

30-015-43487

Schlumberger

Cimarex Gadwall 18 Federal 4H MWD Off to 11719ft Survey Geodetic Report



(Def Survey)

Report Date: January 11, 2016 - 11:59 AM
 Client: Cimarex
 Field: NM Eddy County (NAD 83)
 Structure / Slot: Cimarex Gadwall 18 Federal 4H / Cimarex Gadwall 18 Federal 4H
 Well: Gadwall 18 Federal 4H
 Borehole: Original Borehole
 UWI / AP#: Unknown / Unknown
 Survey Name: Cimarex Gadwall 18 Federal 4H MWD Off to 11719ft
 Survey Date: January 01, 2016
 Tort / AHD / DDI / ERD Ratio: 164.293 ° / 4802.578 ft / 6.114 / 0.675
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 8' 12.63845" W 104° 14' 9.53428"
 Location Grid NE YX: N 413533.170 RUS, E 571470.430 RUS
 CRS Grid Convergence Angle: 0.0518 °
 Grid Scale Factor: 0.99991013
 Version / Patch: 2.8.572.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 179.442 ° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB
 TVD Reference Elevation: 3228.800 ft above MSL
 Seabed / Ground Elevation: 3203.800 ft above MSL
 Magnetic Declination: 7.561 °
 Total Gravity Field Strength: 996.4437mgn (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 48023.566 nT
 Magnetic Dip Angle: 59.909 °
 Declination Date: January 01, 2016
 Magnetic Declination Model: HDGM 2015
 North Reference: Grid North
 Grid Convergence Used: 0.0518 °
 Total Cor Mag North -> Grid North: 7.5092 °
 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)	Eastng (ftUS)	Latitude (N/S ° °'")	Longitude (E/W ° °'")
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S.H.L. Cimarex Gadwall 18 Federal 4H [611' FWL, 330' FNL]	0.00	0.00	171.00	0.00	0.00	0.00	0.00	N/A	413533.17	571470.43	N 32 8 12.64	W 104 14 9.53
	180.00	0.40	215.69	180.00	0.51	-0.51	-0.37	0.22	413532.66	571470.06	N 32 8 12.63	W 104 14 9.54
	205.00	0.40	256.31	205.00	0.59	-0.60	-0.50	1.16	413532.57	571469.93	N 32 8 12.63	W 104 14 9.54
	301.00	0.62	284.11	300.99	0.53	-0.54	-1.33	0.33	413532.63	571469.10	N 32 8 12.63	W 104 14 9.55
	362.00	0.62	256.43	361.99	0.52	-0.54	-1.98	0.49	413532.63	571468.45	N 32 8 12.63	W 104 14 9.56
	422.00	0.79	277.12	421.99	0.54	-0.56	-2.70	0.51	413532.61	571467.73	N 32 8 12.63	W 104 14 9.57
	475.00	0.88	251.75	474.98	0.61	-0.64	-3.45	0.71	413532.53	571466.98	N 32 8 12.63	W 104 14 9.57
	569.00	0.68	272.14	568.97	0.80	-0.84	-4.86	0.33	413532.33	571465.57	N 32 8 12.63	W 104 14 9.59
	660.00	0.70	239.45	659.96	1.04	-1.10	-6.03	0.52	413532.07	571464.40	N 32 8 12.63	W 104 14 9.60
	750.00	0.68	242.97	749.95	1.62	-1.69	-7.12	0.21	413531.48	571463.31	N 32 8 12.62	W 104 14 9.62
	841.00	1.10	241.32	840.94	2.35	-2.43	-8.51	0.24	413530.74	571461.92	N 32 8 12.61	W 104 14 9.63
	931.00	1.41	234.75	930.92	3.38	-3.48	-10.16	0.38	413529.69	571460.26	N 32 8 12.60	W 104 14 9.65
	1021.00	1.49	232.07	1020.89	4.72	-4.84	-12.00	0.12	413528.33	571458.43	N 32 8 12.59	W 104 14 9.67
	1111.00	1.56	240.77	1110.86	6.03	-6.17	-14.01	0.28	413527.00	571456.42	N 32 8 12.58	W 104 14 9.70
	1202.00	1.32	227.76	1201.83	7.33	-7.48	-15.86	0.46	413525.69	571454.55	N 32 8 12.56	W 104 14 9.72
	1292.00	1.01	205.57	1291.81	8.73	-8.80	-16.99	0.60	413524.27	571453.44	N 32 8 12.55	W 104 14 9.73
	1382.00	1.32	200.95	1381.79	10.41	-10.58	-17.70	0.36	413522.59	571452.73	N 32 8 12.53	W 104 14 9.74
	1477.00	1.58	153.93	1476.76	12.61	-12.78	-17.32	1.24	413520.39	571452.91	N 32 8 12.51	W 104 14 9.74
	1572.00	2.50	128.36	1571.70	15.09	-15.24	-15.32	1.34	413517.93	571455.11	N 32 8 12.49	W 104 14 9.71
	1666.00	3.91	120.45	1665.56	18.03	-18.14	-10.95	1.57	413515.03	571459.48	N 32 8 12.46	W 104 14 9.66

