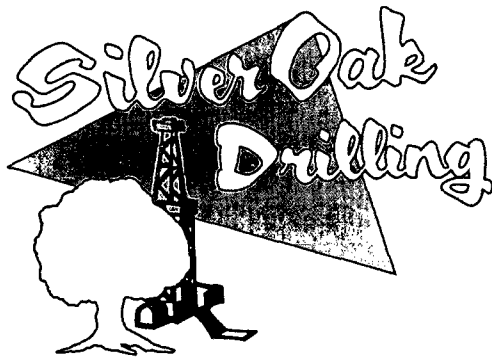




PO Box 1370
Artesia, NM 88211-1370
(575) 748-1288

HOBBS OCR
SEP 02 2015
RECEIVED

June 17, 2015

COG, LLC
One Concho Center
600 W. Illinois Ave.
Midland, TX 79701

RE: Salvador Fee #5H
190' FSL & 560' FEL
Sec. 10, T24S, R34E
Lea County, New Mexico

Dear Sir,

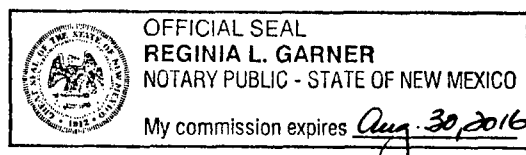
The attached is the Deviation Survey for the above captioned well.

Very truly yours,

Chris Graham
Drilling Superintendent

State of New Mexico }
County of Eddy }

The foregoing was acknowledged before me this 17th day of June, 2015.

Notary Public

SEP 02 2015

Salvador Fee #5H

Date	Depth	Deviation	Direction	TVD	Horiz Disp
5/4/2015	188	0.50			
5/4/2015	600	1.20			
5/4/2015	796	0.30			
5/5/2015	1030	0.70			
5/5/2015	1121	1.10			
5/10/2015	1263	0.60	56.30	1262.00	
5/10/2015	1548	0.70			
5/10/2015	1831	0.70			
5/11/2015	2117	0.30	353.50		
5/11/2015	2401	0.80	331.00		
5/11/2015	2780	0.70	335.80		
5/11/2015	2970	0.80	346.70		
5/11/2015	3255	1.00	14.80		
5/11/2015	3539	0.90	12.70	3538.00	
5/11/2015	3824	1.00	24.60	3823.00	
5/12/2015	4109	0.60			
5/12/2015	4394	0.40	11.20		
5/12/2015	4679	1.80	101.20		
5/12/2015	4963	2.40	104.10	4962.00	
5/13/2015	5246	1.40			
5/13/2015	5383	1.20			
5/14/2015	5585	0.90	88.20	5630.00	
5/14/2015	5775	0.60	121.20	5820.00	
5/15/2015	5951	0.50	337.20		
5/15/2015	6190	1.60	54.20		
5/15/2015	6383	0.80	27.20		
5/15/2015	6770	0.50	35.20		
5/15/2015	6960	0.50	11.20		
5/15/2015	7150	0.40	27.20		
5/15/2015	7593	1.60	54.20		
5/15/2015	7720	0.80	194.20		
5/16/2015	7927	2.20	170.20		
5/16/2015	8117	1.60	226.20	8163.00	
5/16/2015	8352	0.10	234.20		
5/16/2015	8541	0.40	320.20		
5/16/2015	8732	0.60	4.20		
5/16/2015	8922	0.10	264.20		
5/17/2015	9068	0.40	307.20	9117.00	
5/17/2015	9270	0.40	312.20		
5/17/2015	9459	1.00	311.20		
5/18/2015	9634	1.20	270.20		
5/24/2015	9035	1.50	347.20		

Date	Depth	Deviation	Direction	TVD	Horiz Disp
5/24/2015	9066	3.50	2.80		
5/24/2015	9130	10.20	10.60	9128.00	
5/24/2015	9144	6.80	10.70	9096.00	
5/24/2015	9162	13.40	8.70	9159.00	
5/24/2015	9193	16.70	5.70	9189.00	
5/24/2015	9225	20.70	3.70	9220.00	
5/24/2015	9256	24.90	2.20	92.48	92.84
5/24/2015	9288	28.00	1.90	9277.00	107.40
5/24/2015	9351	32.70	0.40	9381.00	138.00
5/24/2015	9383	34.90	359.40	9358.00	156.00
5/25/2015	9363	62.40	1.30	9523.00	
5/25/2015	9414	38.20	358.70		
5/25/2015	9446	42.10	358.40		
5/25/2015	9477	46.10	358.30		
5/25/2015	9509	49.50	358.10		
5/25/2015	9541	51.90	358.60		
5/25/2015	9572	54.50	359.70		
5/25/2015	9699	70.30	1.60	9549.00	
5/25/2015	9731	73.70	1.70		
5/25/2015	9967	66.40	1.40	9537.00	
5/26/2015	9794	77.30	2.10		
5/26/2015	9808	75.90	1.90		
5/26/2015	9825	79.30	2.60		
5/26/2015	9857	81.70	3.20	9856.00	
5/26/2015	9889	83.30	3.10	9590.00	
5/26/2015	9920	86.20	3.00	9593.00	
5/26/2015	9952	89.90	2.90	9594.00	
5/26/2015	9984	92.40	2.80	9593.00	
5/27/2015	10047	92.80	2.20		
5/27/2015	10142	94.60	2.10		
5/27/2015	10237	92.40	1.30		
5/27/2015	10332	89.10	0.80		
5/27/2015	10427	89.20	0.10		
5/27/2015	10522	89.30	0.50		
5/27/2015	10617	90.10	359.70	9580.00	
5/27/2015	10712	93.00	358.90	9578.00	
5/27/2015	10806	94.10	359.80	9572.00	
5/28/2015	10901	92.50	359.20		
5/28/2015	10995	92.60	358.90	9562.00	
5/28/2015	11091	93.50	359.00	9557.00	
5/29/2015	11186	94.00	358.50		
5/29/2015	11281	94.60	359.00		
6/1/2015	8904	2.20	1.90	8903.00	47.33
6/1/2015	8937	5.30	8.60	8935.00	49.00
6/2/2015	8969	8.90	10.70	8967.00	

