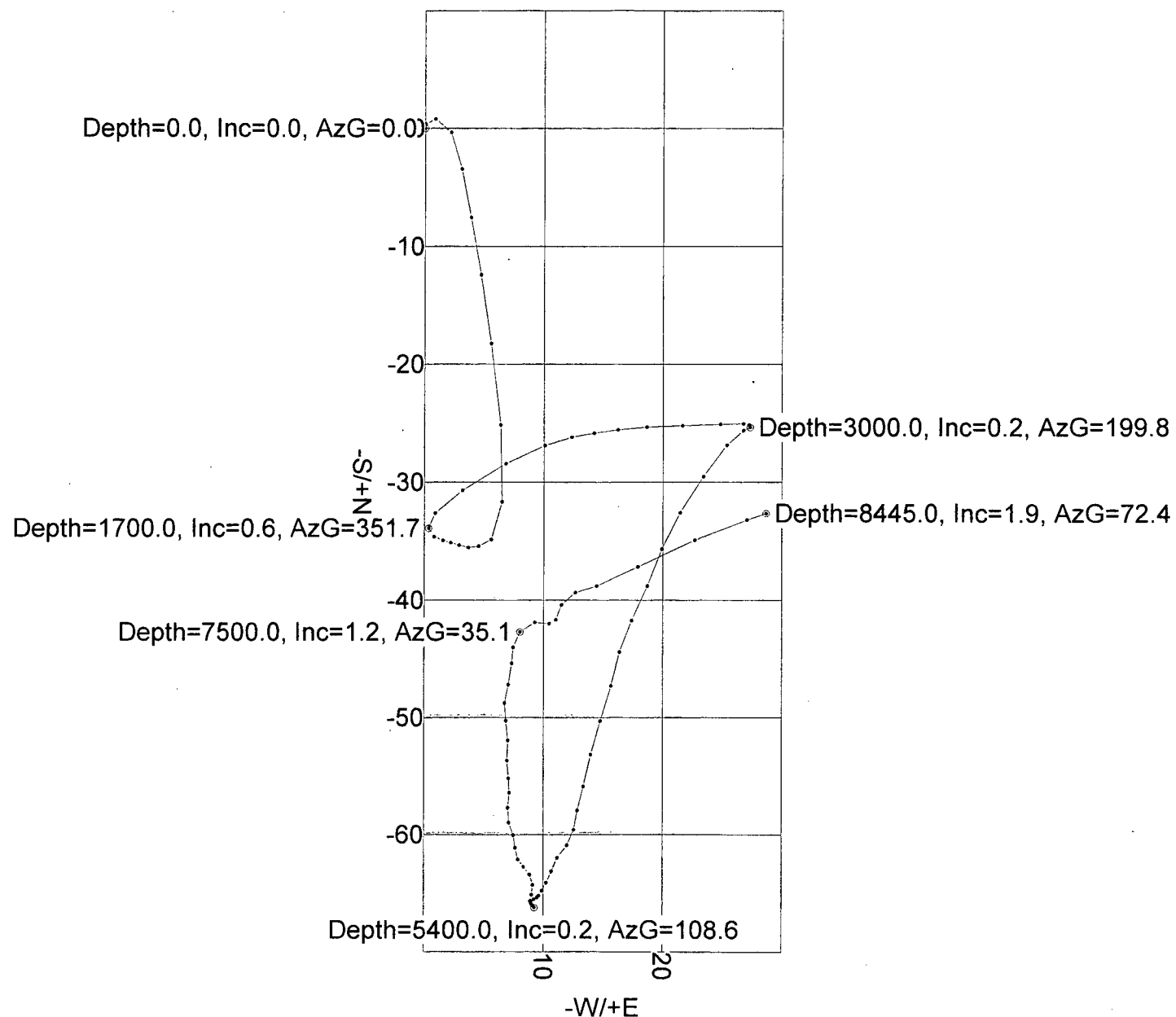
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	****
100.00	0.46	2.30	100.00	0.40	0.02	0.40	0.40	2.30	0.46
200.00	0.93	89.51	199.99	0.80	0.84	0.80	1.16	46.42	1.01
300.00	1.45	155.61	299.98	-0.34	2.17	-0.34	2.20	98.92	1.37
400.00	2.27	168.99	399.92	-3.44	3.07	-3.44	4.61	138.21	0.93
500.00	2.52	169.23	499.83	-7.55	3.86	-7.55	8.48	152.90	0.25
600.00	3.12	170.66	599.71	-12.39	4.72	-12.39	13.26	159.17	0.60
700.00	3.66	172.60	699.54	-18.24	5.57	-18.24	19.07	163.02	0.55
800.00	4.30	174.12	799.30	-25.13	6.36	-25.13	25.92	165.79	0.65
900.00	3.23	185.19	899.08	-31.67	6.49	-31.67	32.32	168.42	1.29
1000.00	0.88	236.89	999.02	-34.89	5.60	-34.89	35.33	170.89	2.77
1100.00	0.52	250.74	1099.01	-35.45	4.53	-35.45	35.74	172.72	0.39
1200.00	0.48	277.23	1199.00	-35.55	3.69	-35.55	35.74	174.08	0.23
1300.00	0.46	290.67	1299.00	-35.36	2.90	-35.36	35.48	175.31	0.11
1400.00	0.38	282.27	1399.00	-35.15	2.20	-35.15	35.22	176.41	0.09
1500.00	0.40	288.17	1499.00	-34.97	1.55	-34.97	35.00	177.47	0.04
1600.00	0.51	297.68	1598.99	-34.65	0.82	-34.65	34.66	178.65	0.13
1700.00	0.62	351.71	1698.99	-33.91	0.35	-33.91	33.91	179.42	0.52
1800.00	1.11	40.76	1798.98	-32.65	0.90	-32.65	32.66	178.42	0.84

