VES SURVEY INTERNATIONAL

September 1, 2015

Concho Resources, Inc.
One Concho Center
600 W. Illinois Avenue
Midland, Texas 79701

Attn: Kanicia Castillo

RE: **Blue Jay Federal No 001H**

Please find enclosed a copy of the survey from 0' to 11,500' ran on the above referenced well.

Sincerely,

Keith Havelka
Operations

STATE OF TEXAS §
§
COUNTY OF NUECES §

This instrument was acknowledged before me on the 1 day of September A.D., 2015, by Keith Havelka.

Jennifer Ann Byerly
Notary Public, State of Texas

JENNIFER ANN BYERLY
Notary Public, State of Texas
My Commission Expires
August 16, 2017

VES Survey International
P.O. Box 261021, Corpus Christi, Texas 78426
T (361) 767-0602 F (361) 767-0612
www.vessurvey.com

McVAY DRILLING COMPANY
P.O. Box 2450
Hobbs, New Mexico 88241
(575) 397-3311
FAX: 39-DRILL

Well Name and Num: Blue Jay Federal #1H
Location: Sec 18, T20S, R35E
Operator: COG
Drilling Contractor: McVay Drilling Company

The undersigned certifies that he is an authorized representative of the drilling contractor who drilled the above described well and that he has conducted deviation tests and obtained the following results:

Degrees @	Depth	Degrees @	Depth	Degrees @	Depth	Degrees @	Depth
0.40	287	2.00	6359	62.90	11532		
0.30	670	1.70	6697	84.60	11691		
0.50	1077	2.20	7076	90.80	12180		
0.80	1487	1.10	7546	96.40	12657		
0.20	1991	1.10	7872	91.90	12940		
0.30	2180	1.00	8230	91.30	13023		
0.10	2432	1.00	8611	93.60	13403		
0.10	2686	1.80	8981	92.20	13875		
0.10	3190	0.90	9362	92.20	14159		
0.10	3410	2.50	9334	90.80	14538		
1.90	3914	1.90	10051	93.00	15013		
3.90	4410	1.50	10243	90.60	15489		
3.10	4599	1.40	10498	93.10	15932		
0.30	4976	1.10	10878				
2.80	5417	1.50	11261				
3.10	3747	1.10	11636				
2.20	5924	8.90	11056				

By: Mark C. Counce

Subscribed and sworn to before me this 16th day of September, 2015

Tina Flemens
Notary Public, Lea County, New Mexico

OFFICIAL SEAL
TINA FLEMENS
Notary Public
State of New Mexico
My Comm. Expires 10-16-17

Company: Cog Operating LLC
Lease/Well: Blue Jay Federal No/001H

Rig Name: McVay 7
State/County: New Mexico /Lea
VS-Azi: 0.00 Degrees
Latitude: 32.56629, Longitude: -103.49504
Grid North = True North -0.45 degs (NAD 27)

Depth Reference : R.K.B = 17 Ft

DRILLOG HA GYRO SURVEY CALCULATIONS
Filename: blue jay fed com # 1h .ut
Minimum Curvature Method
Report Date/Time: 9/1/2015 / 11:01

VES Survey International
Midland, Texas
432-563-5444
Surveyor: Javier Estrada
Blue Jay Federal No 001H / API 30-025-42338

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	0.52	86.16	100.00	0.03	0.45	0.03	0.45	86.16	0.52
200.00	0.14	56.82	200.00	0.13	1.00	0.13	1.01	82.72	0.40
300.00	0.18	138.96	300.00	0.08	1.21	0.08	1.22	86.40	0.22
400.00	0.20	121.40	400.00	-0.13	1.47	-0.13	1.47	95.23	0.06
500.00	0.03	163.37	500.00	-0.25	1.62	-0.25	1.64	98.68	0.18
600.00	0.12	208.64	600.00	-0.36	1.58	-0.36	1.62	102.98	0.10
700.00	0.12	289.51	700.00	-0.42	1.42	-0.42	1.48	106.44	0.16
800.00	0.30	282.76	799.99	-0.33	1.06	-0.33	1.11	107.01	0.18
900.00	0.44	283.25	899.99	-0.18	0.44	-0.18	0.47	112.40	0.14
1000.00	0.46	268.81	999.99	-0.10	-0.33	-0.10	0.35	253.02	0.11
1100.00	0.27	252.15	1099.99	-0.18	-0.96	-0.18	0.98	259.22	0.21
1200.00	0.63	296.61	1199.98	-0.01	-1.67	-0.01	1.67	269.68	0.47
1300.00	0.55	279.69	1299.98	0.32	-2.63	0.32	2.65	276.86	0.19
1400.00	0.73	257.63	1399.97	0.26	-3.73	0.26	3.74	273.99	0.31
1500.00	0.62	236.96	1499.97	-0.17	-4.80	-0.17	4.81	267.97	0.27
1600.00	0.82	252.35	1599.96	-0.68	-5.94	-0.68	5.98	263.46	0.28
1700.00	0.62	264.72	1699.95	-0.95	-7.15	-0.95	7.22	262.46	0.25
1800.00	0.26	180.71	1799.95	-1.22	-7.69	-1.22	7.79	260.97	0.64