Date	Depth	Deviation	Direction	TVD	Horiz Disp
6/2/2015	9000	12.60	11.50	8998.00	
6/2/2015	9032	16.30	12.00	9029.00	
6/2/2015	9064	20.00	11.90	9059.00	
6/2/2015	9095	25.40	9.90	9088.00	
6/2/2015	9127	27.30	6.40		
6/2/2015	9153	30.60	5.70		
6/2/2015	9190	33.30	4.60		
6/2/2015	9222	37.00	3.50		
6/2/2015	9254	40.90	1.80		
6/2/2015	9268	4.40			
6/2/2015	9286	43.30	1.00	9246.00	193.00
6/2/2015	9317	44.40	2.10	9268.00	214.00
6/2/2015	9349	46.40	3.30	9291.00	237.00
6/2/2015	9381	49.60	4.50	9312.00	261.00
6/2/2015	9412	53.30	4.40	9331.00	285.00
6/3/2015	9476	60.50	3.40	9366.00	
6/3/2015	9507	62.20	3.40		
6/3/2015	9539	64.00	2.80	9395.00	
6/3/2015	9571	66.70	2.60	9409.00	
6/3/2015	9602	69.90	2.00	9420.00	
6/3/2015	9634	72.40	1.40	9431.00	
6/3/2015	9666	74.80	1.00		
6/3/2015	9698	78.00	1.60		
6/3/2015	9729	81.00	0.60	9453.00	573.00
6/3/2015	9761	83.20	359.40	9457.00	607.00
6/4/2015	9793	84.90	357.50	9461.00	
6/4/2015	9824	87.90	356.80	9462.00	
6/4/2015	9856	92.00	356.90	9462.00	
6/4/2015	9951	95.50	356.40	9456.00	
6/4/2015	10046	94.80	356.40	9448.00	
6/4/2015	10141	94.20	357.80		
6/4/2015	10235	93.40	358.00	9434.00	
6/5/2015	10330	93.10	358.30		
6/5/2015	10424	92.60	359.50	9424.00	1266.00
6/5/2015	10519	93.50	0.20	9419.00	1360.00
6/5/2015	10614	93.20	0.90	9413.00	1456.00
6/6/2015	10709	92.20	0.40		
6/6/2015	10804	94.60	0.70		
6/6/2015	10899	95.00	3.10		
6/6/2015	10994	92.70	3.30		
6/6/2015	11089	88.60	0.50	9388.00	1930.00
6/7/2015	11183	88.40	2.70		
6/7/2015	11278	91.30	2.30	9391.00	2119.00
6/7/2015	11373	92.40	2.00	9388.00	2214.00
6/8/2015	11468	93.50	1.80		

Date	Depth	Deviation	Direction	TVD	Horiz Disp
6/8/2015	11563	93.80	1.60		
6/8/2015	11658	94.20	1.30	9370.00	
6/8/2015	11753	95.50	1.00	9362.00	
6/8/2015	11848	95.20	1.00	9535.00	2687.00
6/9/2015	11940	95.10	0.50	9345.00	
6/9/2015	12038	92.30	2.20	9238.97	
6/10/2015	12227	92.70	2.90		
6/10/2015	12324	93.40	2.60	9323.00	3234.00
6/11/2015	12419	95.40	2.00		
6/11/2015	12514	94.50	2.00		
6/11/2015	12609	94.50	2.40	9304.00	
6/12/2015	12700	93.80	1.80	3537.00	
6/12/2015	12795	93.80	1.30	9291.00	
6/12/2015	12890	93.70	0.70	9285.00	
6/12/2015	12985	93.70	359.90	9278.00	
6/13/2015	13080	93.70	0.10	9272.76	
6/13/2015	13175	93.60	359.10	9266.71	
6/13/2015	13270	94.10	358.80		
6/14/2015	13365	95.10	359.10		
6/14/2015	13460	93.90	359.40		
6/14/2015	13555	94.80	359.10	9238.00	
6/14/2015	13650	93.90	357.80	9230.85	
6/14/2015	13745	94.30	358.00	9224.00	
6/15/2015	13840	94.60	357.30	9216.69	4673.85
6/15/2015	13935	94.90	357.30	9208.82	4768.25
6/15/2015	13961	94.90	356.90	9206.60	4794.00



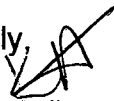
May 26, 2015

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

Attn: Kanicia Castillo

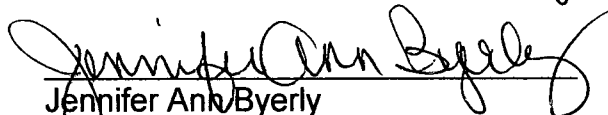
RE: **Salvador Fee 5H**

Please find enclosed a copy of the survey from 0' to 9679' ran on the above referenced well.

Sincerely, 
Keith Havelka
Operations

STATE OF TEXAS §
 §
COUNTY OF NUECES §

This instrument was acknowledged before me on the 26 day of May,
A.D., 2015, by Keith Havelka.


Jennifer Ann Byerly
Notary Public, State of Texas





Company: CONCHO
Well: SALVADOR FEE 5H

Rig Name: SILVER OAK 12
State/County: NEW MEXICO/LEA
VS-Azi: 1.64 Degrees

Latitude: 32.22520, Longitude: -103.45060
Grid Convergence Applied = -0.47 degs
Grid North = True North -0.47 degs



