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Oilfield Services, Central U.S. Land
Schlumberger Drilling and Measurements
Drilling Group
Geo Market Area: South West Texas Basin
7220 W I-H 20
Midland, Texas 79706
Phone : (432) 742-5400 (Main)
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JUN 24 2019

Schlumberger

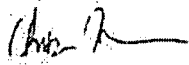
DISTRICT II-ARTESIA O.C.D.

Well Reference:

15, 24S, 29E, Eddy NM
32.21398 103.96510

I, Chris Heimann certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of February 16, 2019 through March 08, 2019, conduct or supervise the taking of the SlimPulse & Third Party Corrected surveys from a depth of 10485.00 feet to a depth of 21127.00 feet referenced to driller's depth; that the data is true, correct, complete and within the limitations of the tool as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I am authorized and qualified to make this report; that this survey was conducted at the request of OXY USA Inc. for the Whomping Willow CC 15-16 State Com 44H ST01 Well (Side Track) API No. 30-015-45218 in New Mexico; and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by Drilling & Measurements, a division of Schlumberger Technology Corporation.

By
Chris Heimann
FE



Subscribed and Sworn to before me this 18th day of March (month) 2019 (yr)

My Commission expires:

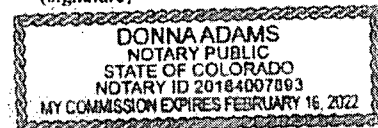
2-16-2022

Notary Public

Donna Adams

Adams County Colorado
(County State)

(signature)



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Final PVA - ST01 Rev0

JUN 24 2019

H&P 617 (RKB=26.5')

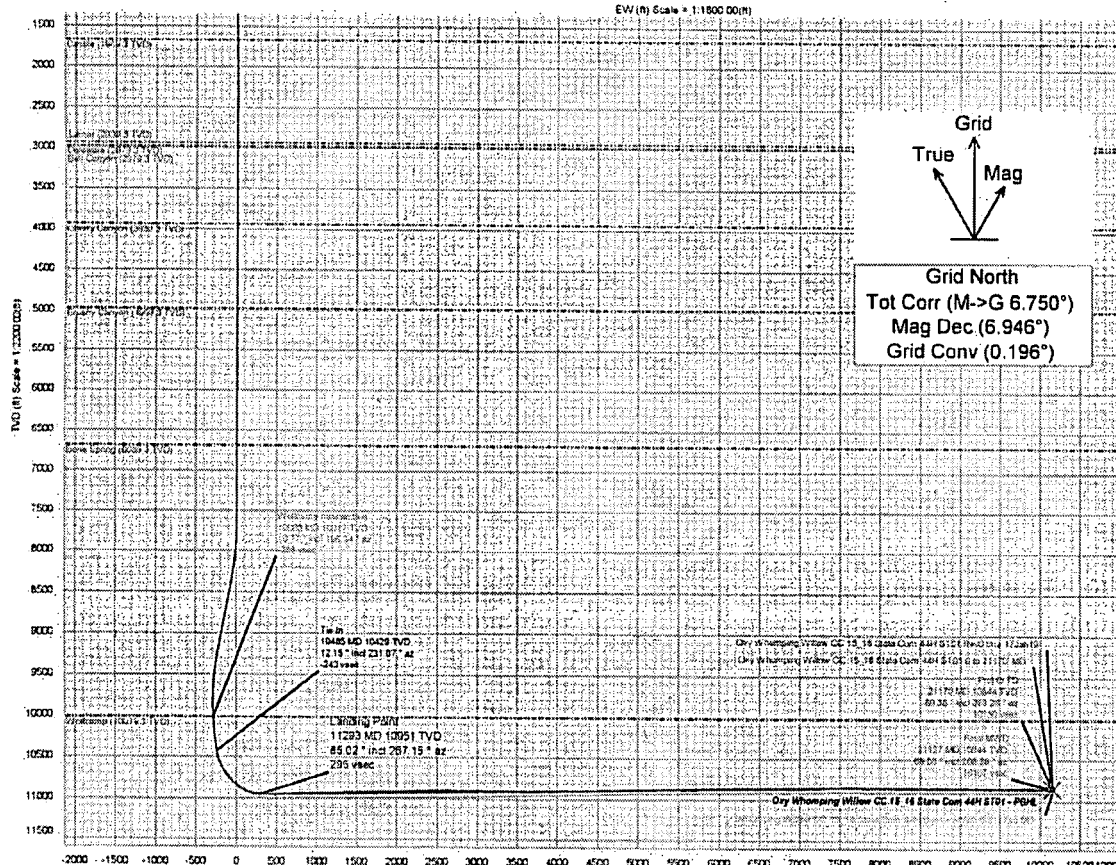
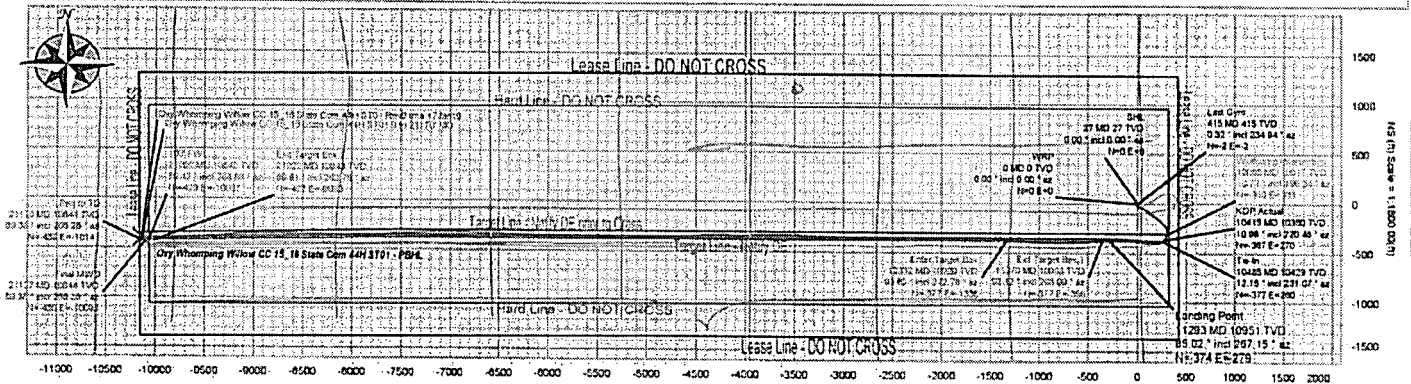
SchlumbergerOXY
DISTRICT II-ARTESIA O.C.D.