V.E.S. Survey Date: 8/26/2015

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	0.44	269.67	1899.95	-1.45	-8.08	-1.45	8.21	259.81	0.50
2000.00	0.29	222.44	1999.95	-1.64	-8.63	-1.64	8.78	259.24	0.32
2100.00	0.25	144.56	2099.94	-2.00	-8.67	-2.00	8.90	256.98	0.34
2200.00	0.24	133.31	2199.94	-2.33	-8.39	-2.33	8.71	254.50	0.05
2300.00	0.27	137.04	2299.94	-2.64	-8.08	-2.64	8.50	251.91	0.03
2400.00	0.23	86.81	2399.94	-2.80	-7.72	-2.80	8.21	250.08	0.21
2500.00	0.21	85.48	2499.94	-2.77	-7.34	-2.77	7.85	249.30	0.01
2600.00	0.22	230.03	2599.94	-2.88	-7.30	-2.88	7.85	248.46	0.41
2700.00	0.24	96.74	2699.94	-3.03	-7.24	-3.03	7.85	247.29	0.42
2800.00	0.18	229.09	2799.94	-3.15	-7.15	-3.15	7.81	246.19	0.38
2900.00	0.31	70.99	2899.94	-3.16	-7.00	-3.16	7.69	245.68	0.48
3000.00	0.18	59.89	2999.94	-3.00	-6.61	-3.00	7.25	245.61	0.14
3100.00	0.63	52.05	3099.94	-2.58	-6.04	-2.58	6.56	246.87	0.45
3200.00	1.11	45.60	3199.92	-1.56	-4.91	-1.56	5.15	252.35	0.49
3300.00	1.19	69.26	3299.90	-0.52	-3.24	-0.52	3.29	260.97	0.48
3400.00	0.96	46.09	3399.89	0.45	-1.67	0.45	1.73	284.94	0.50
3500.00	1.10	60.24	3499.87	1.52	-0.25	1.52	1.54	350.69	0.30
3600.00	1.02	40.99	3599.85	2.66	1.17	2.66	2.91	23.67	0.36
3700.00	1.14	39.37	3699.84	4.10	2.38	4.10	4.74	30.13	0.12
3800.00	1.40	45.87	3799.81	5.72	3.88	5.72	6.91	34.19	0.30
3900.00	1.90	35.73	3899.77	7.91	5.73	7.91	9.77	35.90	0.58
4000.00	1.78	30.82	3999.72	10.60	7.50	10.60	12.98	35.27	0.20
4100.00	2.03	27.67	4099.66	13.50	9.12	13.50	16.29	34.02	0.27
4200.00	2.71	32.10	4199.58	17.07	11.19	17.07	20.42	33.25	0.70
4300.00	3.38	29.32	4299.44	21.65	13.89	21.65	25.72	32.70	0.69
4400.00	3.58	24.59	4399.25	27.06	16.64	27.06	31.77	31.59	0.35
4500.00	3.48	26.49	4499.06	32.62	19.29	32.62	37.89	30.60	0.16
4600.00	3.23	29.13	4598.89	37.79	22.02	37.79	43.74	30.22	0.29
4700.00	2.94	35.23	4698.75	42.35	24.87	42.35	49.12	30.42	0.44
4800.00	2.22	48.74	4798.64	45.73	27.81	45.73	53.52	31.31	0.94
4900.00	3.01	51.03	4898.54	48.66	31.31	48.66	57.86	32.76	0.80
5000.00	2.76	59.18	4998.41	51.54	35.41	51.54	62.53	34.49	0.48
5100.00	2.53	62.93	5098.31	53.78	39.44	53.78	66.69	36.26	0.29
5200.00	2.41	65.30	5198.21	55.66	43.31	55.66	70.53	37.89	0.15
5300.00	2.64	67.78	5298.12	57.41	47.36	57.41	74.42	39.52	0.25
5400.00	2.55	73.35	5398.01	58.92	51.63	58.92	78.34	41.23	0.27
5500.00	2.22	96.96	5497.93	59.32	55.69	59.32	81.36	43.19	1.03
5600.00	2.47	115.71	5597.85	58.15	59.55	58.15	83.23	45.68	0.80
5700.00	2.64	138.68	5697.75	55.49	63.01	55.49	83.96	48.63	1.03