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1900.00	2.37	53.91	1898.93	-30.70	3.20	-30.70	30.86	174.05	1.31
2000.00	2.53	61.16	1998.84	-28.42	6.81	-28.42	29.22	166.53	0.35
2100.00	1.64	70.26	2098.77	-26.87	10.09	-26.87	28.70	159.42	0.94
2200.00	1.08	76.85	2198.74	-26.17	12.35	-26.17	28.94	154.73	0.58
2300.00	1.11	82.12	2298.73	-25.82	14.22	-25.82	29.48	151.15	0.10
2400.00	1.21	82.58	2398.70	-25.55	16.23	-25.55	30.27	147.58	0.11
2500.00	1.56	86.27	2498.68	-25.33	18.64	-25.33	31.45	143.65	0.36
2600.00	1.90	88.54	2598.63	-25.20	21.66	-25.20	33.23	139.32	0.35
2700.00	1.77	87.40	2698.58	-25.09	24.86	-25.09	35.32	135.26	0.14
2800.00	0.42	92.28	2798.56	-25.03	26.77	-25.03	36.65	133.08	1.35
2900.00	0.17	124.47	2898.56	-25.13	27.25	-25.13	37.07	132.68	0.29
3000.00	0.16	199.75	2998.56	-25.34	27.33	-25.34	37.27	132.84	0.20
3100.00	0.58	254.90	3098.55	-25.61	26.79	-25.61	37.06	133.71	0.51
3200.00	1.64	219.21	3198.53	-26.85	25.40	-26.85	36.95	136.59	1.21
3300.00	2.17	214.11	3298.48	-29.52	23.43	-29.52	37.69	141.56	0.56
3400.00	2.02	210.75	3398.41	-32.61	21.47	-32.61	39.04	146.64	0.20
3500.00	1.92	201.93	3498.35	-35.67	19.94	-35.67	40.87	150.80	0.32
3600.00	1.95	201.31	3598.30	-38.81	18.70	-38.81	43.08	154.28	0.04
3700.00	1.75	207.11	3698.24	-41.75	17.38	-41.75	45.22	157.39	0.27
3800.00	1.55	192.68	3798.20	-44.43	16.39	-44.43	47.36	159.75	0.46
3900.00	1.86	194.88	3898.16	-47.32	15.68	-47.32	49.85	161.67	0.31
4000.00	1.70	199.08	3998.11	-50.29	14.78	-50.29	52.41	163.63	0.20
4100.00	1.71	191.66	4098.07	-53.16	13.99	-53.16	54.97	165.26	0.22
4200.00	1.49	194.90	4198.03	-55.88	13.35	-55.88	57.45	166.56	0.25
4300.00	0.96	192.08	4298.00	-57.95	12.84	-57.95	59.35	167.50	0.53
4400.00	0.94	187.97	4397.99	-59.58	12.56	-59.58	60.89	168.10	0.07
4500.00	0.79	222.17	4497.98	-60.90	11.98	-60.90	62.07	168.87	0.53
4600.00	0.73	210.94	4597.97	-61.96	11.19	-61.96	62.96	169.77	0.16
4700.00	0.75	195.81	4697.96	-63.13	10.68	-63.13	64.03	170.40	0.20
4800.00	0.51	215.90	4797.96	-64.12	10.24	-64.12	64.94	170.92	0.33
4900.00	0.37	201.08	4897.95	-64.78	9.87	-64.78	65.53	171.34	0.18
5000.00	0.22	224.75	4997.95	-65.22	9.62	-65.22	65.92	171.61	0.19
5100.00	0.02	188.82	5097.95	-65.37	9.48	-65.37	66.05	171.74	0.20
5200.00	0.36	243.11	5197.95	-65.53	9.20	-65.53	66.17	172.01	0.35
5300.00	0.29	164.92	5297.95	-65.92	8.98	-65.92	66.53	172.24	0.42
5400.00	0.23	108.61	5397.95	-66.22	9.24	-66.22	66.87	172.06	0.25
5500.00	0.45	307.67	5497.95	-66.05	9.12	-66.05	66.67	172.14	0.67
5600.00	0.19	34.89	5597.95	-65.67	8.90	-65.67	66.27	172.28	0.48
5700.00	0.45	1.77	5697.95	-65.13	9.01	-65.13	65.75	172.12	0.31

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	0.52	11.23	5797.94	-64.30	9.11	-64.30	64.94	171.93	0.10
5900.00	0.65	322.58	5897.94	-63.40	8.86	-63.40	64.02	172.05	0.49
6000.00	0.31	321.24	5997.93	-62.74	8.34	-62.74	63.29	172.42	0.33
6100.00	0.60	326.57	6097.93	-62.09	7.88	-62.09	62.59	172.76	0.29
6200.00	0.64	4.28	6197.93	-61.10	7.64	-61.10	61.57	172.87	0.40
6300.00	0.63	337.76	6297.92	-60.03	7.47	-60.03	60.49	172.91	0.29
6400.00	0.67	343.32	6397.91	-58.96	7.09	-58.96	59.38	173.14	0.07
6500.00	0.82	6.45	6497.90	-57.68	7.00	-57.68	58.11	173.08	0.33
6600.00	0.64	3.65	6597.90	-56.42	7.12	-56.42	56.86	172.81	0.18
6700.00	0.79	351.18	6697.89	-55.18	7.05	-55.18	55.63	172.72	0.21
6800.00	0.95	359.84	6797.88	-53.67	6.94	-53.67	54.12	172.63	0.21
6900.00	1.02	4.73	6897.86	-51.95	7.01	-51.95	52.42	172.31	0.10
7000.00	0.97	342.61	6997.85	-50.26	6.83	-50.26	50.72	172.26	0.38
7100.00	0.80	12.80	7097.84	-48.77	6.74	-48.77	49.23	172.14	0.49
7200.00	1.04	9.44	7197.82	-47.19	7.04	-47.19	47.71	171.51	0.24
7300.00	1.06	8.03	7297.81	-45.38	7.32	-45.38	45.97	170.84	0.03
7400.00	0.53	359.32	7397.80	-44.01	7.44	-44.01	44.63	170.40	0.53
7500.00	1.17	35.08	7497.79	-42.71	8.02	-42.71	43.45	169.36	0.80
7600.00	0.74	92.77	7597.77	-41.90	9.25	-41.90	42.91	167.56	0.99
7700.00	0.68	96.73	7697.77	-42.00	10.47	-42.00	43.29	166.00	0.08
7800.00	0.45	355.86	7797.76	-41.68	11.03	-41.68	43.12	165.18	0.88
7900.00	1.16	29.74	7897.75	-40.41	11.50	-40.41	42.02	164.11	0.82
8000.00	0.80	74.97	7997.74	-39.35	12.68	-39.35	41.35	162.14	0.82
8100.00	1.33	72.51	8097.72	-38.83	14.46	-38.83	41.43	159.57	0.53
8200.00	3.07	61.31	8197.64	-37.19	17.92	-37.19	41.28	154.28	1.79
8300.00	3.02	68.22	8297.50	-34.93	22.72	-34.93	41.66	146.96	0.37
8400.00	2.36	69.30	8397.39	-33.22	27.09	-33.22	42.86	140.81	0.66
8445.00	1.95	72.36	8442.36	-32.66	28.68	-32.66	43.47	138.71	0.95