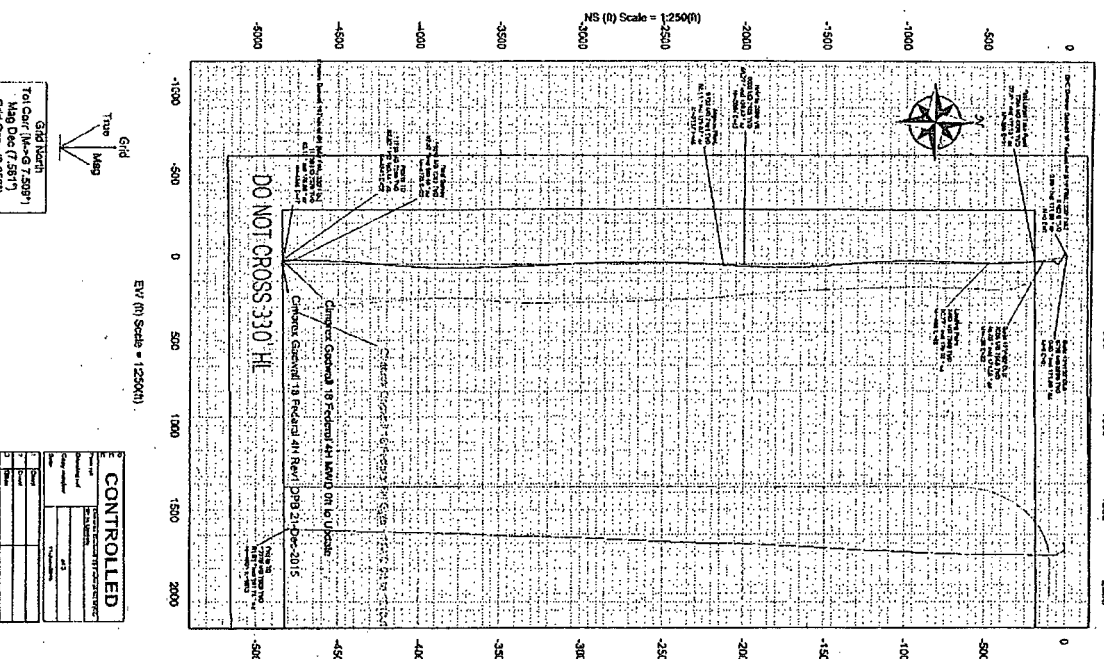
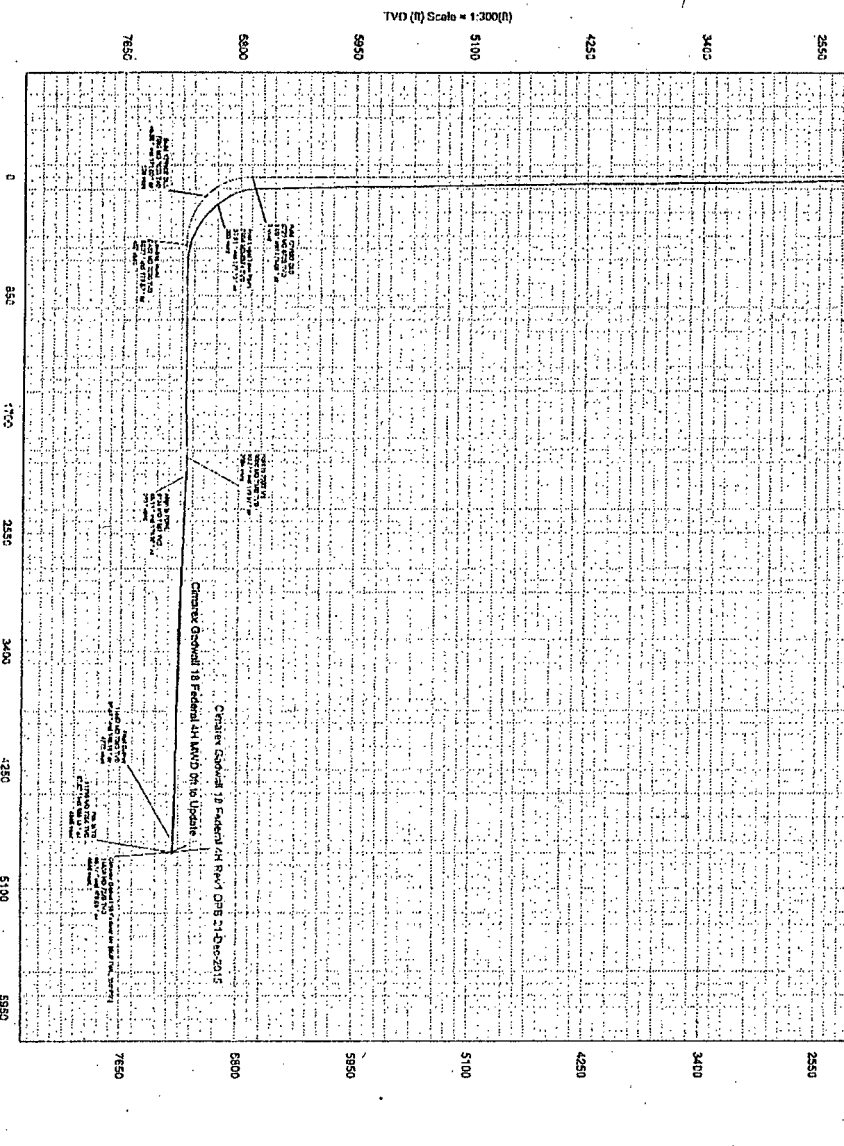
NM OIL CONSERVATION
 ARTESIA DISTRICT
 SEP 07 2016
 RECEIVED



Borehole: Original Borehole Well: GADWELL 18 FEDERAL 4H Field: NM Eddy County (NAD 83) Structure: H&P 381

Company: H&P 381
 Date: 03/20/07
 Well: GADWELL 18 FEDERAL 4H
 Depth: 25340.00
 Location: N 22 E 13 S 4 W 154 14 433
 UTM Zone: 17Q
 UTM Easting: 71979.4120
 UTM Northing: 41323.7100
 UTM Scale Factor: 0.999993
 Datum: NAD 83
 Projection: UTM
 Contour Interval: 100
 Contour Style: Solid
 Contour Color: Black
 Contour Width: 0.5
 Contour Label: Yes
 Contour Offset: 0.0
 Contour Units: Feet
 Contour Type: Elevation
 Contour Interval: 100
 Contour Style: Solid
 Contour Color: Black
 Contour Width: 0.5
 Contour Label: Yes
 Contour Offset: 0.0
 Contour Units: Feet
 Contour Type: Elevation