V.E.S. Survey Date: 8/26/2015

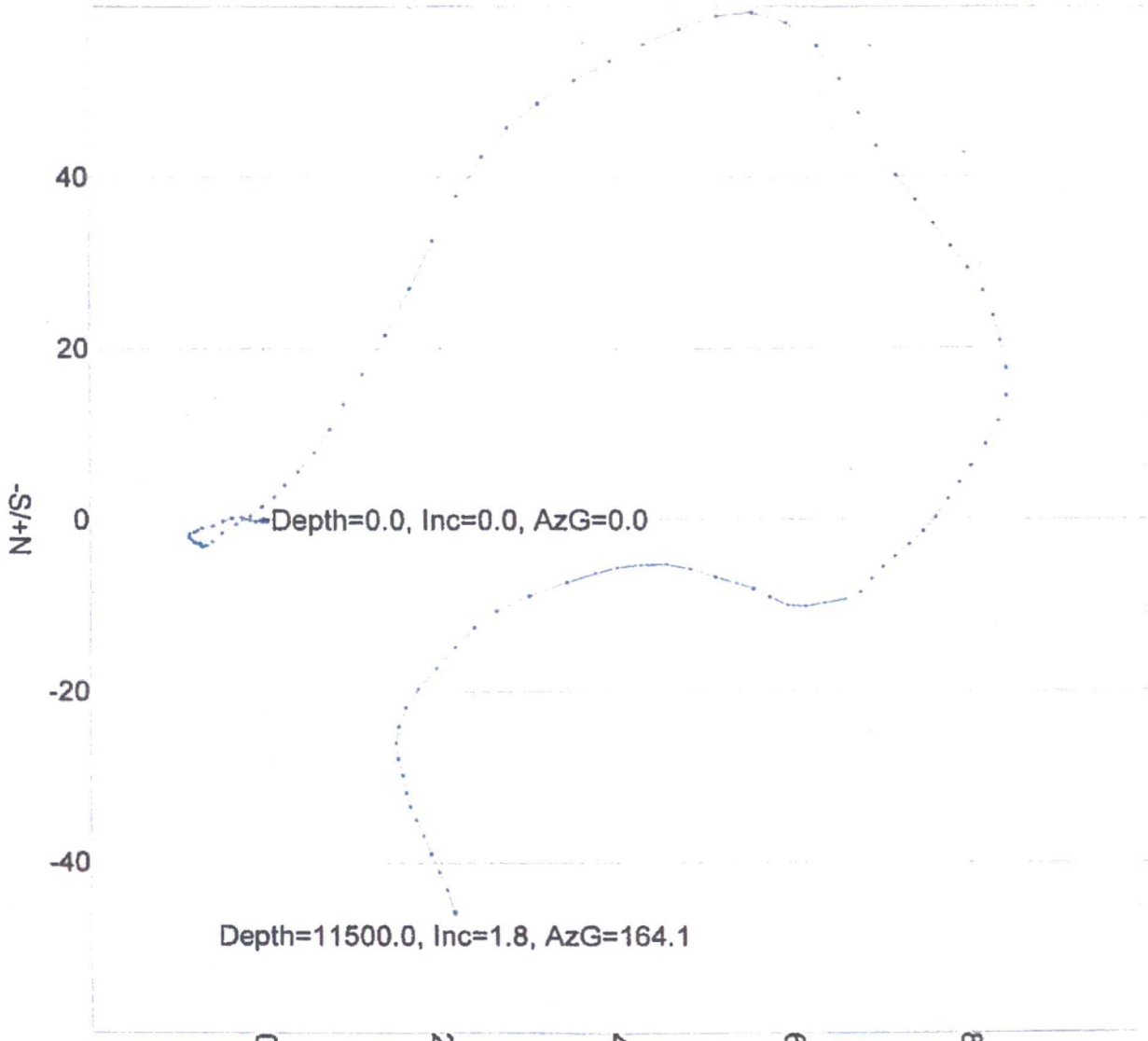
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
5800.00	2.69	152.74	5797.64	51.67	65.61	51.67	83.51	51.78	0.65
5900.00	2.66	153.97	5897.53	47.49	67.70	47.49	82.70	54.95	0.07
6000.00	2.36	150.58	5997.44	43.62	69.73	43.62	82.25	57.97	0.34
6100.00	2.25	144.00	6097.36	40.24	71.89	40.24	82.39	60.76	0.29
6200.00	1.95	141.25	6197.29	37.33	74.11	37.33	82.98	63.27	0.31
6300.00	1.88	145.88	6297.23	34.64	76.10	34.64	83.61	65.52	0.17
6400.00	1.94	141.91	6397.18	31.95	78.06	31.95	84.35	67.74	0.15
6500.00	1.73	144.79	6497.13	29.39	79.98	29.39	85.20	69.82	0.23
6600.00	1.92	149.66	6597.08	26.71	81.69	26.71	85.95	71.89	0.24
6700.00	1.67	166.85	6697.03	23.85	82.87	23.85	86.23	73.94	0.59
6800.00	1.88	165.40	6796.98	20.84	83.61	20.84	86.17	76.00	0.21
6900.00	1.88	171.67	6896.93	17.64	84.26	17.64	86.09	78.18	0.21
7000.00	1.87	188.44	6996.87	14.40	84.26	14.40	85.48	80.30	0.55
7100.00	1.66	205.90	7096.83	11.49	83.39	11.49	84.18	82.16	0.57
7200.00	1.88	210.34	7196.78	8.76	81.93	8.76	82.39	83.89	0.26
7300.00	1.54	217.20	7296.74	6.28	80.28	6.28	80.53	85.53	0.40
7400.00	1.26	212.84	7396.71	4.28	78.87	4.28	78.99	86.89	0.30
7500.00	1.40	212.86	7496.68	2.33	77.61	2.33	77.65	88.28	0.14
7600.00	1.42	216.49	7596.65	0.30	76.21	0.30	76.21	89.77	0.09