Depth Reference : RKB = 18 FEET

DRILLOG HA GYRO SURVEY CALCULATIONS

Filename: salvadorfee#5h-de_01.ut

Minimum Curvature Method

Report Date/Time: 5/26/2015 / 14:21

VES Survey International
Conroe, TX
936-539-9096

Surveyor: Will Clark
Salvador Fee 5H / API 30-025-42513

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	0.40	93.97	100.00	-0.02	0.35	-0.01	0.35	93.97	0.40
200.00	0.29	110.47	200.00	-0.14	0.94	-0.11	0.95	98.24	0.15
300.00	0.39	122.10	300.00	-0.40	1.46	-0.36	1.51	105.42	0.12
400.00	0.43	96.55	399.99	-0.62	2.12	-0.56	2.21	106.43	0.19
500.00	0.21	103.82	499.99	-0.71	2.67	-0.63	2.76	104.91	0.22
600.00	0.44	108.95	599.99	-0.88	3.21	-0.79	3.33	105.31	0.23
700.00	0.72	101.51	699.98	-1.13	4.18	-1.01	4.33	105.09	0.29
800.00	0.53	89.56	799.98	-1.25	5.25	-1.10	5.40	103.37	0.23
900.00	0.61	103.70	899.97	-1.37	6.23	-1.19	6.38	102.42	0.16
1000.00	0.64	74.06	999.97	-1.34	7.28	-1.13	7.41	100.45	0.32
1100.00	0.57	60.78	1099.96	-0.95	8.26	-0.71	8.31	96.53	0.16
1200.00	0.63	58.81	1199.96	-0.41	9.17	-0.15	9.18	92.59	0.06
1300.00	0.69	43.13	1299.95	0.31	10.05	0.60	10.06	88.23	0.19
1400.00	0.74	31.47	1399.94	1.30	10.80	1.61	10.88	83.14	0.15
1500.00	0.66	20.15	1499.94	2.39	11.33	2.71	11.58	78.10	0.16
1600.00	0.65	25.02	1599.93	3.45	11.77	3.78	12.27	73.69	0.06

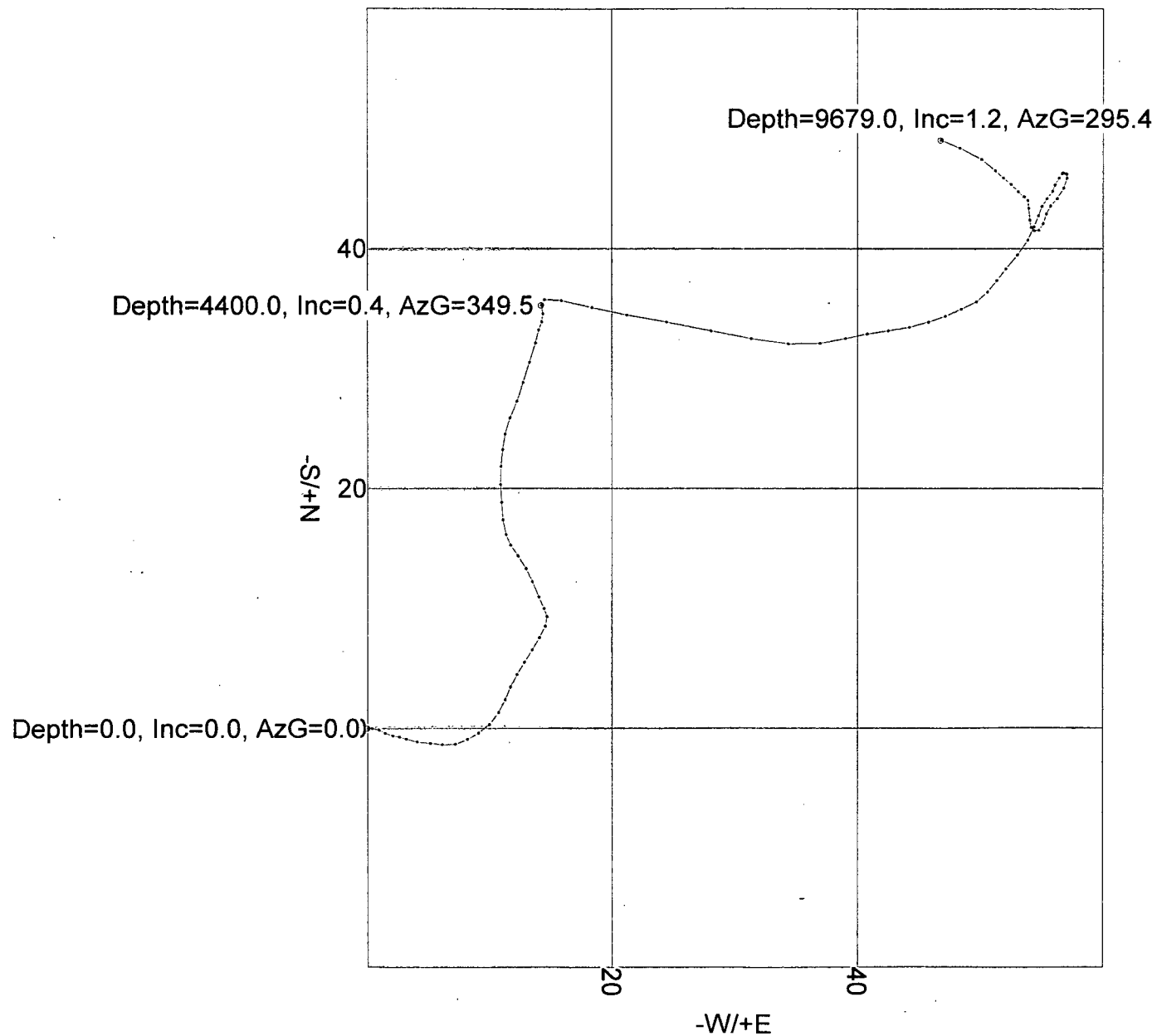
Measured Depth FT	Incl Angle Deg	Drift Direction Deg	TVD FT	+N/-S FT	+E/-W FT	Vertical Section FT	Closure Distance FT	Closure Direction Deg	Dogleg Severity Deg/100
1700.00	0.67	30.04	1699.92	4.47	12.31	4.82	13.09	70.04	0.06
1800.00	0.69	30.52	1799.92	5.49	12.91	5.86	14.03	66.94	0.02
1900.00	0.70	33.57	1899.91	6.52	13.55	6.91	15.04	64.29	0.04
2000.00	0.66	25.60	1999.90	7.55	14.14	7.95	16.03	61.90	0.11
2100.00	0.56	26.65	2099.90	8.51	14.61	8.92	16.90	59.78	0.09
2200.00	0.43	348.86	2199.89	9.31	14.76	9.73	17.45	57.75	0.35
2300.00	0.41	329.47	2299.89	9.99	14.50	10.40	17.61	55.45	0.14
2400.00	0.79	341.03	2399.88	10.94	14.10	11.34	17.84	52.17	0.39
2500.00	0.80	334.38	2499.87	12.22	13.57	12.61	18.26	47.98	0.09
2600.00	0.57	333.31	2599.87	13.30	13.04	13.67	18.63	44.43	0.23
2700.00	0.85	325.13	2699.86	14.36	12.39	14.71	18.97	40.78	0.30
2800.00	0.39	331.50	2799.85	15.28	11.80	15.61	19.30	37.69	0.46
2900.00	0.70	338.69	2899.85	16.15	11.41	16.47	19.78	35.25	0.32
3000.00	0.75	358.56	2999.84	17.38	11.17	17.69	20.66	32.74	0.26
3100.00	0.92	353.77	3099.83	18.83	11.07	19.14	21.85	30.45	0.18
3200.00	0.80	359.35	3199.82	20.33	10.97	20.64	23.11	28.36	0.15
3300.00	0.92	3.86	3299.81	21.84	11.02	22.14	24.46	26.78	0.14
3400.00	0.68	6.71	3399.80	23.23	11.14	23.54	25.77	25.63	0.25
3500.00	0.82	10.15	3499.79	24.53	11.34	24.84	27.02	24.81	0.15
3600.00	0.81	23.73	3599.78	25.88	11.75	26.20	28.42	24.42	0.19
3700.00	0.93	19.89	3699.77	27.29	12.31	27.63	29.94	24.28	0.14
3800.00	0.91	15.28	3799.75	28.82	12.80	29.18	31.54	23.94	0.08
3900.00	1.13	19.00	3899.74	30.53	13.33	30.89	33.31	23.59	0.23
4000.00	0.81	15.11	3999.72	32.14	13.84	32.52	34.99	23.29	0.32
4100.00	0.44	8.79	4099.72	33.21	14.08	33.60	36.07	22.98	0.37
4200.00	0.41	32.20	4199.71	33.90	14.33	34.29	36.80	22.92	0.18
4300.00	0.43	348.27	4299.71	34.57	14.45	34.97	37.46	22.68	0.32
4400.00	0.38	349.47	4399.71	35.26	14.31	35.65	38.05	22.09	0.05
4500.00	0.40	64.65	4499.71	35.73	14.57	36.14	38.59	22.18	0.48
4600.00	1.22	101.57	4599.70	35.67	15.93	36.11	39.07	24.06	0.93
4700.00	1.69	104.48	4699.66	35.09	18.40	35.60	39.62	27.67	0.48
4800.00	1.63	100.36	4799.62	34.46	21.23	35.06	40.48	31.63	0.14
4900.00	2.15	100.19	4899.57	33.88	24.47	34.56	41.79	35.84	0.52
5000.00	2.10	102.54	4999.50	33.15	28.10	33.94	43.45	40.29	0.10
5100.00	1.75	99.44	5099.44	32.50	31.40	33.38	45.19	44.01	0.36
5200.00	1.73	96.99	5199.40	32.06	34.40	33.04	47.03	47.01	0.08
5300.00	1.27	78.21	5299.36	32.11	36.99	33.15	48.98	49.04	0.67
5400.00	1.11	79.80	5399.34	32.51	39.02	33.61	50.79	50.21	0.17
5500.00	0.98	75.58	5499.32	32.89	40.81	34.04	52.41	51.13	0.14