Borehole:	Well:	Field:	Structure:
ST01	Oxy Whomping Willow CC 15_16 State Com 44H	NM Eddy County (NAD 83)	Oxy Whomping Willow CC 15_16 State Com 44H

Gravity & Magnetic Parameters	Surface Location	Miscellaneous
Model: WRT Mag Dec: 6.946° Date: 12-Feb-2019 Dip: 89.864° FS: 47938.2mT Gravity FS: 999.47mgals (9.80665 m/s²)	NAD83 New Mexico State Plane, Eastern Zone, US Feet Lat: N 32 12 50.38 Lon: W 102 07 54.38 Northing: 4417789.11MUS Easting: 655217.11MUS Grid Conv: 0.1962° Scale Fact: 0.99992184	Well: ST01 Slot: Yellow CC 15_16 Plan: Oxy Whomping Willow CC 15_16 State Com 44H ST01 0 to 21170 MD

Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
Tie-In	10485.00	12.15	231.07	10428.54	-244.60	-377.04	259.67	
Landing Point	11293.00	85.02	267.15	10650.98	293.22	-374.02	-278.89	9.29
Exit Target Box 1	11370.00	92.12	268.00	10652.91	370.15	-377.28	-355.55	9.29
Enter Target Box	12352.00	93.85	272.78	10019.85	1349.98	-377.27	-1336.13	1.19
Exit Target Box 2	21022.00	89.81	262.78	-10842.73	10092.15	-422.39	-9993.27	5.91
100' FWL	21096.00	89.42	266.85	10843.28	10078.04	-428.95	-10066.96	4.57
Final MWD	21127.00	89.38	268.28	10843.60	10107.04	-430.28	-10097.93	4.57
Proj to TD	21170.00	89.38	268.28	10844.07	10150.03	-431.55	-10140.90	0.00



Vertical Section (ft) Azim = 267.45° Scale = 1:2200 00(ft) Origin = GNA-S, DEJ-W

Oxy Whomping Willow CC 15_16 State Com 44H ST01 0 to 21170' MD Survey Geodetic Report (Def Survey)