7700.00	1.15	222.94	7696.62	-1.43	74.79	-1.43	74.80	91.09	0.31
7800.00	1.37	229.67	7796.60	-2.94	73.20	-2.94	73.26	92.30	0.27
7900.00	1.14	228.75	7896.57	-4.37	71.54	-4.37	71.67	93.49	0.23
8000.00	0.94	229.73	7996.56	-5.56	70.16	-5.56	70.38	94.53	0.20
8100.00	1.26	215.68	8096.54	-6.98	68.89	-6.98	69.24	95.79	0.41
8200.00	1.01	224.28	8196.52	-8.50	67.64	-8.50	68.17	97.17	0.30
8300.00	1.33	258.31	8296.50	-9.37	65.89	-9.37	66.55	98.09	0.75
8400.00	1.38	262.80	8396.47	-9.75	63.55	-9.75	64.30	98.73	0.12
8500.00	1.10	254.65	8496.45	-10.16	61.43	-10.16	62.27	99.39	0.33
8600.00	1.37	288.36	8596.43	-10.04	59.37	-10.04	60.21	99.59	0.76
8700.00	1.21	301.40	8696.40	-9.11	57.33	-9.11	58.05	99.03	0.34
8800.00	1.21	294.01	8796.38	-8.13	55.47	-8.13	56.06	98.34	0.16
8900.00	1.12	284.03	8896.36	-7.47	53.56	-7.47	54.08	97.94	0.22
9000.00	1.75	289.79	8996.33	-6.71	51.18	-6.71	51.61	97.47	0.64
9100.00	1.69	288.37	9096.28	-5.73	48.34	-5.73	48.68	96.76	0.07
9200.00	1.57	271.39	9196.24	-5.23	45.57	-5.23	45.87	96.55	0.50
9300.00	1.71	266.83	9296.20	-5.28	42.72	-5.28	43.04	97.05	0.19
9400.00	1.44	259.91	9396.16	-5.58	40.00	-5.58	40.38	97.95	0.33
9500.00	1.51	249.83	9496.13	-6.26	37.52	-6.26	38.04	99.47	0.27
9600.00	2.33	252.56	9596.07	-7.32	34.34	-7.32	35.11	102.04	0.83