Vaughn Energy Services
Midland, Texas
432-563-5444
Surveyor: Logan Henry
Birdseye 32 State No 002H / API 30-015-40954



VES Survey Date: 03/07/2013

PathFinder Energy Services, Inc.

BHL Report

Page 01/01
Tie-in Date: 02/28/2013
Date Completed: 03/11/2013

COG OPERATING, LLC
BIRDSEYE 32 STATE #2H
EDDY COUNTY, NM
Rig: PATRIOT 6
PathFinder Office Supervisor: MARCUS MITCHAM
PathFinder Field Engineers: D. PFENNINGER
J. ALLEN

Survey Horiz. Reference: WELLHEAD
Ref Coordinates: LAT: 32.36.36.0998 N LON: 103.52.59.8476 W
GRID Reference: NAD27 new mexico east Transverse Mercator
Ref GRID Coord: X: 638579.8000 Y: 585932.9000
North Aligned To: GRID NORTH
Total Magnetic Correction: 7.31° EAST TO GRID
Vertical Section Plane: 358.97
Survey Vert. Reference: 18.00' Kelly Bushing To Ground
Altitude: 3462.00' Ground To MSL

Measured Depth	13612.00	(feet)
Inclination	92.15	(deg)
Azimuth	0.81	(deg)
True Vertical Depth	9036.01	(feet)
Vertical Section	4761.29	(feet)
Survey X cord	638492.47	(feet)
Survey Y cord	590693.39	(feet)
Survey Lat	32.62311405 N	(deg)
Survey Lon	103.88350917 W	(deg)
Rectangular Corr. N/S	4760.49 N	(feet)
Rectangular Corr. E/W	87.33 W	(feet)
Closure Distance	4761.29	(feet)
Direction of Closure	358.95	(deg)
Dogleg Severity	0.00	(deg/100ft)



COG Birdseye 32 State #2H Gyro+MWD from 0ft to 13612ft Survey Geodetic Report

(Non-Def Survey)

PATHFINDER
A Schlumberger Company

Report Date: March 13, 2013 - 01:34 PM
Client: COG
Field: NM Eddy County (NAD 27)
Structure / Slot: COG Birdseye 32 State #2H / COG Birdseye 32 State #2H
Well: COG Birdseye 32 State #2H
Borehole: COG Birdseye 32 State #2H
UWI / API#: Unknown / Unknown
Survey Name: COG Birdseye 32 State #2H Gyro+MWD from 0ft to 13612ft
Survey Date: March 07, 2013
Tort / AHD / DDI / ERD Ratio: 180.285 ° / 4974.101 ft / 6.130 / 0.549
Coordinate Reference System: NAD27 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 36' 36.09975", W 103° 52' 59.84758"
Location Grid N/E Y/X: N 585932.900 ftUS, E 638579.800 ftUS
CRS Grid Convergence Angle: 0.2425 °
Grid Scale Factor: 0.99993108

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 0.000 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 3480.000 ft above MSL
Seabed / Ground Elevation: 3462.000 ft above MSL
Magnetic Declination: 7.655 °
Total Gravity Field Strength: 999.1909 mgn (9.8 based)
Total Magnetic Field Strength: 48618.300 nT
Magnetic Dip Angle: 60.409 °
Declination Date: March 07, 2013
Magnetic Declination Model: BGGM 2012
North Reference: Grid North
Grid Convergence Used: 0.2425 °
Total Corr Mag North->Grid North: 7.4121 °
Local Coord Referenced To: Structure Reference Point