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(O)S(I)	E(+)/W(-)	DLS
Old Crown Colwell 18 Federal 4H Rev 17-11-11	0.00	0.00	171.10	0.00	0.00	0.00	0.00	0.00
Footwall Test Point	1622.27	27.81	171.12	697.23	206.10	-198.83	17.48	0.27
Flow Survey	11482.23	67.27	162.18	7262.18	4772.13	-4772.14	21.80	1.59
Flow Survey	11719.25	67.27	162.18	7262.18	4802.23	-4802.23	21.80	0.00



CONTROLLED

DATE: 03/20/07

BY: [Signature]

FOR: [Signature]

SCALE: 1:2500 (H)

PROJECT: GADWELL 18 FEDERAL 4H

WELL: H&P 381

DATE: 03/20/07

BY: [Signature]

FOR: [Signature]

SCALE: 1:2500 (H)

PROJECT: GADWELL 18 FEDERAL 4H

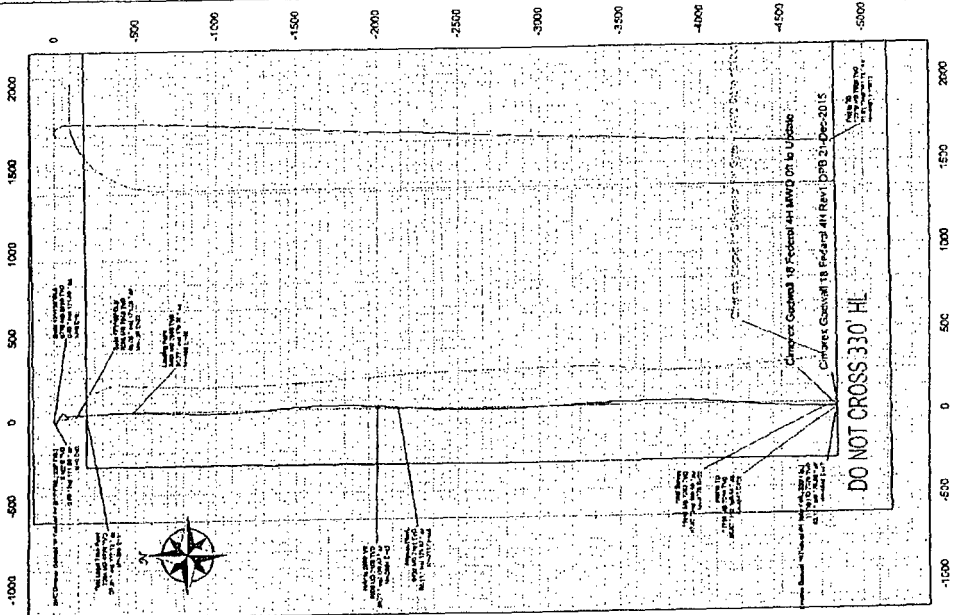
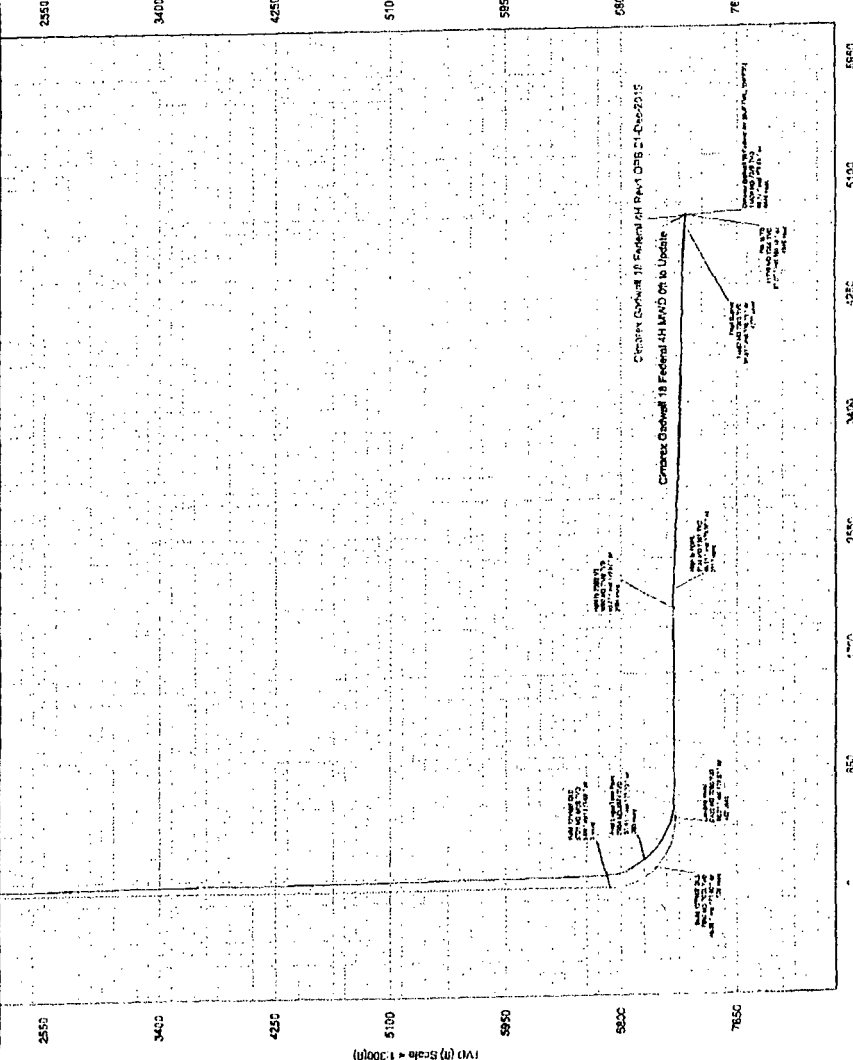
WELL: H&P 381