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
5600.00	0.98	86.79	5599.31	33.15	42.49	34.35	53.89	52.04	0.19
5700.00	1.01	73.67	5699.29	33.45	44.19	34.70	55.42	52.88	0.23
5800.00	0.84	75.21	5799.28	33.88	45.74	35.18	56.92	53.47	0.17
5900.00	0.83	66.38	5899.27	34.36	47.11	35.69	58.31	53.90	0.13
6000.00	0.82	64.49	5999.26	34.95	48.41	36.32	59.71	54.17	0.03
6100.00	0.76	62.19	6099.25	35.57	49.64	36.97	61.07	54.38	0.06
6200.00	0.69	33.06	6199.24	36.38	50.56	37.82	62.29	54.26	0.37
6300.00	0.71	43.17	6299.24	37.34	51.31	38.79	63.46	53.96	0.12
6400.00	0.71	32.84	6399.23	38.31	52.07	39.78	64.64	53.66	0.13
6500.00	1.01	42.73	6499.22	39.47	53.00	40.97	66.08	53.32	0.34
6600.00	0.74	24.03	6599.21	40.71	53.86	42.23	67.51	52.92	0.39
6700.00	0.64	23.63	6699.20	41.81	54.35	43.35	68.57	52.43	0.10
6800.00	0.52	21.54	6799.19	42.74	54.74	44.29	69.45	52.01	0.12
6900.00	0.41	16.42	6899.19	43.51	55.00	45.06	70.13	51.66	0.11
7000.00	0.50	45.09	6999.19	44.16	55.41	45.72	70.85	51.45	0.24
7100.00	0.37	25.88	7099.18	44.76	55.86	46.34	71.58	51.30	0.19
7200.00	0.30	15.55	7199.18	45.30	56.07	46.89	72.09	51.06	0.10
7300.00	0.45	41.51	7299.18	45.85	56.40	47.44	72.69	50.89	0.22
7400.00	0.10	354.46	7399.18	46.23	56.65	47.83	73.12	50.78	0.38
7500.00	0.13	110.63	7499.18	46.28	56.75	47.89	73.23	50.80	0.20
7600.00	0.10	87.72	7599.18	46.24	56.94	47.86	73.36	50.92	0.05
7700.00	0.05	160.09	7699.18	46.21	57.04	47.82	73.41	50.99	0.10
7800.00	0.36	184.17	7799.18	45.86	57.04	47.47	73.18	51.20	0.31
7900.00	0.64	204.23	7899.17	45.03	56.78	46.64	72.47	51.58	0.33
8000.00	0.55	221.09	7999.17	44.16	56.23	45.75	71.50	51.86	0.20
8100.00	0.39	223.21	8099.17	43.54	55.68	45.12	70.69	51.98	0.16
8200.00	0.48	193.37	8199.16	42.89	55.35	44.45	70.02	52.23	0.24
8300.00	0.51	202.05	8299.16	42.07	55.09	43.63	69.32	52.63	0.08
8400.00	0.25	228.87	8399.16	41.52	54.76	43.07	68.72	52.83	0.30
8500.00	0.28	295.28	8499.16	41.48	54.38	43.02	68.39	52.66	0.29
8600.00	0.19	345.42	8599.16	41.75	54.11	43.28	68.35	52.35	0.22
8700.00	0.54	353.92	8699.15	42.38	54.02	43.91	68.66	51.89	0.35
8800.00	0.57	354.73	8799.15	43.34	53.93	44.87	69.19	51.21	0.03
8900.00	0.18	350.85	8899.15	43.99	53.86	45.52	69.54	50.75	0.39
9000.00	0.36	300.23	8999.15	44.31	53.56	45.82	69.51	50.40	0.29
9100.00	0.41	319.90	9099.14	44.74	53.05	46.24	69.40	49.85	0.14
9200.00	0.53	314.96	9199.14	45.35	52.49	46.83	69.37	49.18	0.12
9300.00	0.41	303.11	9299.14	45.87	51.86	47.34	69.24	48.51	0.15
9400.00	0.63	318.97	9399.13	46.48	51.20	47.93	69.15	47.76	0.26