V.E.S. Survey Date: 8/26/2015

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
9700.00	2.85	247.58	9695.97	-8.88	30.10	-8.88	31.39	106.44	0.56
9800.00	1.90	240.79	9795.88	-10.64	26.36	-10.64	28.43	111.97	0.99
9900.00	1.80	223.49	9895.83	-12.59	23.83	-12.59	26.95	117.84	0.56
10000.00	1.79	224.01	9995.78	-14.85	21.67	-14.85	26.27	124.42	0.02
10100.00	1.92	219.31	10095.73	-17.27	19.52	-17.27	26.06	131.49	0.20
10200.00	1.66	223.78	10195.68	-19.61	17.46	-19.61	26.26	138.33	0.29
10300.00	1.44	199.16	10295.65	-21.85	16.04	-21.85	27.10	143.72	0.70
10400.00	1.19	201.01	10395.62	-24.00	15.25	-24.00	28.44	147.57	0.26
10500.00	1.12	179.10	10495.60	-25.95	14.90	-25.95	29.92	150.14	0.44
10600.00	1.00	164.69	10595.58	-27.77	15.14	-27.77	31.63	151.40	0.29
10700.00	1.31	164.70	10695.56	-29.72	15.68	-29.72	33.60	152.19	0.31
10800.00	1.07	173.88	10795.54	-31.75	16.08	-31.75	35.59	153.14	0.31
10900.00	0.88	155.32	10895.53	-33.38	16.50	-33.38	37.24	153.70	0.37
11000.00	1.01	157.90	10995.51	-34.90	17.15	-34.90	38.89	153.83	0.13
11100.00	1.37	155.52	11095.49	-36.81	17.98	-36.81	40.96	153.96	0.36
11200.00	1.31	162.15	11195.46	-38.98	18.83	-38.98	43.29	154.22	0.16
11300.00	1.31	151.61	11295.44	-41.08	19.72	-41.08	45.57	154.35	0.24
11400.00	1.39	161.63	11395.41	-43.23	20.65	-43.23	47.91	154.47	0.25
11500.00	1.82	164.15	11495.37	-45.92	21.46	-45.92	50.68	154.95	0.44

V.E.S. Survey Date: 8/26/2015

VES Survey International
Midland, Texas
432-563-5444
Surveyor: Javier Estrada
Blue Jay Federal No 001H / API 30-025-42338



V.E.S. Survey Date: 8/26/2015

VES SURVEY

I JAVIER ESTRADA certify that I am employed by Vaughn Energy Services. That I did on the day(s) of 08/27/15 through 08/27/15 conduct or supervise the taking of a RATE GYRO survey from a depth of 0 feet to a depth of 11500 feet; that the data is true, correct, complete and within the limitations of the tool as set forth by Vaughn Energy Services, that I am authorized and qualified to make this report; that this survey was conducted at the request of COG OPERATING LLC for the Blue Jay Fed Com No Well # 001H API # 30-025-42338 in Lea County / Parish New Mexico ; and that I have reviewed this report and find that it conforms to the principles and procedures as set forth by Vaughn Energy Services

Javier Estrada

JAVIER ESTRADA
Service Technician
Vaughn Energy Services

CONCHO

COG Operating, LLC

Lea County, NM
Sec 18, T20S, R35E
Blue Jay Federal #1H

Wellbore #1

Survey: MWD

DDC Survey Report

23 September, 2015

DDC
The DIRECTIONAL DRILLING COMPANY

The Directional Drilling Company
11390 FM 830
Willis, TX 77318
Phone: (936) 856-4332
Fax: (936) 856-8678

Survey Certification Sheet

Company	Job Number	Date
COG Operating, LLC	WT-150585	9/18/2015

Lease	Well Name	County & State
Sec18,T20S,R35E	Blue Jay Federal 1H	Lea, NM

API No.	Survey Depth Range	Survey Type
30-025-42338	10900' feet to 15976' feet MD	MWD

Sidetrack Information	Directional Supervisor/Surveyor
N/A	Tuffy Hudson

Certification Statement

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by The Directional Drilling Company (DDC). This report represents a true and correct directional survey of this well based on the original data obtained at the well site. Wellbore coordinates are calculated using minimum curvature.