Borehole:		Well:		Field:		Structure:	
Original Borehole		Gadwall 18 Federal 4H		NMI Eddy County (NAD 83)		H&P 381	
Client's Log File Path:	Client's Log File Name:	Client's Log File Path:	Client's Log File Name:	Client's Log File Path:	Client's Log File Name:	Client's Log File Path:	Client's Log File Name:
\\01010101\01010101	01010101_01010101	\\01010101\01010101	01010101_01010101	\\01010101\01010101	01010101_01010101	\\01010101\01010101	01010101_01010101
Client's Log File Path:	Client's Log File Name:	Client's Log File Path:	Client's Log File Name:	Client's Log File Path:	Client's Log File Name:	Client's Log File Path:	Client's Log File Name:
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Critical Points

Critical Point	MD	INCL	AZIM	TVD	USEC	N(°)S(°)E(°)	E(°)M(°)S(°)	DLS
255	11719.25	81.87	162.18	758.87	4843.23	4843.23	21.58	0.00
3415	11719.25	81.87	162.18	758.87	4843.23	4843.23	21.58	0.00
4255	11719.25	81.87	162.18	758.87	4843.23	4843.23	21.58	0.00
5100	11719.25	81.87	162.18	758.87	4843.23	4843.23	21.58	0.00
5950	11719.25	81.87	162.18	758.87	4843.23	4843.23	21.58	0.00
6800	11719.25	81.87	162.18	758.87	4843.23	4843.23	21.58	0.00
7650	11719.25	81.87	162.18	758.87	4843.23	4843.23	21.58	0.00



CONTROLLED

Project:	
Client:	
Date:	
Scale:	
Author:	
Reviewer:	
Approver:	

Grid UTM
 Zone 18N
 Spheroid: Everest
 Datum: Everest
 Unit: Meter
 Projection: UTM

Vertical Section (°) Azim = 178.4° Scale = 1:3000 (N) Orig = 214.5° SE/W

Comments	MID (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (1/100ft)	Northing (ftUS)	Eastng (ftUS)	Latitude (N/S...)	Longitude (E/W...)
	1761.00	3.12	115.83	1760.38	20.85	-20.91	-5.83	0.88	413512.27	571464.60	N 32 8 12.43	W 104 14 9.60
	1821.00	2.02	112.93	1820.31	21.99	-22.03	-3.38	1.85	413511.14	571467.05	N 32 8 12.42	W 104 14 9.57
	1957.00	2.11	126.46	1956.23	24.42	-24.42	0.86	0.34	413508.78	571471.29	N 32 8 12.40	W 104 14 9.52
	2051.00	2.11	116.41	2050.16	26.22	-26.19	3.82	0.35	413505.98	571474.25	N 32 8 12.38	W 104 14 9.49
	2146.00	2.11	112.36	2145.10	27.70	-27.63	7.01	0.16	413505.54	571477.44	N 32 8 12.36	W 104 14 9.45
	2241.00	2.20	115.04	2240.03	29.17	-29.07	10.28	0.14	413504.10	571480.70	N 32 8 12.35	W 104 14 9.42
	2336.00	1.89	121.24	2334.97	30.78	-30.65	13.27	0.40	413502.52	571483.70	N 32 8 12.34	W 104 14 9.38
	2430.00	1.58	110.95	2428.93	32.07	-31.92	15.80	0.47	413501.25	571486.23	N 32 8 12.32	W 104 14 9.35
	2525.00	1.71	125.46	2523.89	33.39	-33.21	18.18	0.46	413499.96	571488.61	N 32 8 12.31	W 104 14 9.32
	2619.00	1.49	112.84	2617.85	34.70	-34.50	20.45	0.44	413498.67	571490.88	N 32 8 12.30	W 104 14 9.30
	2714.00	1.32	116.84	2712.82	35.69	-35.47	22.56	0.21	413497.70	571492.99	N 32 8 12.29	W 104 14 9.27
	2809.00	1.41	133.45	2807.80	37.01	-36.77	24.39	0.43	413496.40	571494.82	N 32 8 12.27	W 104 14 9.25
	2903.00	1.50	116.84	2901.77	38.38	-38.12	26.33	0.46	413495.05	571496.75	N 32 8 12.26	W 104 14 9.23
	2998.00	1.58	127.96	2996.73	39.76	-39.49	28.47	0.33	413493.69	571498.90	N 32 8 12.25	W 104 14 9.20
	3093.00	1.32	131.04	3091.70	41.31	-41.01	30.33	0.29	413492.16	571500.75	N 32 8 12.23	W 104 14 9.18
	3188.00	1.32	131.34	3186.68	42.76	-42.45	31.97	0.01	413490.72	571502.40	N 32 8 12.22	W 104 14 9.16