Report Date: March 08, 2019 - 10:15 AM
Client: OXY
Field: NM Eddy County (NAD 83)
Structure / Slot: Oxy Whomping Willow CC 15_16 State Com 44H / Oxy Whomping Willow CC 15_16 State Com 44H
Well: Oxy Whomping Willow CC 15_16 State Com 44H
Borehole: ST01
UWI / API#: Unknown / 30-015-45218
Survey Name: Oxy Whomping Willow CC 15_16 State Com 44H ST01 0 to 21170' MD
Survey Date: January 15, 2019
Tort / AHD / ODI / ERD Ratio: 361.775' / 10984.199 ft / 6.885 / 1.003
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 12' 50.35764" W 103° 57' 54.39218"
Location Grid N/E Y/X: N 441778.010 NUS, E 655217.110 NUS
CRS Grid Convergence Angle: 0.1963°
Grid Scale Factor: 0.99992394
Version / Patch: 2.10.753.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 257.741° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB=26.5'
TVD Reference Elevation: 2969.300 ft above MSL
Seabed / Ground Elevation: 2942.800 ft above MSL
Magnetic Declination: 6.940°
998.4701mgn (9.80685 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47939.200 nT
Magnetic Dip Angle: 59.984°
Declination Date: February 12, 2019
Magnetic Declination Model: IFR1
North Reference: Grid North
Grid Convergence Used: 0.1963°
Total Corr Mag North-Grid North: 6.7497°
Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ft)	Easting (ft)	Latitude (N/S ° ° °)	Longitude (E/W ° ° °)
WRP SHL	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	441778.01	655217.11	N 32 12 50.36 W 103 57 54.39	
	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	441778.01	655217.11	N 32 12 50.36 W 103 57 54.39	
Last Gyro	113.50	0.33	236.94	113.50	0.22	-0.14	-0.21	0.38	441777.87	655216.90	N 32 12 50.36 W 103 57 54.39	
	171.50	0.50	232.63	171.50	0.57	-0.38	-0.55	0.30	441777.63	655216.56	N 32 12 50.35 W 103 57 54.40	
	226.50	0.51	237.45	226.50	0.97	-0.66	-0.95	0.08	441777.35	655216.16	N 32 12 50.35 W 103 57 54.40	
	289.50	0.47	230.74	289.49	1.42	-0.97	-1.38	0.11	441777.04	655215.73	N 32 12 50.35 W 103 57 54.41	
	352.50	0.33	211.24	352.49	1.73	-1.29	-1.60	0.31	441776.72	655215.43	N 32 12 50.34 W 103 57 54.41	
	415.00	0.32	234.94	414.99	1.97	-1.55	-1.91	0.21	441776.40	655215.20	N 32 12 50.34 W 103 57 54.41	
	562.00	0.32	227.51	561.99	2.63	-2.06	-2.55	0.03	441775.95	655214.56	N 32 12 50.34 W 103 57 54.42	
	650.00	0.27	220.26	649.99	2.96	-2.38	-2.87	0.07	441775.63	655214.24	N 32 12 50.33 W 103 57 54.43	
	835.00	0.29	212.92	834.99	3.52	-3.11	-3.40	0.02	441774.90	655213.71	N 32 12 50.33 W 103 57 54.43	
	927.00	0.27	234.46	926.98	3.84	-3.43	-3.71	0.12	441774.58	655213.40	N 32 12 50.32 W 103 57 54.44	
	1019.00	0.28	234.33	1018.98	4.21	-3.69	-4.07	0.01	441774.32	655213.04	N 32 12 50.32 W 103 57 54.44	
	1110.00	0.22	272.07	1109.98	4.57	-3.81	-4.42	0.19	441774.20	655212.69	N 32 12 50.32 W 103 57 54.44	
	1201.00	0.24	268.09	1200.98	4.92	-3.75	-4.78	0.07	441774.26	655212.33	N 32 12 50.32 W 103 57 54.45	
	1293.00	0.49	267.12	1292.98	5.50	-5.32	-5.36	0.30	441774.29	655211.75	N 32 12 50.32 W 103 57 54.45	
	1385.00	0.75	244.79	1384.97	6.45	-3.99	-6.30	0.38	441773.41	655209.48	N 32 12 50.31 W 103 57 54.47	
	1568.00	0.17	249.29	1567.97	7.81	-4.60	-7.63	0.32	441773.32	655209.38	N 32 12 50.31 W 103 57 54.48	