Christopher Hughes

Digitally signed by Christopher Hughes
DN: cn=Christopher Hughes, o=DDC, ou, email=Chrish@directionaldrillers.com, c=US
Date: 2015.09.23 10:07:45 -05'00'

Christopher Hughes
MWD Compliance Manager
The Directional Drilling Company

CONCHO

HP
Survey Report

DDC

Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well Blue Jay Federal #1H
Project:	Lea County, NM	**TVD Reference:**	well @ 3689.0usft (Mcvay #7)
Site:	Sec 18, T20S, R35E	**MD Reference:**	well @ 3689.0usft (Mcvay #7)
Well:	Blue Jay Federal #1H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Compass

Project Lea County, NM

Map System:	US State Plane 1927 (Exact solution)	**System Datum:**	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site Sec 18, T20S, R35E

Site Position:		**Northing:**	570,747.00 usft	**Latitude:**	32° 33' 58.661 N
From:	Map	**Easting:**	758,261.00 usft	**Longitude:**	103° 29' 42.139 W
Position Uncertainty:	0.0 usft	**Slot Radius:**	13-3/16 "	**Grid Convergence:**	0.45 °

Well Blue Jay Federal #1H

Well Position	**+N/-S**	0.0 usft	**Northing:**	570,747.00 usft	**Latitude:**	32° 33' 58.661 N
	+E/-W	0.0 usft	**Easting:**	758,261.00 usft	**Longitude:**	103° 29' 42.139 W
Position Uncertainty		0.0 usft	**Wellhead Elevation:**	0.0 usft	**Ground Level:**	3,672.0 usft

Wellbore Wellbore #1

Magnetics	**Model Name**	**Sample Date**	**Declination (°)**	**Dip Angle (°)**	**Field Strength (nT)**
	IGRF2015	8/31/2015	7.14	60.41	48,334

Design Wellbore #1

Audit Notes:

Version:	1.0	**Phase:**	ACTUAL	**Tie On Depth:**	0.0

Vertical Section:	**Depth From (TVD) (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Direction (°)**
	0.0	0.0	0.0	0.12

Survey Program **Date** 9/12/2015

From (usft)	**To (usft)**	**Survey (Wellbore)**	**Tool Name**	**Description**
100.0	10,900.0	Gyro (Wellbore #1)	Good_gyro	Good Gyro
10,961.0	15,976.0	MWD (Wellbore #1)	MWD default	MWD - Standard

Survey

Measured Depth (usft)	**Inclination (°)**	**Azimuth (°)**	**Vertical Depth (usft)**	**+N/-S (usft)**	**+E/-W (usft)**	**Vertical Section (usft)**	**Dogleg Rate (°/100usft)**	**Build Rate (°/100usft)**	**Turn Rate (°/100usft)**
Gyro Tie-in @ 10900' MD / 10696' TVD									
10,900.0	0.88	155.32	10,895.5	-33.4	16.5	-33.4	0.00	0.00	0.00
10,961.0	1.20	168.40	10,956.5	-34.4	16.8	-34.4	0.65	0.52	21.44
10,992.0	0.20	50.50	10,987.5	-34.7	16.9	-34.7	4.21	-3.23	-380.32
11,024.0	4.50	352.10	11,019.5	-33.5	16.8	-33.4	13.75	13.44	-182.50
11,056.0	8.90	354.40	11,051.3	-29.7	16.3	-29.7	13.77	13.75	7.19
11,088.0	13.40	356.50	11,082.6	-23.6	15.9	-23.5	14.12	14.06	6.56
11,119.0	17.80	354.40	11,112.5	-15.3	15.2	-15.2	14.31	14.19	-6.77
11,149.0	21.50	353.10	11,140.7	-5.2	14.1	-5.2	12.42	12.33	-4.33
11,181.0	25.10	355.60	11,170.1	7.3	12.9	7.4	11.66	11.25	7.81

Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well Blue Jay Federal #1H
Project:	Lea County, NM	**TVD Reference:**	well @ 3689.0usft (Mcvay #7)
Site:	Sec 18, T20S, R35E	**MD Reference:**	well @ 3689.0usft (Mcvay #7)
Well:	Blue Jay Federal #1H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
11,213.0	29.20	355.10	11,198.6	21.9	11.7	21.9	12.83	12.81	-1.56
11,245.0	32.30	354.20	11,226.1	38.2	10.1	38.2	9.79	9.69	-2.81
11,277.0	35.50	354.70	11,252.7	55.9	8.4	56.0	10.04	10.00	1.56
11,309.0	38.90	355.60	11,278.1	75.2	6.8	75.2	10.76	10.63	2.81
11,341.0	42.40	357.20	11,302.4	96.0	5.5	96.0	11.41	10.94	5.00
11,373.0	45.90	358.30	11,325.4	118.3	4.6	118.3	11.20	10.94	3.44
11,405.0	48.00	0.20	11,347.2	141.7	4.3	141.7	7.87	6.56	5.94
11,436.0	50.70	3.00	11,367.4	165.2	5.0	165.2	11.08	8.71	9.03
11,468.0	54.80	5.10	11,386.8	190.6	6.8	190.6	13.84	12.81	6.56
11,500.0	58.80	6.90	11,404.3	217.2	9.6	217.2	13.36	12.50	5.63
11,532.0	62.90	7.70	11,419.9	244.9	13.2	244.9	13.00	12.81	2.50
11,564.0	66.70	6.90	11,433.5	273.6	16.8	273.7	12.09	11.88	-2.50
11,596.0	71.40	6.30	11,444.9	303.3	20.3	303.3	14.79	14.69	-1.88
11,628.0	76.20	5.60	11,453.9	333.9	23.5	333.9	15.15	15.00	-2.19
11,660.0	80.90	4.10	11,460.2	365.1	26.1	365.2	15.39	14.69	-4.69
11,691.0	84.60	2.70	11,464.1	395.8	27.9	395.8	12.75	11.94	-4.52
11,733.0	88.60	0.90	11,466.6	437.7	29.2	437.7	10.44	9.52	-4.29
11,765.0	90.00	0.40	11,467.0	469.7	29.6	469.7	4.65	4.38	-1.56
11,797.0	92.10	0.70	11,466.4	501.7	29.9	501.7	6.63	6.56	0.94
11,893.0	95.10	1.20	11,460.4	597.5	31.5	597.5	3.17	3.13	0.52
11,989.0	93.10	2.50	11,453.5	693.2	34.6	693.2	2.48	-2.08	1.35
12,084.0	91.70	1.20	11,449.6	788.0	37.7	788.1	2.01	-1.47	-1.37
12,180.0	90.80	0.00	11,447.5	884.0	38.7	884.1	1.56	-0.94	-1.25
12,276.0	87.80	0.20	11,448.6	980.0	38.8	980.0	3.13	-3.13	0.21
12,372.0	90.00	0.40	11,450.5	1,075.9	39.3	1,076.0	2.30	2.29	0.21
12,466.0	90.60	0.00	11,450.0	1,169.9	39.7	1,170.0	0.77	0.64	-0.43
12,561.0	93.10	0.00	11,446.9	1,264.9	39.7	1,265.0	2.63	2.63	0.00
12,657.0	91.40	0.20	11,443.1	1,360.8	39.8	1,360.9	1.78	-1.77	0.21
12,751.0	92.80	0.00	11,439.7	1,454.7	40.0	1,454.8	1.50	1.49	-0.21
12,846.0	92.10	0.20	11,435.6	1,549.7	40.2	1,549.7	0.77	-0.74	0.21
12,940.0	91.90	359.70	11,432.4	1,643.6	40.1	1,643.7	0.57	-0.21	-0.53
13,023.0	91.30	359.30	11,430.0	1,726.6	39.3	1,726.6	0.87	-0.72	-0.48
13,116.0	92.30	359.10	11,427.1	1,821.5	38.0	1,821.6	1.07	1.05	-0.21
13,213.0	91.40	359.10	11,424.0	1,916.4	36.5	1,916.5	0.95	-0.95	0.00
13,308.0	92.10	359.80	11,421.1	2,011.4	35.6	2,011.5	1.04	0.74	0.74
13,403.0	93.60	359.50	11,416.4	2,106.3	35.0	2,106.3	1.61	1.58	-0.32
13,498.0	92.50	358.60	11,411.3	2,201.1	33.5	2,201.2	1.50	-1.16	-0.95
13,592.0	91.50	359.00	11,408.0	2,295.0	31.5	2,295.1	1.15	-1.06	0.43
13,686.0	91.30	359.00	11,405.7	2,389.0	29.9	2,389.1	0.21	-0.21	0.00
13,781.0	92.50	358.60	11,402.6	2,483.9	27.9	2,484.0	1.33	1.26	-0.42
13,875.0	92.20	359.00	11,398.7	2,577.8	25.9	2,577.9	0.53	-0.32	0.43
13,970.0	91.30	359.10	11,395.8	2,672.8	24.3	2,672.8	0.95	-0.95	0.11
14,064.0	93.00	358.80	11,392.3	2,766.7	22.6	2,766.7	1.84	1.81	-0.32