	3282.00	1.19	122.25	3280.66	44.02	-43.69	33.61	0.25	413489.48	571504.04	N 32 8 12.21	W 104 14 9.14
	3377.00	1.32	138.24	3375.63	45.37	-45.03	35.17	0.39	413488.14	571505.60	N 32 8 12.19	W 104 14 9.13
	3471.00	1.01	120.45	3469.61	46.61	-46.28	36.61	0.50	413486.91	571507.04	N 32 8 12.18	W 104 14 9.11
	3566.00	1.19	141.23	3564.60	47.82	-47.45	37.95	0.46	413485.72	571508.39	N 32 8 12.17	W 104 14 9.09
	3661.00	1.10	125.63	3659.58	49.13	-48.75	39.31	0.34	413484.42	571509.73	N 32 8 12.16	W 104 14 9.08
	3756.00	1.58	129.94	3754.55	50.52	-50.13	41.05	0.32	413483.05	571511.48	N 32 8 12.14	W 104 14 9.06
	3851.00	1.58	133.37	3849.52	52.28	-51.87	43.01	0.10	413481.31	571513.44	N 32 8 12.12	W 104 14 9.03
	3946.00	0.70	128.53	3944.50	53.56	-53.13	44.42	0.33	413480.05	571514.84	N 32 8 12.11	W 104 14 9.02
	4040.00	0.09	119.17	4038.49	53.96	-53.52	45.93	0.65	413479.65	571515.36	N 32 8 12.11	W 104 14 9.01
	4135.00	0.31	132.35	4133.49	54.17	-53.73	45.18	0.24	413479.45	571515.61	N 32 8 12.11	W 104 14 9.01
	4230.00	0.40	136.13	4228.49	54.58	-54.14	45.60	0.10	413479.03	571516.03	N 32 8 12.07	W 104 14 9.01
	4325.00	0.31	137.45	4323.49	55.02	-54.57	46.01	0.10	413478.60	571516.43	N 32 8 12.10	W 104 14 9.00
	4420.00	0.40	127.23	4418.49	55.43	-54.98	45.94	0.53	413478.19	571516.36	N 32 8 12.09	W 104 14 9.00
	4514.00	0.40	195.46	4512.49	55.97	-55.52	45.61	0.23	413477.65	571516.04	N 32 8 12.09	W 104 14 9.00
	4609.00	0.70	222.44	4607.48	56.71	-56.27	45.13	0.41	413476.90	571515.56	N 32 8 12.08	W 104 14 9.01
	4704.00	0.70	219.76	4702.47	57.58	-57.15	44.37	0.03	413476.03	571514.79	N 32 8 12.07	W 104 14 9.02
	4798.00	0.62	170.06	4796.47	58.52	-58.09	44.09	0.50	413475.09	571514.51	N 32 8 12.06	W 104 14 9.02
	4893.00	0.62	204.64	4891.48	59.49	-59.06	43.96	0.39	413474.11	571514.39	N 32 8 12.05	W 104 14 9.02
	4988.00	1.01	183.77	4986.45	60.79	-60.36	43.69	0.51	413472.81	571514.12	N 32 8 12.04	W 104 14 9.03
	5083.00	1.19	188.74	5081.44	62.60	-62.18	43.49	0.21	413471.00	571513.91	N 32 8 12.02	W 104 14 9.03
	5178.00	1.10	211.46	5176.42	64.34	-63.93	42.86	0.48	413469.25	571513.29	N 32 8 12.01	W 104 14 9.04
	5272.00	1.01	213.96	5270.40	65.79	-65.38	41.93	0.11	413467.79	571512.35	N 32 8 11.99	W 104 14 9.05
	5367.00	1.71	216.33	5365.38	67.61	-67.22	40.62	0.74	413465.95	571511.05	N 32 8 11.97	W 104 14 9.06
	5462.00	1.32	233.87	5460.34	69.38	-69.01	38.90	0.63	413464.17	571509.32	N 32 8 11.96	W 104 14 9.08
	5557.00	1.32	231.93	5555.32	70.69	-70.33	37.15	0.05	413462.85	571507.58	N 32 8 11.94	W 104 14 9.10
	5652.00	1.19	239.76	5650.29	71.84	-71.50	35.44	0.23	413461.68	571506.87	N 32 8 11.93	W 104 14 9.12
	5746.00	1.19	254.63	5744.27	72.41	-72.08	33.62	0.55	413461.09	571504.05	N 32 8 11.92	W 104 14 9.14
	5841.00	1.19	274.56	5839.25	72.40	-72.10	31.66	0.22	413461.08	571502.09	N 32 8 11.92	W 104 14 9.17
	5936.00	2.02	276.85	5934.22	72.10	-71.82	29.01	0.88	413461.36	571499.44	N 32 8 11.93	W 104 14 9.20
	6031.00	1.10	197.26	6029.19	72.75	-72.49	27.08	2.23	413460.69	571497.51	N 32 8 11.92	W 104 14 9.22
	6125.00	1.32	184.43	6123.17	74.65	-74.39	27.10	0.76	413458.78	571497.53	N 32 8 11.90	W 104 14 9.22