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	585932.90	638579.80	N 32 36 36.10	W 103 52 59.85
	100.00	0.46	2.30	100.00	0.40	0.40	0.02	0.46	585933.30	638579.82	N 32 36 36.10	W 103 52 59.85
	200.00	0.93	89.51	199.99	0.81	0.81	1.02	0.84	585933.71	638580.64	N 32 36 36.11	W 103 52 59.84
	300.00	1.45	155.61	299.98	-0.34	-0.34	2.18	1.37	585932.56	638581.98	N 32 36 36.10	W 103 52 59.82
	400.00	2.27	168.99	399.92	-3.43	-3.43	3.08	0.92	585929.47	638582.88	N 32 36 36.07	W 103 52 59.81
	500.00	2.52	169.23	499.83	-7.54	-7.54	3.87	0.25	585925.36	638583.67	N 32 36 36.03	W 103 52 59.80
	600.00	3.12	170.66	599.71	-12.38	-12.38	4.72	0.60	585920.52	638584.52	N 32 36 35.98	W 103 52 59.79
	700.00	3.66	172.60	699.54	-18.23	-18.23	5.57	0.55	585914.67	638585.37	N 32 36 35.92	W 103 52 59.78
	800.00	4.30	174.12	799.30	-25.13	-25.13	6.37	0.65	585907.78	638586.17	N 32 36 35.85	W 103 52 59.77
	900.00	3.23	185.19	899.08	-31.66	-31.66	6.50	1.29	585901.24	638586.30	N 32 36 35.79	W 103 52 59.77
	1000.00	0.88	236.89	999.01	-34.89	-34.89	5.60	2.77	585898.02	638585.40	N 32 36 35.75	W 103 52 59.78
	1100.00	0.52	250.74	1099.01	-35.46	-35.46	4.53	0.40	585897.45	638584.32	N 32 36 35.85	W 103 52 59.80
	1200.00	0.48	277.23	1199.00	-35.55	-35.55	3.88	0.23	585897.35	638583.48	N 32 36 35.75	W 103 52 59.81
	1300.00	0.46	290.67	1299.00	-35.36	-35.36	2.89	0.11	585897.54	638582.69	N 32 36 35.75	W 103 52 59.82
	1400.00	0.38	282.27	1399.00	-35.15	-35.15	2.19	0.10	585897.76	638581.99	N 32 36 35.75	W 103 52 59.82
	1500.00	0.40	288.17	1499.00	-34.97	-34.97	1.54	0.04	585897.94	638581.34	N 32 36 35.75	W 103 52 59.83
	1600.00	0.51	297.68	1598.99	-34.65	-34.65	0.81	0.13	585898.25	638580.61	N 32 36 35.76	W 103 52 59.84
	1700.00	0.62	351.71	1698.99	-33.91	-33.91	0.34	0.52	585898.99	638580.14	N 32 36 35.76	W 103 52 59.85
	1800.00	1.11	40.76	1798.98	-32.64	-32.64	0.89	0.85	585900.26	638580.69	N 32 36 35.78	W 103 52 59.84
	1900.00	2.37	53.91	1898.93	-30.69	-30.69	3.20	1.31	585902.21	638583.00	N 32 36 35.80	W 103 52 59.81
	2000.00	2.53	61.16	1998.84	-28.41	-28.41	6.80	0.35	585904.50	638586.60	N 32 36 35.82	W 103 52 59.77
	2100.00	1.64	70.26	2098.77	-26.86	-26.86	10.08	0.95	585906.04	638589.88	N 32 36 35.83	W 103 52 59.73
	2200.00	1.08	76.85	2198.74	-26.16	-26.16	12.35	0.58	585906.74	638592.15	N 32 36 35.84	W 103 52 59.70
	2300.00	1.11	82.12	2298.72	-25.81	-25.81	14.22	0.11	585907.09	638594.02	N 32 36 35.84	W 103 52 59.68
	2400.00	1.21	82.58	2398.70	-25.54	-25.54	16.23	0.10	585907.36	638596.03	N 32 36 35.85	W 103 52 59.66
	2500.00	1.56	86.27	2498.67	-25.32	-25.32	18.63	0.36	585907.58	638598.43	N 32 36 35.85	W 103 52 59.63
	2600.00	1.90	88.54	2598.63	-25.19	-25.19	21.65	0.35	585907.71	638601.45	N 32 36 35.85	W 103 52 59.60
	2700.00	1.77	87.40	2698.58	-25.08	-25.08	24.85	0.14	585907.83	638604.65	N 32 36 35.85	W 103 52 59.56
	2800.00	0.42	92.28	2798.56	-25.02	-25.02	26.76	1.35	585907.88	638606.56	N 32 36 35.85	W 103 52 59.54
	2900.00	0.17	124.47	2898.56	-25.12	-25.12	27.25	0.29	585907.78	638607.05	N 32 36 35.85	W 103 52 59.53
	3000.00	0.16	199.75	2998.56	-25.33	-25.33	27.32	0.20	585907.57	638607.12	N 32 36 35.85	W 103 52 59.53
	3100.00	0.58	254.90	3098.55	-25.60	-25.60	26.79	0.51	585907.30	638606.59	N 32 36 35.83	W 103 52 59.54
	3200.00	1.64	219.21	3198.53	-26.84	-26.84	25.39	1.22	585906.06	638605.19	N 32 36 35.83	W 103 52 59.55
	3300.00	2.17	214.11	3298.48	-29.52	-29.52	23.43	0.56	585903.39	638603.23	N 32 36 35.81	W 103 52 59.58
	3400.00	2.02	210.75	3398.41	-32.60	-32.60	21.46	0.19	585900.31	638601.26	N 32 36 35.78	W 103 52 59.60
	3500.00	1.92	201.93	3498.35	-35.67	-35.67	19.94	0.32	585897.24	638599.74	N 32 36 35.75	W 103 52 59.62
	3600.00	1.95	201.31	3598.30	-38.80	-38.80	18.89	0.04	585894.10	638598.49	N 32 36 35.72	W 103 52 59.63
	3700.00	1.75	207.11	3698.24	-41.75	-41.75	17.38	0.27	585891.15	638597.18	N 32 36 35.69	W 103 52 59.65
	3800.00	1.55	192.68	3798.20	-44.43	-44.43	16.39	0.46	585888.48	638596.19	N 32 36 35.66	W 103 52 59.66
	3900.00	1.86	194.88	3898.16	-47.32	-47.32	15.67	0.32	585885.59	638595.47	N 32 36 35.63	W 103 52 59.67
	4000.00	1.70	199.08	3998.11	-50.29	-50.29	14.77	0.21	585882.62	638594.57	N 32 36 35.60	W 103 52 59.68
	4100.00	1.71	191.66	4098.07	-53.15	-53.15	13.99	0.22	585879.75	638593.78	N 32 36 35.57	W 103 52 59.69
	4200.00	1.49	194.90	4198.03	-55.87	-55.87	13.35	0.24	585877.04	638593.15	N 32 36 35.55	W 103 52 59.69
	4300.00	0.96	192.08	4298.00	-57.94	-57.94	12.84	0.53	585874.96	638592.64	N 32 36 35.53	W 103 52 59.70
	4400.00	0.94	187.97	4397.99	-59.57	-59.57	12.55	0.07	585873.33	638592.35	N 32 36 35.51	W 103 52 59.70
	4500.00	0.79	222.17	4497.98	-60.90	-60.90	11.97	0.53	585872.01	638591.77	N 32 36 35.50	W 103 52 59.71
	4600.00	0.73	210.94	4597.97	-61.95	-61.95	11.18	0.16	585870.95	638590.98	N 32 36 35.49	W 103 52 59.72
	4700.00	0.75	195.81	4697.96	-63.13	-63.13	10.88	0.20	585869.77	638590.48	N 32 36 35.47	W 103 52 59.73
	4800.00	0.51	215.90	4797.96	-64.12	-64.12	10.24	0.32	585868.78	638590.04	N 32 36 35.46	W 103 52 59.73
	4900.00	0.37	201.08	4897.95	-64.78	-64.78	9.86	0.18	585868.12	638589.66	N 32 36 35.46	W 103 52 59.74
	5000.00	0.22	224.75	4997.95	-65.22	-65.22	9.61	0.19	585867.68	638589.41	N 32 36 35.45	W 103 52 59.74
	5100.00	0.02	188.82	5097.95	-65.37	-65.37	9.47	0.20	585867.53	638589.27	N 32 36 35.45	W 103 52 59.74
	5200.00	0.36	243.11	5197.95	-65.53	-65.53	9.19	0.35	585867.37	638588.99	N 32 36 35.45	W 103 52 59.74
	5300.00	0.29	164.92	5297.95	-65.92	-65.92	8.98	0.41	585866.99	638588.78	N 32 36 35.45	W 103 52 59.75
	5400.00	0.23	108.61	5397.95	-66.23	-66.23	9.23	0.25	585866.65	638589.03	N 32 36 35.44	W 103 52 59.74
	5500.00	0.45	307.67	5497.95	-66.05	-66.05	9.11	0.67	585866.85	638588.91	N 32 36 35.45	W 103 52 59.74
	5600.00	0.19	34.89	5597.95	-65.68	-65.68	8.90	0.48	585867.23	638588.69	N 32 36 35.45	W 103 52 59.75
	5700.00	0.45	1.77	5697.95	-65.15	-65.15	9.00	0.31	585867.76	638588.80	N 32 36 35.45	W 103 52 59.75
	5800.00	0.52	11.23	5797.94	-64.31	-64.31	9.10	0.11	585868.59	638588.90	N 32 36 35.46	W 103 52 59.74