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Survey Report

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Company:	COG Operating, LLC	**Local Co-ordinate Reference:**	Well Blue Jay Federal #1H
Project:	Lea County, NM	**TVD Reference:**	well @ 3689.0usft (Mcvay #7)
Site:	Sec 18, T20S, R35E	**MD Reference:**	well @ 3689.0usft (Mcvay #7)
Well:	Blue Jay Federal #1H	**North Reference:**	Grid
Wellbore:	Wellbore #1	**Survey Calculation Method:**	Minimum Curvature
Design:	Wellbore #1	**Database:**	Compass

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
14,159.0	92.20	359.00	11,388.0	2,861.6	20.8	2,861.6	0.67	-0.84	0.21
14,253.0	91.30	0.00	11,385.1	2,955.5	20.0	2,955.5	1.43	-0.96	1.06
14,347.0	92.80	0.20	11,381.8	3,049.4	20.1	3,049.5	1.61	1.60	0.21
14,442.0	92.10	359.80	11,377.7	3,144.4	20.1	3,144.4	0.85	-0.74	-0.42
14,538.0	91.80	359.50	11,374.4	3,240.3	19.5	3,240.3	0.44	-0.31	-0.31
14,633.0	93.00	359.30	11,370.5	3,335.2	18.5	3,335.2	1.28	1.26	-0.21
14,728.0	92.60	359.50	11,365.8	3,430.1	17.6	3,430.1	0.47	-0.42	0.21
14,823.0	92.20	358.60	11,361.8	3,525.0	16.0	3,525.0	1.04	-0.42	-0.95
14,918.0	91.30	358.60	11,358.9	3,619.9	13.7	3,619.9	0.95	-0.95	0.00
15,013.0	93.00	358.40	11,355.4	3,714.8	11.2	3,714.8	1.80	1.79	-0.21
15,108.0	92.20	358.80	11,351.1	3,809.7	8.9	3,809.7	0.94	-0.84	0.42
15,203.0	91.40	0.00	11,348.1	3,904.6	7.9	3,904.6	1.52	-0.84	1.26
15,299.0	91.10	0.40	11,346.0	4,000.6	8.2	4,000.6	0.52	-0.31	0.42
15,394.0	92.30	0.90	11,343.2	4,095.6	9.3	4,095.6	1.37	1.26	0.53
15,489.0	90.60	1.80	11,340.8	4,190.5	11.5	4,190.5	2.02	-1.79	0.95
15,584.0	92.10	1.90	11,338.5	4,285.4	14.6	4,285.4	1.58	1.58	0.11
15,678.0	91.00	1.90	11,336.0	4,379.3	17.7	4,379.4	1.17	-1.17	0.00
15,773.0	92.90	2.30	11,332.8	4,474.2	21.2	4,474.2	2.04	2.00	0.42
15,869.0	92.30	1.20	11,328.4	4,570.1	24.1	4,570.1	1.30	-0.63	-1.15
15,932.0	93.10	0.70	11,325.4	4,633.0	25.1	4,633.0	1.50	1.27	-0.79
TD @ 15976' MD / 11323' TVD									
15,976.0	93.10	0.70	11,323.0	4,676.9	25.7	4,677.0	0.00	0.00	0.00

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates +N/-S (usft)	Local Coordinates +E/-W (usft)	Comment
10,900.0	10,895.5	-33.4	16.5	Gyro Tie-in @ 10900' MD / 10896' TVD
15,976.0	11,323.0	4,676.9	25.7	TD @ 15976' MD / 11323' TVD

Checked By: _____ Approved By: _____ Date: _____