Comments	MD	Incl	Azim Grd	TVD	VSEC	NS	EW	DLG	Nothing	Eastng	Latitude	Longitude
	(ft)	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft/100ft)	(ft/US)	(ft/US)	(N/S ° W/E)	(E/W ° N/S)
	6220.00	1.10	186.36	6218.15	76.62	-76.35	27.29	0.54	413456.82	571497.72	N 32 8 11.88 W 104 14 9.22	
	6315.00	1.01	163.16	6313.13	78.33	-78.06	27.44	0.46	413455.11	571497.86	N 32 8 11.87 W 104 14 9.22	
	6410.00	1.10	152.13	6408.12	79.94	-79.67	28.11	0.23	413453.51	571498.53	N 32 8 11.85 W 104 14 9.21	
	6505.00	1.01	187.86	6503.10	81.58	-81.31	28.42	0.69	413451.87	571498.84	N 32 8 11.83 W 104 14 9.20	
	6800.00	1.41	181.13	6798.08	83.58	-83.30	28.28	0.45	413449.87	571498.71	N 32 8 11.81 W 104 14 9.21	
	6668.00	2.81	185.26	6666.03	86.07	-85.80	28.11	2.07	413447.38	571498.54	N 32 8 11.79 W 104 14 9.21	
	6731.00	5.71	178.15	6728.85	90.74	-90.47	28.07	4.67	413442.71	571498.50	N 32 8 11.74 W 104 14 9.21	
	6779.00	12.25	177.58	6776.24	98.23	-97.95	28.36	13.63	413435.23	571498.79	N 32 8 11.67 W 104 14 9.21	
	6826.00	20.13	177.59	6821.34	111.31	-111.04	28.91	16.77	413422.14	571499.34	N 32 8 11.54 W 104 14 9.20	
	6874.00	27.18	178.73	6865.28	130.55	-130.27	28.50	14.72	413402.91	571499.93	N 32 8 11.35 W 104 14 9.19	
	6921.00	31.19	179.05	6908.30	153.47	-153.18	28.94	8.54	413380.00	571500.37	N 32 8 11.12 W 104 14 9.19	
	6989.00	34.87	178.11	6946.54	179.62	-179.33	30.60	7.74	413363.85	571501.03	N 32 8 10.96 W 104 14 9.18	
First Legal Take Point	7003.57	37.81	177.13	6974.39	200.10	-199.80	31.46	8.67	413333.39	571501.89	N 32 8 10.66 W 104 14 9.17	
	7016.00	38.87	176.81	6984.13	207.89	-207.50	31.87	8.67	413325.69	571502.29	N 32 8 10.58 W 104 14 9.17	
	7110.00	48.25	177.13	7052.17	272.44	-272.11	36.27	9.98	413261.08	571505.70	N 32 8 9.95 W 104 14 9.13	
	7205.00	56.72	176.27	7109.93	347.72	-347.37	38.25	9.03	413185.84	571508.68	N 32 8 9.20 W 104 14 9.09	
	7300.00	68.01	179.36	7153.88	431.77	-431.40	39.95	11.86	413101.81	571510.38	N 32 8 8.37 W 104 14 9.07	
	7395.00	80.11	179.84	7179.93	522.94	-522.57	40.57	12.75	413010.65	571511.00	N 32 8 7.47 W 104 14 9.07	
	7469.00	87.90	182.23	7189.74	616.31	-615.96	38.87	8.66	412917.26	571509.30	N 32 8 6.54 W 104 14 9.09	
	7521.00	88.66	182.15	7190.70	648.26	-647.93	37.65	2.39	412885.30	571508.08	N 32 8 6.23 W 104 14 9.10	
	7628.00	89.86	182.69	7192.08	755.11	-754.82	33.13	1.23	412778.42	571503.66	N 32 8 5.17 W 104 14 9.16	
	7723.00	90.52	182.31	7191.76	849.97	-849.73	28.99	0.80	412683.52	571499.42	N 32 8 4.23 W 104 14 9.21	
	7818.00	90.31	180.29	7191.06	944.91	-944.70	26.83	2.14	412598.56	571497.26	N 32 8 3.29 W 104 14 9.22	
	7912.00	90.52	177.95	7190.40	1038.90	-1038.66	28.28	2.50	412494.59	571498.70	N 32 8 2.36 W 104 14 9.22	
	8007.00	90.17	177.21	7189.82	1133.85	-1133.59	32.29	0.86	412399.69	571502.72	N 32 8 1.42 W 104 14 9.17	
	8102.00	90.21	176.24	7189.51	1228.74	-1228.48	37.72	1.02	412304.85	571508.14	N 32 8 0.48 W 104 14 9.11	
	8197.00	89.93	175.20	7189.39	1323.54	-1323.16	44.81	1.13	412210.13	571515.23	N 32 7 59.54 W 104 14 9.03	
	8291.00	90.85	173.59	7188.74	1417.30	-1416.86	52.35	1.07	412116.44	571522.78	N 32 7 58.62 W 104 14 8.94	
	8386.00	90.65	176.75	7187.49	1512.14	-1511.64	58.70	1.24	412021.67	571529.12	N 32 7 57.68 W 104 14 8.87	
	8481.00	90.75	177.91	7186.30	1607.06	-1606.52	63.12	1.23	411928.79	571533.55	N 32 7 56.74 W 104 14 8.82	
	8576.00	91.17	179.57	7184.67	1702.04	-1701.48	65.21	1.79	411831.84	571535.63	N 32 7 55.80 W 104 14 8.79	
	8671.00	91.07	180.53	7182.82	1797.01	-1796.46	65.13	1.02	411736.87	571535.55	N 32 7 54.86 W 104 14 8.80	
	8765.00	91.03	181.66	7181.09	1890.96	-1890.43	63.33	1.20	411642.91	571533.76	N 32 7 53.99 W 104 14 8.82	
	8860.00	90.58	182.65	7179.76	1985.84	-1985.35	59.76	1.14	411548.00	571530.18	N 32 7 52.95 W 104 14 8.86	
	8955.00	89.21	183.29	7179.93	2080.66	-2080.22	54.84	1.59	411453.14	571525.26	N 32 7 52.05 W 104 14 8.92	
	9049.00	87.49	183.82	7182.64	2174.37	-2174.00	49.01	1.91	411359.37	571519.44	N 32 7 51.13 W 104 14 8.99	
	9144.00	87.04	182.89	7181.77	2269.54	-2268.73	43.46	1.09	411264.65	571513.88	N 32 7 50.19 W 104 14 9.05	
	9239.00	87.42	181.79	7181.09	2363.81	-2363.53	39.58	1.22	411169.95	571510.01	N 32 7 49.25 W 104 14 9.10	
	9334.00	87.39	181.33	7196.07	2458.64	-2458.40	37.00	0.48	411075.00	571507.43	N 32 7 48.31 W 104 14 9.15	
	9428.00	87.42	180.37	7200.32	2552.52	-2552.29	35.61	1.02	410981.11	571506.03	N 32 7 47.38 W 104 14 9.15	
	9523.00	87.90	179.88	7204.20	2647.43	-2647.21	35.40	0.72	410886.20	571505.83	N 32 7 46.44 W 104 14 9.15	
	9618.00	87.80	179.71	7207.76	2742.36	-2742.15	35.74	0.21	410791.28	571505.17	N 32 7 45.50 W 104 14 9.15	
	9713.00	87.11	178.37	7211.98	2837.28	-2837.04	37.33	1.59	410696.40	571507.76	N 32 7 44.55 W 104 14 9.13	
	9809.00	87.49	177.50	7216.46	2932.13	-2931.87	40.75	1.00	410601.57	571511.18	N 32 7 43.63 W 104 14 9.09	
	9902.00	87.94	177.98	7220.21	3026.01	-3025.72	44.45	0.70	410507.73	571514.88	N 32 7 42.70 W 104 14 9.05	
	9987.00	88.11	177.48	7223.48	3120.59	-3120.59	48.21	0.56	410412.87	571518.84	N 32 7 41.76 W 104 14 9.01	
	10092.00	87.97	177.27	7226.73	3215.79	-3215.43	52.56	0.27	410318.03	571522.99	N 32 7 40.82 W 104 14 8.96	