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	5900.00	0.65	322.58	5897.94	-63.41	-63.41	8.85	0.50	585869.49	638586.65	N 32 36 35.47	W 103 52 59.75
	6000.00	0.31	321.24	5997.93	-62.75	-62.75	8.33	0.34	585870.15	638588.13	N 32 36 35.48	W 103 52 59.75
	6100.00	0.60	326.57	6097.93	-62.10	-62.10	7.87	0.29	585870.80	638587.67	N 32 36 35.48	W 103 52 59.76
	6200.00	0.64	4.28	6197.92	-61.11	-61.11	7.63	0.40	585871.79	638587.43	N 32 36 35.49	W 103 52 59.76
	6300.00	0.63	337.76	6297.92	-60.05	-60.05	7.46	0.29	585872.86	638587.26	N 32 36 35.51	W 103 52 59.76
	6400.00	0.67	343.32	6397.91	-58.98	-58.98	7.09	0.07	585873.93	638586.88	N 32 36 35.52	W 103 52 59.77
	6500.00	0.82	6.45	6497.90	-57.71	-57.71	7.00	0.33	585875.20	638586.80	N 32 36 35.53	W 103 52 59.77
	6600.00	0.64	3.65	6597.90	-56.44	-56.44	7.11	0.18	585876.47	638586.91	N 32 36 35.54	W 103 52 59.77
	6700.00	0.79	351.18	6697.89	-55.20	-55.20	7.04	0.22	585877.71	638586.84	N 32 36 35.55	W 103 52 59.77
	6800.00	0.95	359.84	6797.88	-53.69	-53.69	6.94	0.21	585879.22	638586.74	N 32 36 35.57	W 103 52 59.77
	6900.00	1.02	4.73	6897.86	-51.97	-51.97	7.01	0.11	585880.93	638586.81	N 32 36 35.59	W 103 52 59.77
	7000.00	0.97	342.61	6997.85	-50.28	-50.28	6.83	0.38	585882.63	638586.63	N 32 36 35.60	W 103 52 59.77
	7100.00	0.80	12.80	7097.84	-48.79	-48.79	6.73	0.49	585884.11	638586.53	N 32 36 35.62	W 103 52 59.77
	7200.00	1.04	9.44	7197.82	-47.21	-47.21	7.03	0.25	585885.69	638586.83	N 32 36 35.63	W 103 52 59.77
	7300.00	1.06	8.03	7297.81	-45.40	-45.40	7.31	0.03	585887.50	638587.11	N 32 36 35.65	W 103 52 59.76
	7400.00	0.53	359.32	7397.80	-44.02	-44.02	7.43	0.54	585888.88	638587.23	N 32 36 35.66	W 103 52 59.76
	7500.00	1.17	35.08	7497.79	-42.73	-42.73	8.02	0.80	585890.18	638587.81	N 32 36 35.68	W 103 52 59.76
	7600.00	0.74	92.77	7597.77	-41.92	-41.92	9.25	1.00	585890.98	638589.05	N 32 36 35.68	W 103 52 59.74
	7700.00	0.68	96.73	7697.77	-42.02	-42.02	10.48	0.08	585890.88	638590.28	N 32 36 35.68	W 103 52 59.73
	7800.00	0.45	355.86	7797.76	-41.70	-41.70	11.04	0.88	585891.20	638590.84	N 32 36 35.69	W 103 52 59.72
	7900.00	1.16	29.74	7897.75	-40.43	-40.43	11.52	0.83	585892.47	638591.32	N 32 36 35.70	W 103 52 59.71
	8000.00	0.80	74.97	7997.74	-39.37	-39.37	12.69	0.82	585893.53	638592.49	N 32 36 35.71	W 103 52 59.70
	8100.00	1.33	72.51	8097.72	-38.84	-38.84	14.47	0.53	585894.06	638594.27	N 32 36 35.71	W 103 52 59.68
	8200.00	3.07	61.31	8197.64	-37.20	-37.20	17.93	1.78	585895.70	638597.73	N 32 36 35.73	W 103 52 59.64
	8300.00	3.02	68.22	8297.50	-34.94	-34.94	22.73	0.37	585897.96	638602.52	N 32 36 35.75	W 103 52 59.58
	8400.00	2.36	69.30	8397.39	-33.24	-33.24	27.10	0.66	585899.67	638608.90	N 32 36 35.77	W 103 52 59.53
	8445.00	1.95	72.36	8442.36	-32.68	-32.68	28.69	0.95	585900.23	638608.49	N 32 36 35.78	W 103 52 59.51
	8478.00	1.32	107.07	8475.35	-32.62	-32.62	29.59	3.47	585900.28	638609.39	N 32 36 35.78	W 103 52 59.50
	8510.00	0.79	32.89	8507.34	-32.54	-32.54	30.06	4.19	585900.36	638609.86	N 32 36 35.78	W 103 52 59.50
	8542.00	4.04	354.57	8539.31	-31.23	-31.23	30.08	10.80	585901.67	638609.88	N 32 36 35.79	W 103 52 59.50
	8573.00	7.65	353.95	8570.15	-28.09	-28.09	29.76	11.65	585904.81	638609.55	N 32 36 35.82	W 103 52 59.50
	8605.00	11.43	355.27	8601.70	-22.81	-22.81	29.27	11.83	585910.09	638609.07	N 32 36 35.87	W 103 52 59.51
	8637.00	15.30	355.01	8632.82	-15.44	-15.44	28.64	12.10	585917.46	638608.44	N 32 36 35.95	W 103 52 59.51
	8669.00	19.43	353.07	8663.36	-5.95	-5.95	27.63	13.03	585926.95	638607.43	N 32 36 36.04	W 103 52 59.52
	8701.00	23.65	352.11	8693.12	5.70	5.70	26.11	13.23	585938.60	638605.91	N 32 36 36.16	W 103 52 59.54
	8732.00	26.38	350.00	8721.21	18.64	18.64	24.06	9.26	585951.54	638603.86	N 32 36 36.28	W 103 52 59.57
	8764.00	28.31	349.64	8749.63	33.11	33.11	21.46	6.05	585966.00	638601.26	N 32 36 36.43	W 103 52 59.60
	8796.00	30.51	346.30	8777.51	48.47	48.47	18.17	8.57	585981.36	638597.97	N 32 36 36.58	W 103 52 59.63
	8827.00	34.03	344.99	8803.72	64.49	64.49	14.06	11.58	585997.39	638593.86	N 32 36 36.74	W 103 52 59.68