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
9500.00	1.07	304.40	9499.12	47.43	50.06	48.84	68.96	46.55	0.49
9600.00	1.22	291.73	9599.10	48.35	48.30	49.71	68.34	44.97	0.29
9679.00	1.21	295.36	9678.08	49.02	46.77	50.34	67.75	43.66	0.10



VES Survey International
Conroe, TX
936-539-9096
Surveyor: Will Clark
Salvador Fee 5H / API 30-025-42513



VES Survey Date: 5/17/2015



COG Operating LLC

Lea County, NM

Salvador Fee

#5H

ST01

Survey: MWD ST01

Survey Report - Geographic

15 June, 2015



Wellplanning
Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM	TVD Reference:	WELL @ 3528.6usft (Original Well Elev)
Site:	Salvador Fee	MD Reference:	WELL @ 3528.6usft (Original Well Elev)
Well:	#5H	North Reference:	Grid
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000.1 Single User Db

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	Salvador Fee		
Site Position:		Northing:	446,719.90 usft
From:	Map	Easting:	771,549.40 usft
Position Uncertainty:	0.0 usft	Slot Radius:	6-1/8 "
		Latitude:	32° 13' 30.358 N
		Longitude:	103° 27' 18.775 W
		Grid Convergence:	0.47 °

Well	#5H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Latitude:	32° 13' 30.642 N
		Longitude:	103° 27' 2.251 W
		Ground Level:	3,510.6 usft

Wellbore	ST01				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/29/2015	7.04	60.11	48,233

Design	ST01			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 8,800.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	1.63

Survey Program	Date 6/15/2015			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	8,800.0	MWD #1 (OH)	MWD	MWD - Standard
8,905.0	14,012.0	MWD ST01 (ST01)	MWD	MWD - Standard

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
8,800.0	0.57	354.73	8,799.1	43.3	54.0	446,803.47	773,022.66	32° 13' 31.066 N	103° 27' 1.618 W
8,905.0	2.20	1.90	8,904.1	45.8	54.0	446,806.00	773,022.68	32° 13' 31.091 N	103° 27' 1.618 W
8,937.0	5.30	8.60	8,936.0	47.9	54.2	446,808.08	773,022.92	32° 13' 31.112 N	103° 27' 1.615 W
8,969.0	8.90	10.70	8,967.8	51.8	54.9	446,811.97	773,023.60	32° 13' 31.150 N	103° 27' 1.607 W
9,000.0	12.60	11.50	8,998.2	57.4	56.0	446,817.64	773,024.72	32° 13' 31.206 N	103° 27' 1.593 W
9,032.0	16.30	12.00	9,029.2	65.3	57.7	446,825.46	773,026.35	32° 13' 31.283 N	103° 27' 1.573 W
9,064.0	20.00	11.90	9,059.6	75.0	59.7	446,835.21	773,028.41	32° 13' 31.380 N	103° 27' 1.548 W
9,095.0	23.40	9.90	9,088.4	86.3	61.9	446,846.46	773,030.57	32° 13' 31.491 N	103° 27' 1.522 W
9,127.0	27.30	6.90	9,117.3	99.8	63.8	446,860.02	773,032.54	32° 13' 31.625 N	103° 27' 1.498 W
9,158.0	30.60	5.70	9,144.5	114.7	65.5	446,874.93	773,034.18	32° 13' 31.772 N	103° 27' 1.477 W
9,190.0	33.30	4.60	9,171.6	131.6	67.0	446,891.79	773,035.69	32° 13' 31.939 N	103° 27' 1.458 W