Comments	MD (ft)	Incl (°)	Azim Grd (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (%/00ft)	Nothing (ft)	Eastng (ft)	Latitude (N/S/°)	Longitude (E/W/°)
	6220.00	1.10	186.36	6218.15	76.52	-76.52	27.29	0.54	413456.82	571497.72	N 32 8 11.88	W 104 14 9.22
	6315.00	1.01	183.16	6313.13	78.33	-78.33	27.44	0.46	413455.11	571497.86	N 32 8 11.87	W 104 14 9.22
	6410.00	1.10	182.15	6408.12	79.94	-79.94	28.11	0.23	413453.51	571498.53	N 32 8 11.85	W 104 14 9.21
	6505.00	1.01	187.86	6503.10	81.58	-81.51	28.42	0.69	413451.87	571498.84	N 32 8 11.83	W 104 14 9.20
	6500.00	1.41	181.13	6538.08	83.58	-83.30	28.28	0.45	413449.87	571498.71	N 32 8 11.81	W 104 14 9.21
	6566.00	2.81	185.26	6566.03	86.07	-85.80	28.11	2.07	413447.38	571498.54	N 32 8 11.79	W 104 14 9.21
	6731.00	5.71	178.15	6728.65	90.74	-90.47	28.07	4.67	413442.71	571498.50	N 32 8 11.74	W 104 14 9.21
	6779.00	12.25	177.58	6776.24	98.23	-87.95	26.36	13.63	413435.23	571498.79	N 32 8 11.67	W 104 14 9.21
	6826.00	20.13	177.59	6821.34	111.31	-111.04	28.91	16.77	413422.14	571499.34	N 32 8 11.54	W 104 14 9.20
	6874.00	27.18	178.73	6865.28	130.55	-130.27	26.50	14.72	413402.91	571499.92	N 32 8 11.35	W 104 14 9.19
	6921.00	31.19	179.05	6906.30	153.47	-153.18	25.94	8.54	413380.00	571500.37	N 32 8 11.12	W 104 14 9.19
	6965.00	34.87	178.11	6946.54	179.62	-179.33	30.60	7.74	413353.85	571501.03	N 32 8 10.86	W 104 14 9.19
First Legal Take Point	7003.57	37.81	177.12	6974.59	200.10	-199.80	31.46	8.67	413333.39	571501.89	N 32 8 10.66	W 104 14 9.17
	7016.00	38.87	176.81	6984.13	207.80	-207.50	31.87	8.67	413325.69	571502.29	N 32 8 10.58	W 104 14 9.17
	7115.00	48.25	177.13	7052.17	272.44	-272.11	35.27	9.98	413281.08	571505.70	N 32 8 9.95	W 104 14 9.13
	7205.00	56.72	176.27	7109.93	347.72	-347.37	38.25	9.03	413185.84	571508.68	N 32 8 9.20	W 104 14 9.09
	7300.00	58.01	179.36	7153.86	431.77	-431.40	36.95	11.86	413101.81	571510.38	N 32 8 8.37	W 104 14 9.07
	7395.00	80.11	179.84	7179.93	522.94	-522.57	40.57	12.75	413010.65	571511.00	N 32 8 7.47	W 104 14 9.07
	7489.00	87.90	182.23	7189.74	616.31	-615.96	38.87	8.66	412917.26	571509.30	N 32 8 6.54	W 104 14 9.09
	7521.00	86.66	182.15	7190.70	648.26	-647.93	37.65	2.39	412885.30	571508.08	N 32 8 6.23	W 104 14 9.10
	7628.00	89.86	182.69	7192.08	755.11	-754.82	33.13	1.23	412778.42	571503.56	N 32 8 5.17	W 104 14 9.16
	7723.00	90.52	182.31	7191.76	849.97	-849.73	28.99	0.80	412683.52	571499.42	N 32 8 4.23	W 104 14 9.21
	7818.00	90.31	180.29	7191.08	944.91	-944.70	26.83	2.14	412588.56	571497.26	N 32 8 3.29	W 104 14 9.23
	7912.00	90.52	177.95	7190.40	1038.90	-1038.68	28.28	2.50	412494.59	571498.70	N 32 8 2.36	W 104 14 9.22
	8007.00	90.17	177.21	7189.82	1133.85	-1133.59	32.29	0.86	412399.66	571502.72	N 32 8 1.42	W 104 14 9.17
	8102.00	90.21	176.24	7189.51	1228.74	-1228.43	37.72	1.02	412304.85	571508.14	N 32 8 0.48	W 104 14 9.11
	8187.00	89.93	175.20	7189.36	1323.54	-1323.16	44.81	1.13	412210.13	571515.23	N 32 7 59.54	W 104 14 9.03
	8291.00	90.85	175.59	7188.74	1417.30	-1416.86	52.36	1.07	412116.44	571522.78	N 32 7 58.62	W 104 14 8.94
	8386.00	90.65	176.75	7187.49	1512.14	-1511.64	58.70	1.24	412021.67	571529.12	N 32 7 57.68	W 104 14 8.87
	8481.00	90.75	177.91	7186.30	1607.06	-1606.52	63.12	1.23	411926.79	571533.55	N 32 7 56.74	W 104 14 8.82
	8576.00	91.17	179.57	7184.67	1702.04	-1701.48	65.21	1.09	411831.84	571535.63	N 32 7 55.80	W 104 14 8.79
	8671.00	91.07	180.53	7182.62	1787.01	-1786.46	65.13	1.02	411736.87	571535.55	N 32 7 54.86	W 104 14 8.79
	8765.00	91.03	181.66	7181.09	1850.96	-1850.43	63.33	1.20	411642.91	571533.76	N 32 7 53.93	W 104 14 8.82
	8860.00	90.58	182.65	7179.76	1985.84	-1985.35	59.76	1.14	411548.00	571530.18	N 32 7 52.99	W 104 14 8.86
	8955.00	89.21	183.29	7179.93	2080.66	-2080.22	54.84	1.59	411453.14	571525.26	N 32 7 52.05	W 104 14 8.92
	9049.00	87.49	183.82	7182.64	2174.37	-2174.00	49.01	1.91	411359.37	571519.44	N 32 7 51.13	W 104 14 8.99
	9144.00	87.04	182.89	7181.17	2269.04	-2268.73	43.46	1.09	411264.55	571513.88	N 32 7 50.19	W 104 14 9.05
	9239.00	87.42	181.79	7151.76	2363.81	-2363.53	39.58	1.22	411169.85	571510.01	N 32 7 49.25	W 104 14 9.13
	9334.00	87.39	181.33	7196.07	2458.64	-2458.40	37.00	0.48	411075.00	571507.43	N 32 7 48.31	W 104 14 9.13
	9428.00	87.42	180.37	7200.32	2552.52	-2552.29	35.61	1.02	410981.11	571506.03	N 32 7 47.38	W 104 14 9.15
	9523.00	87.90	179.98	7204.20	2647.43	-2647.21	35.40	0.72	410886.20	571505.83	N 32 7 46.44	W 104 14 9.15
	9618.00	87.80	179.71	7207.76	2742.36	-2742.15	35.74	0.21	410791.28	571506.17	N 32 7 45.50	W 104 14 9.15
	9713.00	87.11	178.37	7211.98	2837.26	-2837.04	37.33	1.59	410696.40	571507.76	N 32 7 44.56	W 104 14 9.13
	9808.00	87.49	177.50	7216.46	2932.13	-2931.87	40.75	1.00	410601.57	571511.18	N 32 7 43.63	W 104 14 9.09
	9902.00	87.94	177.98	7220.21	3026.01	-3025.72	44.45	0.70	410507.73	571514.88	N 32 7 42.70	W 104 14 9.05
	9997.00	86.11	177.48	7223.46	3120.91	-3120.59	48.21	0.56	410412.87	571518.64	N 32 7 41.76	W 104 14 9.01
	10092.00	87.97	177.27	7226.73	3215.79	-3215.43	52.56	0.27	410318.03	571522.99	N 32 7 40.82	W 104 14 8.96