	8859.00	38.25	346.74	8829.55	82.79	82.79	9.46	13.58	586015.69	638589.26	N 32 36 36.92	W 103 52 59.73
	8890.00	42.56	348.15	8853.15	102.40	102.40	5.11	14.21	586035.30	638584.91	N 32 36 37.11	W 103 52 59.78
	8922.00	46.17	349.03	8876.03	124.33	124.33	0.69	11.44	586057.22	638580.49	N 32 36 37.33	W 103 52 59.83
	8954.00	48.63	349.20	8897.69	147.46	147.46	-3.76	7.70	586080.35	638576.04	N 32 36 37.56	W 103 52 59.88
	8985.00	50.91	349.29	8917.71	170.71	170.71	-8.17	7.36	586103.80	638571.63	N 32 36 37.79	W 103 52 59.93
	9017.00	54.26	349.29	8937.15	195.68	195.68	-12.90	10.47	586128.57	638566.90	N 32 36 38.04	W 103 52 59.99
	9049.00	57.86	349.38	8955.01	221.77	221.77	-17.81	11.25	586154.65	638561.99	N 32 36 38.29	W 103 53 0.04
	9080.00	60.76	350.00	8970.83	247.99	247.99	-22.58	9.51	586180.87	638557.22	N 32 36 38.55	W 103 53 0.10
	9112.00	63.58	350.35	8985.77	275.87	275.87	-27.40	8.87	586208.75	638552.40	N 32 36 38.83	W 103 53 0.15
	9144.00	66.83	350.43	8999.19	304.51	304.51	-32.25	10.16	586237.39	638547.55	N 32 36 39.11	W 103 53 0.21
	9175.00	70.00	350.26	9010.59	332.93	332.93	-37.09	10.24	586265.80	638542.71	N 32 36 39.40	W 103 53 0.26
	9207.00	72.90	349.82	9020.77	362.80	362.80	-42.34	9.16	586295.68	638537.47	N 32 36 39.69	W 103 53 0.32
	9238.00	75.89	349.82	9029.11	392.19	392.19	-47.61	9.65	586325.06	638532.19	N 32 36 39.98	W 103 53 0.38
	9270.00	78.52	350.52	9036.19	422.93	422.93	-52.94	8.49	586355.80	638526.87	N 32 36 40.29	W 103 53 0.45
	9302.00	81.16	350.79	9041.84	454.01	454.01	-58.05	8.29	586386.88	638521.75	N 32 36 40.59	W 103 53 0.50
	9333.00	85.03	351.49	9045.56	484.41	484.41	-62.79	12.68	586417.28	638517.01	N 32 36 40.90	W 103 53 0.56
	9365.00	89.08	351.84	9047.21	516.02	516.02	-67.42	12.70	586448.89	638512.38	N 32 36 41.21	W 103 53 0.61
	9397.00	90.04	351.67	9047.45	547.69	547.69	-72.01	3.05	586480.55	638507.79	N 32 36 41.52	W 103 53 0.66
	9429.00	90.22	351.49	9047.38	579.35	579.35	-76.70	0.80	586512.21	638503.11	N 32 36 41.84	W 103 53 0.72
	9524.00	89.96	356.41	9047.23	673.79	673.79	-86.71	5.19	586606.64	638493.10	N 32 36 42.77	W 103 53 0.83
	9619.00	89.69	355.53	9047.52	768.55	768.55	-93.38	0.97	586701.40	638486.42	N 32 36 43.71	W 103 53 0.90
	9714.00	90.40	357.73	9047.45	863.38	863.38	-98.97	2.43	586796.22	638480.84	N 32 36 44.65	W 103 53 0.96
	9809.00	90.48	0.63	9046.72	958.36	958.36	-100.33	3.05	586891.19	638479.48	N 32 36 45.59	W 103 53 0.97
	9903.00	90.84	0.01	9045.63	1052.35	1052.35	-99.80	0.76	586985.18	638480.01	N 32 36 46.52	W 103 53 0.96
	9998.00	90.31	1.16	9044.68	1147.34	1147.34	-98.83	1.33	587080.16	638480.98	N 32 36 47.46	W 103 53 0.95
	10093.00	90.84	1.16	9043.73	1242.31	1242.31	-96.91	0.56	587175.13	638482.90	N 32 36 48.40	W 103 53 0.92
	10188.00	88.99	1.33	9043.87	1337.29	1337.29	-94.84	1.96	587270.09	638484.96	N 32 36 49.34	W 103 53 0.89
	10283.00	89.52	0.63	9045.10	1432.27	1432.27	-93.22	0.92	587365.06	638486.59	N 32 36 50.28	W 103 53 0.87
	10378.00	89.69	0.63	9045.76	1527.26	1527.26	-92.17	0.18	587460.05	638487.63	N 32 36 51.22	W 103 53 0.85
	10472.00	89.69	1.25	9046.27	1621.24	1621.24	-90.63	0.66	587554.03	638489.17	N 32 36 52.15	W 103 53 0.83
	10567.00	90.84	1.16	9045.83	1716.22	1716.22	-88.63	1.21	587649.00	638491.17	N 32 36 53.09	W 103 53 0.80
	10662.00	90.84	1.07	9044.43	1811.19	1811.19	-86.79	0.09	587743.96	638493.02	N 32 36 54.02	W 103 53 0.77
	10757.00	91.36	1.68	9042.61	1906.15	1906.15	-84.51	0.84	587838.91	638495.30	N 32 36 54.96	W 103 53 0.74
	10852.00	89.96	0.89	9041.52	2001.11	2001.11	-82.38	1.69	587933.87	638497.43	N 32 36 55.90	W 103 53 0.71
	10946.00	90.75	1.42	9040.93	2095.09	2095.09	-80.48	1.01	588027.84	638499.32	N 32 36 56.83	W 103 53 0.68
	11041.00	89.52	0.37	9040.71	2190.07	2190.07	-79.00	1.70	588122.82	638500.81	N 32 36 57.77	W 103 53 0.66
	11136.00	89.69	0.63	9041.36	2285.07	2285.07	-78.17	0.33	588217.81	638501.64	N 32 36 58.71	W 103 53 0.65
	11231.00	90.13	1.33	9041.51	2380.05	2380.05	-76.54	0.87	588312.79	638503.26	N 32 36 59.65	W 103 53 0.62
	11326.00	89.69	359.93	9041.66								