Wellplanning Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM	TVD Reference:	WELL @ 3528.6usft (Original Well Elev)
Site:	Salvador Fee	MD Reference:	WELL @ 3528.6usft (Original Well Elev)
Well:	#5H	North Reference:	Grid
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,222.0	37.00	3.50	9,197.8	150.0	68.3	446,910.17	773,036.99	32° 13' 32.121 N	103° 27' 1.441 W
9,254.0	40.90	1.80	9,222.7	170.1	69.2	446,930.26	773,037.90	32° 13' 32.319 N	103° 27' 1.429 W
9,286.0	43.30	1.00	9,246.4	191.5	69.7	446,951.70	773,038.42	32° 13' 32.531 N	103° 27' 1.421 W
9,317.0	44.40	2.10	9,268.8	213.0	70.3	446,973.17	773,039.01	32° 13' 32.744 N	103° 27' 1.412 W
9,349.0	46.40	3.30	9,291.2	235.7	71.4	446,995.93	773,040.08	32° 13' 32.969 N	103° 27' 1.397 W
9,381.0	49.60	4.50	9,312.6	259.4	73.0	447,019.65	773,041.71	32° 13' 33.204 N	103° 27' 1.376 W
9,412.0	53.30	4.40	9,331.9	283.6	74.9	447,043.81	773,043.59	32° 13' 33.442 N	103° 27' 1.352 W
9,444.0	57.40	3.90	9,350.1	309.9	76.8	447,070.06	773,045.49	32° 13' 33.702 N	103° 27' 1.327 W
9,476.0	60.50	3.40	9,366.6	337.2	78.5	447,097.42	773,047.23	32° 13' 33.973 N	103° 27' 1.304 W
9,507.0	62.20	3.40	9,381.5	364.4	80.1	447,124.58	773,048.85	32° 13' 34.241 N	103° 27' 1.283 W
9,539.0	64.00	2.80	9,396.0	392.9	81.7	447,153.07	773,050.39	32° 13' 34.523 N	103° 27' 1.262 W
9,571.0	66.70	2.60	9,409.3	421.9	83.1	447,182.12	773,051.76	32° 13' 34.810 N	103° 27' 1.243 W
9,602.0	69.90	2.00	9,420.8	450.7	84.2	447,210.89	773,052.91	32° 13' 35.095 N	103° 27' 1.227 W
9,634.0	72.40	1.40	9,431.1	481.0	85.1	447,241.16	773,053.81	32° 13' 35.394 N	103° 27' 1.214 W
9,666.0	74.80	1.00	9,440.2	511.7	85.8	447,271.85	773,054.45	32° 13' 35.698 N	103° 27' 1.203 W
9,698.0	78.00	0.60	9,447.7	542.7	86.2	447,302.95	773,054.88	32° 13' 36.006 N	103° 27' 1.195 W
9,729.0	81.00	0.60	9,453.3	573.2	86.5	447,333.42	773,055.20	32° 13' 36.307 N	103° 27' 1.189 W
9,761.0	83.20	359.40	9,457.7	604.9	86.5	447,365.12	773,055.20	32° 13' 36.621 N	103° 27' 1.186 W
9,793.0	84.90	357.50	9,461.0	636.7	85.6	447,396.93	773,054.34	32° 13' 36.936 N	103° 27' 1.193 W
9,824.0	87.90	356.80	9,463.0	667.6	84.1	447,427.83	773,052.80	32° 13' 37.242 N	103° 27' 1.208 W
9,856.0	92.00	356.90	9,463.0	699.6	82.3	447,459.77	773,051.04	32° 13' 37.558 N	103° 27' 1.225 W
9,951.0	95.50	356.40	9,456.8	794.2	76.8	447,554.39	773,045.51	32° 13' 38.495 N	103° 27' 1.281 W
10,046.0	94.80	356.40	9,448.3	888.6	70.9	447,648.82	773,039.56	32° 13' 39.429 N	103° 27' 1.341 W
10,141.0	94.20	357.80	9,440.8	983.2	66.1	447,743.40	773,034.77	32° 13' 40.366 N	103° 27' 1.387 W
10,235.0	93.40	358.00	9,434.6	1,076.9	62.6	447,837.13	773,031.34	32° 13' 41.294 N	103° 27' 1.418 W
10,330.0	93.10	358.30	9,429.2	1,171.7	59.6	447,931.93	773,028.28	32° 13' 42.232 N	103° 27' 1.445 W
10,424.0	92.60	359.50	9,424.5	1,265.6	57.8	448,025.80	773,026.47	32° 13' 43.161 N	103° 27' 1.457 W
10,519.0	93.50	0.20	9,419.5	1,360.5	57.5	448,120.66	773,026.22	32° 13' 44.100 N	103° 27' 1.451 W
10,614.0	93.20	0.90	9,413.9	1,455.3	58.4	448,215.49	773,027.14	32° 13' 45.038 N	103° 27' 1.431 W
10,709.0	92.20	0.40	9,409.5	1,550.2	59.5	448,310.38	773,028.21	32° 13' 45.977 N	103° 27' 1.410 W
10,804.0	94.60	0.70	9,403.8	1,645.0	60.4	448,405.20	773,029.12	32° 13' 46.915 N	103° 27' 1.390 W
10,899.0	95.00	3.10	9,395.9	1,739.6	63.6	448,499.81	773,032.26	32° 13' 47.851 N	103° 27' 1.344 W
10,994.0	92.70	3.30	9,389.5	1,834.2	68.9	448,594.44	773,037.55	32° 13' 48.787 N	103° 27' 1.274 W
11,089.0	88.60	3.50	9,388.4	1,929.0	74.5	448,689.25	773,043.18	32° 13' 49.724 N	103° 27' 1.199 W
11,183.0	88.40	2.70	9,390.9	2,022.9	79.6	448,783.07	773,048.26	32° 13' 50.652 N	103° 27' 1.131 W
11,278.0	91.30	2.30	9,391.1	2,117.8	83.7	448,877.97	773,052.41	32° 13' 51.591 N	103° 27' 1.074 W
11,373.0	92.40	2.00	9,388.1	2,212.7	87.3	448,972.86	773,055.97	32° 13' 52.530 N	103° 27' 1.023 W
11,468.0	93.50	1.80	9,383.2	2,307.5	90.4	449,067.68	773,059.12	32° 13' 53.468 N	103° 27' 0.977 W
11,563.0	93.80	1.60	9,377.1	2,402.2	93.2	449,162.44	773,061.93	32° 13' 54.405 N	103° 27' 0.936 W
11,658.0	94.20	1.30	9,370.5	2,497.0	95.6	449,257.18	773,064.33	32° 13' 55.342 N	103° 27' 0.899 W
11,753.0	95.50	1.00	9,362.5	2,591.6	97.5	449,351.82	773,066.23	32° 13' 56.279 N	103° 27' 0.867 W
11,848.0	95.20	1.00	9,353.6	2,686.2	99.2	449,446.39	773,067.88	32° 13' 57.214 N	103° 27' 0.839 W
11,940.0	95.10	0.50	9,345.3	2,777.8	100.4	449,538.01	773,069.08	32° 13' 58.121 N	103° 27' 0.816 W
12,038.0	92.30	2.20	9,339.0	2,875.6	102.7	449,635.77	773,071.38	32° 13' 59.088 N	103° 27' 0.780 W
12,133.0	91.60	3.50	9,335.8	2,970.4	107.4	449,730.59	773,076.10	32° 14' 0.026 N	103° 27' 0.716 W
12,227.0	92.70	2.90	9,332.3	3,064.2	112.6	449,824.38	773,081.35	32° 14' 0.954 N	103° 27' 0.646 W
12,324.0	93.40	2.60	9,327.1	3,160.9	117.3	449,921.13	773,085.99	32° 14' 1.911 N	103° 27' 0.583 W
12,419.0	95.40	2.00	9,319.8	3,255.6	121.1	450,015.76	773,089.80	32° 14' 2.847 N	103° 27' 0.529 W
12,514.0	94.50	2.00	9,311.6	3,350.2	124.4	450,110.35	773,093.10	32° 14' 3.782 N	103° 27' 0.482 W
12,609.0	94.50	2.40	9,304.2	3,444.8	128.0	450,204.99	773,096.73	32° 14' 4.719 N	103° 27' 0.431 W
12,700.0	93.80	1.80	9,297.6	3,535.5	131.4	450,295.69	773,100.06	32° 14' 5.616 N	103° 27' 0.383 W
12,795.0	93.80	1.30	9,291.3	3,630.2	133.9	450,390.44	773,102.62	32° 14' 6.553 N	103° 27' 0.344 W
12,890.0	93.70	0.70	9,285.1	3,725.0	135.6	450,485.23	773,104.28	32° 14' 7.491 N	103° 27' 0.316 W
12,985.0	93.70	359.90	9,278.9	3,819.8	136.1	450,580.03	773,104.77	32° 14' 8.429 N	103° 27' 0.301 W
13,080.0	93.70	0.10	9,272.8	3,914.6	136.1	450,674.83	773,104.77	32° 14' 9.367 N	103° 27' 0.292 W