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLs (ft/100ft)	Nothing (ft)	Easting (ft)	Latitude (N/S...)	Longitude (E/W...)
	10187.00	88.07	177.33	7230.01	3310.67	-3310.27	57.04	0.12	410223.20	571527.46	N 32 7 39.88	W 104 14 8.91
	10281.00	89.07	178.17	7232.36	3404.60	-3404.17	60.72	1.39	410129.32	571531.15	N 32 7 38.95	W 104 14 8.86
	10376.00	88.35	178.64	7234.56	3499.56	-3499.10	63.57	0.91	410034.39	571533.79	N 32 7 38.01	W 104 14 8.83
	10471.00	88.42	178.34	7237.17	3594.51	-3594.03	66.87	0.32	409939.47	571536.29	N 32 7 37.07	W 104 14 8.81
	10566.00	88.66	178.54	7239.40	3688.46	-3687.97	68.43	0.51	409845.54	571538.85	N 32 7 36.14	W 104 14 8.78
	10660.00	89.59	179.74	7240.69	3783.45	-3782.95	69.85	1.48	409750.57	571540.28	N 32 7 35.20	W 104 14 8.76
	10756.00	89.76	181.54	7241.23	3878.43	-3877.94	66.79	1.90	409655.59	571539.22	N 32 7 34.26	W 104 14 8.78
	10850.00	89.21	182.52	7242.08	3973.32	-3972.87	65.43	1.18	409560.66	571535.85	N 32 7 33.33	W 104 14 8.82
	10945.00	88.80	183.27	7243.73	4068.14	-4067.74	60.63	0.90	409465.81	571531.06	N 32 7 32.39	W 104 14 8.87
	11039.00	89.42	183.98	7245.19	4161.87	-4161.54	54.89	1.00	409372.02	571525.11	N 32 7 31.45	W 104 14 8.94
	11134.00	89.28	185.10	7246.27	4256.49	-4256.23	47.17	1.19	409277.33	571517.59	N 32 7 30.52	W 104 14 9.03
	11226.00	88.50	184.25	7247.78	4351.08	-4350.90	39.43	0.98	409182.67	571509.85	N 32 7 29.58	W 104 14 9.12
	11324.00	88.49	183.74	7249.54	4445.76	-4445.65	32.81	0.69	409087.93	571503.24	N 32 7 28.65	W 104 14 9.20
	11418.00	87.66	182.60	7253.10	4539.50	-4539.45	27.62	1.50	408994.14	571498.04	N 32 7 27.72	W 104 14 9.26
	11513.00	87.45	181.63	7257.15	4634.31	-4634.30	24.11	1.04	408899.30	571494.54	N 32 7 26.78	W 104 14 9.30
	11608.00	87.45	180.74	7261.38	4729.17	-4729.18	22.15	0.94	408804.42	571492.58	N 32 7 25.84	W 104 14 9.33
Final Survey Proj to TD	11652.00 11719.00	87.87 87.87	180.18 180.18	7263.18 7265.67	4773.13 4840.08	-4773.14 -4840.09	21.80 21.59	1.59 0.00	408760.47 408693.52	571492.22 571492.01	N 32 7 25.41 N 32 7 24.74	W 104 14 9.33 W 104 14 9.33

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 *** 3-D 95.000% Confidence 2.7955 sigma

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	25.000	1/98.425	30.000	30.000	SLB_MMWD-STD-Depth Only	Original Borehole / Cimarex Gadwall 18 Federal 4H MMWD 0ft
	1	25.000	25.000	Act Shrs	30.000	30.000	SLB_MMWD-STD-Depth Only	Original Borehole / Cimarex Gadwall 18 Federal 4H MMWD 0ft
	1	25.000	11652.000	Act Shrs	30.000	30.000	SLB_MMWD-STD	Original Borehole / Cimarex Gadwall 18 Federal 4H MMWD 0ft
	1	11652.000	11719.000	Act Shrs	30.000	30.000	SLB_BLIND+TREND	Original Borehole / Cimarex Gadwall 18 Federal 4H MMWD 0ft