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (%/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	11800.00	88.20	359.40	9041.36	2948.99	2948.99	-79.14	2.47	588881.68	638500.67	N 32 37 5.28	W 103 53 0.83
	11895.00	88.29	358.70	9044.30	3044.93	3044.93	-80.73	0.73	588977.61	638499.08	N 32 37 6.23	W 103 53 0.64
	11990.00	88.46	358.52	9046.97	3138.87	3138.87	-83.01	0.26	589071.54	638496.80	N 32 37 7.16	W 103 53 0.66
	12085.00	88.72	358.79	9049.30	3233.81	3233.81	-85.24	0.39	589166.48	638494.57	N 32 37 8.10	W 103 53 0.68
	12180.00	88.81	359.31	9051.35	3328.77	3328.77	-86.81	0.56	589261.44	638493.00	N 32 37 9.04	W 103 53 0.70
	12275.00	88.99	359.75	9053.17	3423.75	3423.75	-87.59	0.50	589356.41	638492.22	N 32 37 9.98	W 103 53 0.70
	12370.00	89.60	359.75	9054.34	3518.74	3518.74	-88.00	0.64	589451.40	638491.80	N 32 37 10.92	W 103 53 0.70
	12465.00	91.01	359.93	9053.84	3613.74	3613.74	-88.27	1.50	589546.38	638491.54	N 32 37 11.86	W 103 53 0.70
	12560.00	91.63	359.93	9051.65	3708.72	3708.72	-88.39	0.65	589641.35	638491.42	N 32 37 12.80	W 103 53 0.70
	12655.00	90.48	359.22	9049.90	3803.69	3803.69	-89.09	1.42	589736.32	638490.72	N 32 37 13.74	W 103 53 0.70
	12750.00	90.40	359.22	9049.17	3898.68	3898.68	-90.38	0.08	589831.31	638489.42	N 32 37 14.68	W 103 53 0.71
	12845.00	91.63	359.22	9047.49	3993.66	3993.66	-91.68	1.29	589926.27	638488.13	N 32 37 15.62	W 103 53 0.72
	12940.00	89.08	359.66	9046.90	4088.64	4088.64	-92.61	2.72	590021.25	638487.20	N 32 37 16.56	W 103 53 0.73
	13035.00	89.43	0.19	9048.13	4183.63	4183.63	-92.73	0.67	590116.24	638487.08	N 32 37 17.50	W 103 53 0.72
	13130.00	90.22	0.45	9048.42	4278.63	4278.63	-92.20	0.88	590211.23	638487.61	N 32 37 18.44	W 103 53 0.71
	13225.00	90.31	0.01	9047.99	4373.63	4373.63	-91.82	0.47	590306.22	638487.99	N 32 37 19.38	W 103 53 0.70
	13320.00	91.54	0.37	9046.45	4468.61	4468.61	-91.50	1.35	590401.20	638488.30	N 32 37 20.32	W 103 53 0.70
Final Survey	13415.00	92.15	0.81	9043.39	4563.56	4563.56	-90.52	0.79	590496.14	638489.28	N 32 37 21.26	W 103 53 0.68
Projection to TD	13612.00	92.15	0.81	9036.00	4760.40	4760.40	-87.74	0.00	590692.96	638492.06	N 32 37 23.21	W 103 53 0.64