Wellplanning

Survey Report - Geographic

Company:	COG Operating LLC	Local Co-ordinate Reference:	Well #5H
Project:	Lea County, NM	TVD Reference:	WELL @ 3528.6usft (Original Well Elev)
Site:	Salvador Fee	MD Reference:	WELL @ 3528.6usft (Original Well Elev)
Well:	#5H	North Reference:	Grid
Wellbore:	ST01	Survey Calculation Method:	Minimum Curvature
Design:	ST01	Database:	EDM 5000.1 Single User Db

Survey									
Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
13,175.0	93.60	359.10	9,266.8	4,009.4	135.4	450,769.63	773,104.11	32° 14' 10.305 N	103° 27' 0.291 W
13,270.0	94.10	358.80	9,260.4	4,104.2	133.7	450,864.40	773,102.38	32° 14' 11.243 N	103° 27' 0.302 W
13,365.0	95.10	359.10	9,252.8	4,198.9	131.9	450,959.08	773,100.64	32° 14' 12.180 N	103° 27' 0.313 W
13,460.0	93.90	359.40	9,245.3	4,293.6	130.7	451,053.77	773,099.40	32° 14' 13.117 N	103° 27' 0.318 W
13,555.0	94.80	359.10	9,238.1	4,388.3	129.5	451,148.49	773,098.16	32° 14' 14.055 N	103° 27' 0.324 W
13,650.0	93.90	357.80	9,230.9	4,483.0	126.9	451,243.18	773,095.60	32° 14' 14.992 N	103° 27' 0.344 W
13,745.0	94.30	358.00	9,224.1	4,577.7	123.4	451,337.87	773,092.13	32° 14' 15.929 N	103° 27' 0.376 W
13,840.0	94.60	357.30	9,216.7	4,672.3	119.5	451,432.51	773,088.24	32° 14' 16.866 N	103° 27' 0.412 W
13,935.0	94.90	357.30	9,208.9	4,766.9	115.1	451,527.08	773,083.78	32° 14' 17.802 N	103° 27' 0.455 W
13,961.0	94.90	356.90	9,206.6	4,792.7	113.8	451,552.95	773,082.47	32° 14' 18.058 N	103° 27' 0.468 W
14,012.0	94.90	356.90	9,202.3	4,843.5	111.0	451,603.69	773,079.72	32° 14' 18.560 N	103° 27' 0.495 W
PBHL(salvador Fee#5H)									

Checked By: _____	Approved By: _____	Date: _____
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COG Operating LLC
Project: Lea County, NM
Site: Salvador Fee
Well: #5H
Wellbore: ST01
Plan: Design #1 (#5H/ST01)

Section Details

Sec	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	
1	9000.0	1.16	347.35	8999.1	45.1	53.6	0.00	0.00	46.6	
2	9008.5	1.16	347.35	9007.6	45.2	53.6	0.00	0.00	46.7	
3	9774.0	93.00	1.04	9475.0	547.5	60.4	12.00	13.68	549.0	
4	14091.9	93.00	1.04	9249.0	4858.7	138.6	0.00	0.00	4860.7	PBHL(salvador Fee#5H)