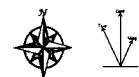
Survey Type: Non-Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma
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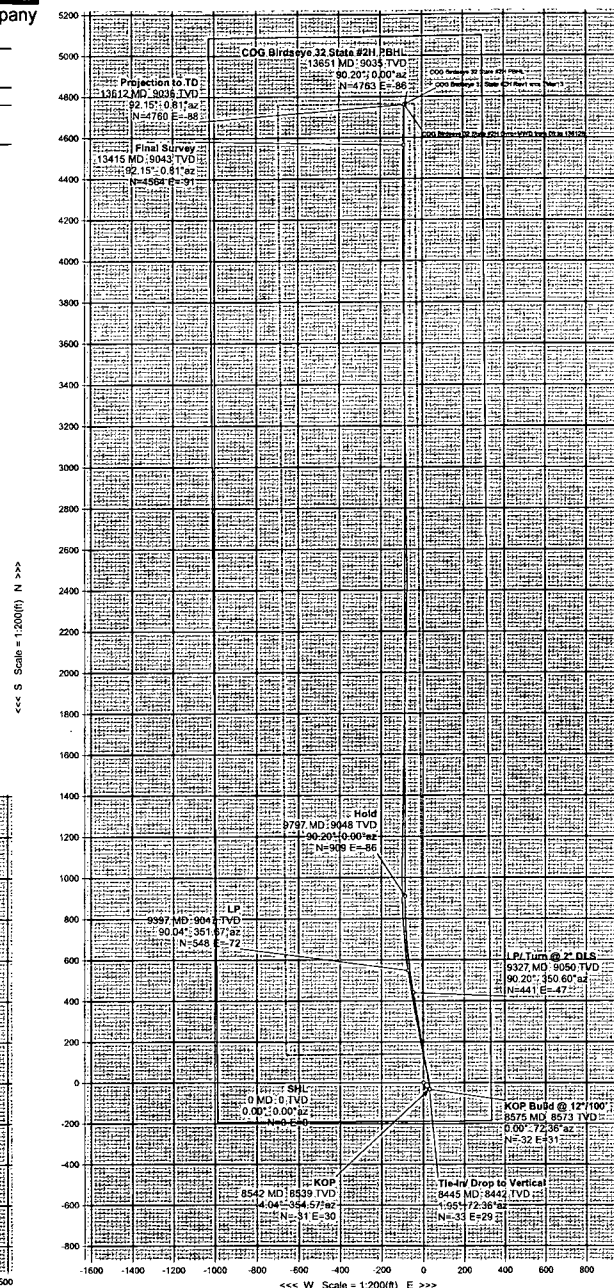
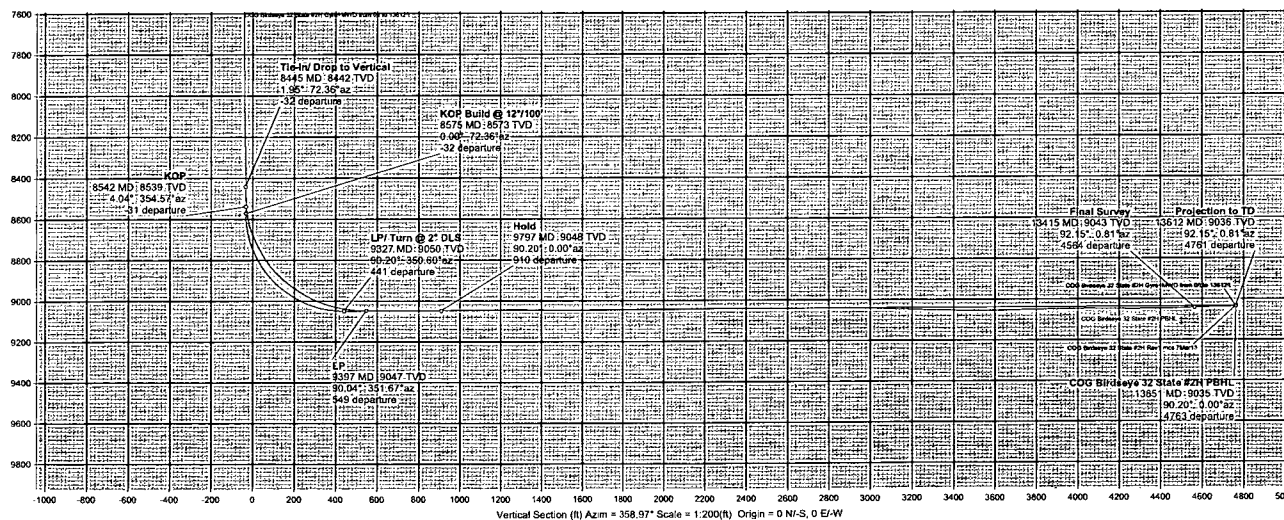
Description	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	0.000	18.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT-Depth Only	COG Birdseye 32 State #2H / COG Birdseye 32 State #2H Gyro+MWD from 0ft to 13612ft
	18.000	8445.000	Act Stns	30.000	30.000	SLB_NSG+MSHOT	COG Birdseye 32 State #2H / COG Birdseye 32 State #2H COG Birdseye 32 State #2H
	8445.000	13612.000	Act Stns	30.000	30.000	SLB_MWD-STD	COG Birdseye 32 State #2H / COG Birdseye 32 State #2H

Legend

- 000 Brisbane 32 State #207 33rd Hardline
- 000 Brisbane 32 State #207 PB&T
- 000 Brisbane 32 State #207 Loose Lines
- 000 Brisbane 32 State #207 Ray's since 7 Mar 13
- 000 Brisbane 32 State #207 Copper-Medals from ON to Upstream
- 000 Brisbane 32 State #207 33rd Medals from ON to 134120



Grid North
Tot Corr (M->G
7.4303°)
Mag Dec (7.673°)
Grid Conv (0.243°)



DATE: 11/15/2012
Checked By: _____
Checked Date: _____
Approved By: _____
Approved Date: _____