WELL DETAILS: #5H

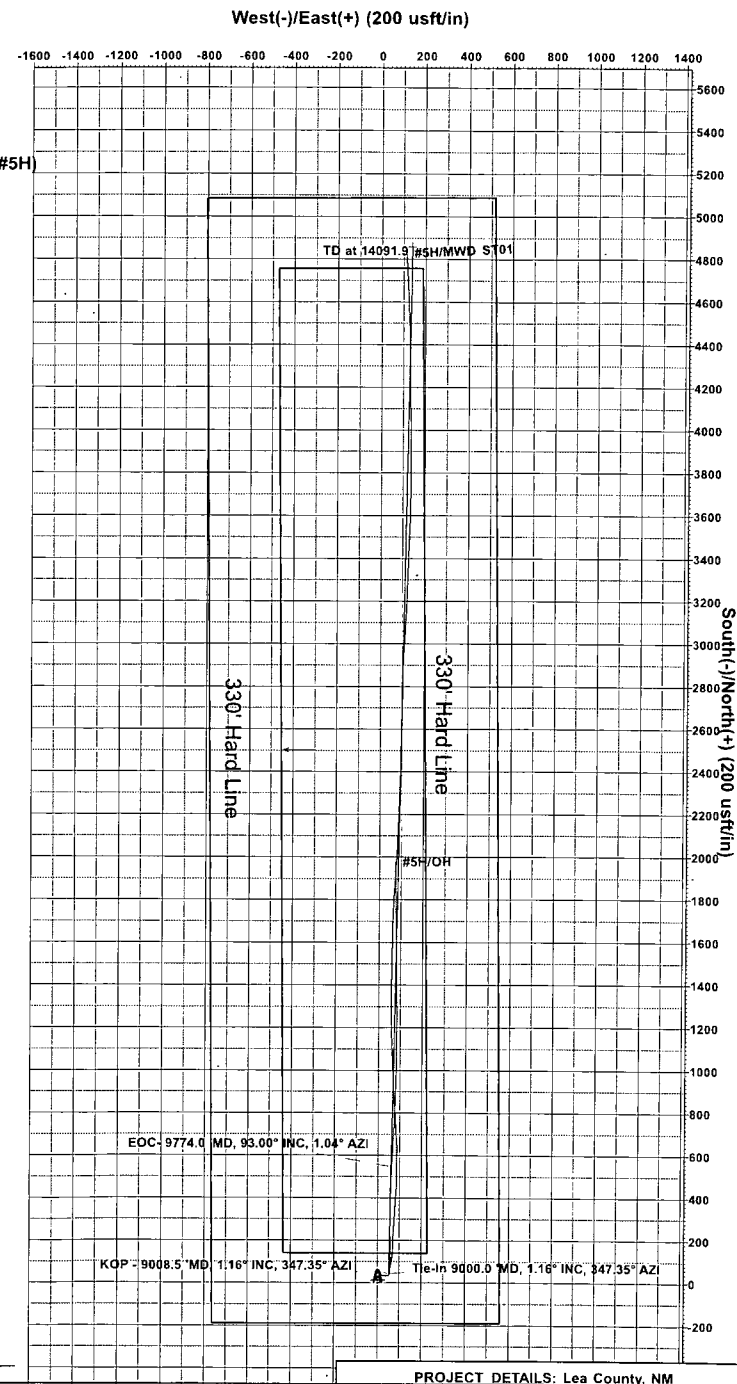
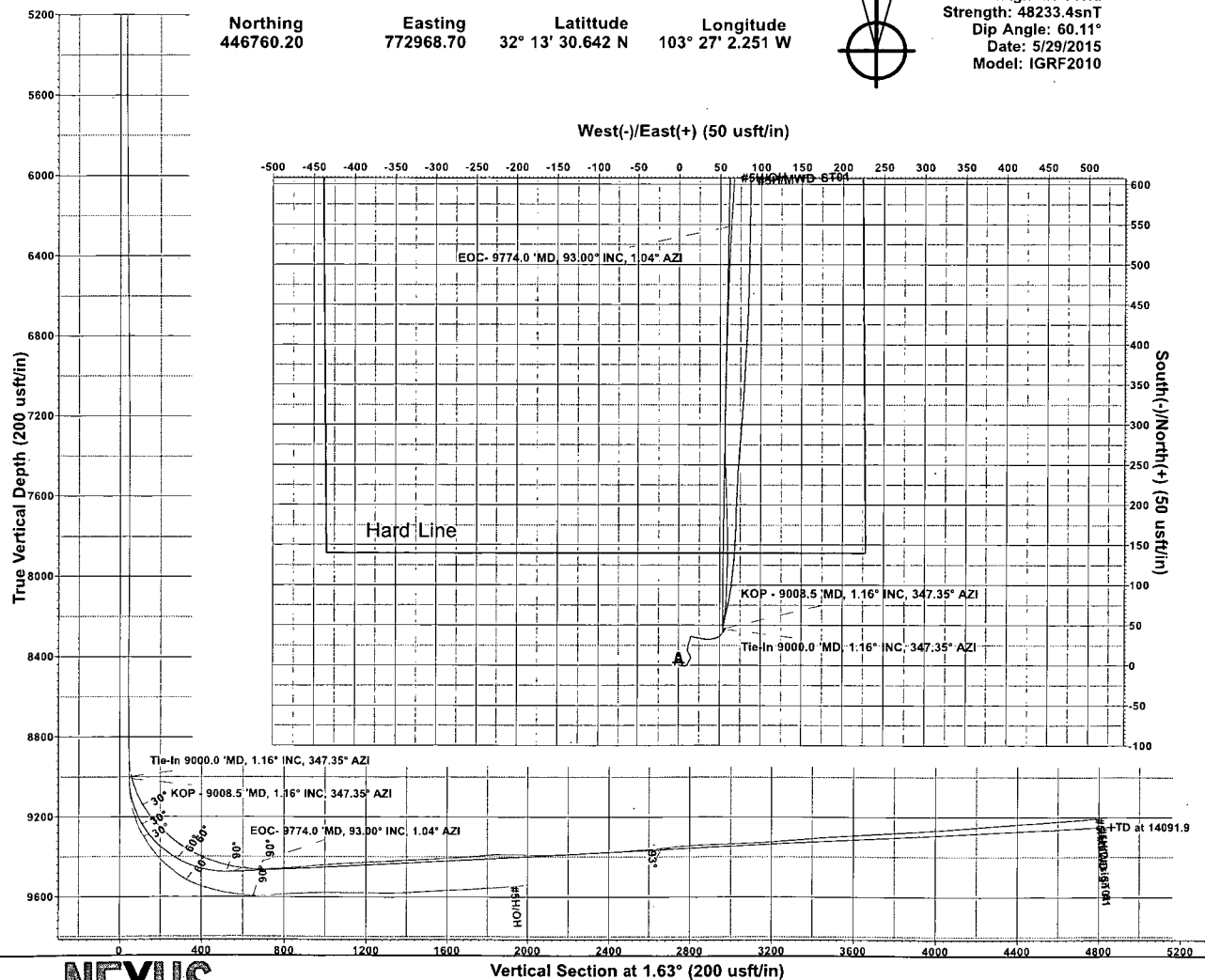
Ground Elevation:: 3510.6
RKB Elevation: WELL @ 3528.6usft (Original Well Elev)
Rig Name: Original Well Elev

Northing 446760.20 Easting 772968.70 Latitude 32° 13' 30.642 N Longitude 103° 27' 2.251 W



Azimuths to Grid North
True North: -0.47°
Magnetic North: 6.57°

Magnetic Field
Strength: 48233.4snT
Dip Angle: 60.11°
Date: 5/29/2015
Model: IGRF2010



NEXUS
DIRECTIONAL SOLUTIONS, L.P.

Vertical Section at 1.63° (200 usft/in)

Nexus Directional Solutions

PROJECT DETAILS: Lea County, NM
Geodetic System: US State Plane 1927 (Exact solution)
Datum: NAD 1927 (NADCON CONUS)
Ellipsoid: Clarke 1866
Zone: New Mexico East 3001
System Datum: Mean Sea Level
Local North: Grid