	1659.00	0.04	99.72	1658.97	7.91	-4.65	-7.73	0.23	441773.32	655209.43	N 32 12 50.31 W 103 57 54.48	
	1754.00	0.04	148.33	1753.97	7.88	-4.69	-7.68	0.03	441773.32	655209.51	N 32 12 50.31 W 103 57 54.48	
	1848.00	0.08	72.32	1847.97	7.78	-4.70	-7.60	0.09	441773.32	655209.61	N 32 12 50.31 W 103 57 54.48	
	1943.00	0.06	133.47	1942.97	7.68	-4.71	-7.50	0.08	441773.32	655209.57	N 32 12 50.31 W 103 57 54.48	
	2037.00	0.13	228.03	2036.97	7.73	-4.81	-7.54	0.16	441773.20	655209.61	N 32 12 50.31 W 103 57 54.48	
	2132.00	0.20	210.53	2131.97	7.90	-5.03	-7.71	0.09	441772.98	655209.57	N 32 12 50.31 W 103 57 54.48	
	2226.00	0.03	110.61	2225.97	7.97	-5.16	-7.77	0.22	441772.83	655209.34	N 32 12 50.31 W 103 57 54.48	
	2321.00	0.08	114.55	2320.97	7.88	-5.22	-7.68	0.05	441772.79	655209.43	N 32 12 50.31 W 103 57 54.48	
	2416.00	0.08	106.44	2415.97	7.76	-5.26	-7.56	0.01	441772.75	655209.55	N 32 12 50.31 W 103 57 54.48	
	2511.00	0.06	343.76	2510.97	7.71	-5.23	-7.51	0.13	441772.78	655209.60	N 32 12 50.31 W 103 57 54.48	
	2700.00	0.10	183.75	2699.97	7.75	-5.30	-7.55	0.08	441772.71	655209.56	N 32 12 50.31 W 103 57 54.48	
	2795.00	0.22	167.62	2794.97	7.73	-5.56	-7.51	0.13	441772.45	655209.60	N 32 12 50.30 W 103 57 54.48	
	2889.00	0.15	134.67	2888.97	7.61	-5.63	-7.39	0.13	441772.16	655209.72	N 32 12 50.30 W 103 57 54.48	
	2984.00	0.07	305.35	2983.97	7.57	-5.68	-7.35	0.23	441772.13	655209.78	N 32 12 50.30 W 103 57 54.48	
	3172.00	0.04	118.37	3171.97	7.61	-5.84	-7.38	0.06	441772.17	655209.73	N 32 12 50.30 W 103 57 54.48	
	3267.00	0.04	298.89	3266.97	7.61	-5.84	-7.38	0.08	441772.23	655209.73	N 32 12 50.30 W 103 57 54.48	
	3361.00	0.06	355.15	3360.97	7.64	-5.78	-7.42	0.05	441772.32	655209.69	N 32 12 50.30 W 103 57 54.48	
	3455.00	0.04	96.65	3454.97	7.61	-5.73	-7.39	0.08	441772.28	655209.72	N 32 12 50.30 W 103 57 54.48	
	3549.00	0.06	3.84	3548.97	7.57	-5.69	-7.35	0.08	441772.32	655209.76	N 32 12 50.30 W 103 57 54.48	
	3739.00	0.04	122.36	3738.97	7.51	-5.63	-7.29	0.05	441772.39	655209.82	N 32 12 50.30 W 103 57 54.48	
	3927.00	0.10	328.87	3926.97	7.53	-5.52	-7.32	0.07	441772.49	655209.79	N 32 12 50.30 W 103 57 54.48	
	4022.00	0.10	235.06	4021.97	7.64	-5.50	-7.43	0.15	441772.51	655209.68	N 32 12 50.30 W 103 57 54.48	
	4116.00	0.10	192.79	4115.97	7.73	-5.62	-7.51	0.08	441772.39	655209.60	N 32 12 50.30 W 103 57 54.48	
	4211.00	0.10	356.25	4210.97	7.75	-5.62	-7.54	0.21	441772.39	655209.57	N 32 12 50.30 W 103 57 54.48	
4308.00	0.08	69.45	4305.97	7.69	-5.51	-7.48	0.11	441772.39	655209.57	N 32 12 50.30 W 103 57 54.48		
4400.00	0.28	317.64	4399.96	7.78	-5.32	-7.58	0.34	441772.39	655209.63	N 32 12 50.30 W 103 57 54.48		
4495.00	0.07	53.76	4494.96	7.88	-5.11	-7.69	0.31	441772.39	655209.53	N 32 12 50.31 W 103 57 54.48		
4590.00	0.07	250.47	4589.96	7.89	-5.07	-7.70	0.14	441772.39	655209.44	N 32 12 50.31 W 103 57 54.48		
4684.00	0.15	146.06	4683.96	7.88	-5.10	-7.66	0.22	441772.85	655209.43	N 32 12 50.31 W 103 57 54.48		
4779.00	0.05	231.49	4778.96	7.85	-5.29	-7.65	0.16	441772.72	655209.46	N 32 12 50.31 W 103 57 54.48		
4873.00	0.01	337.55	4872.96	7.89	-5.31	-7.68	0.06	441772.70	655209.43	N 32 12 50.31 W 103 57 54.48		
5035.00	0.05	236.47	5034.96	7.95	-5.33	-7.75	0.03	441772.68	655209.36	N 32 12 50.31 W 103 57 54.48		
5130.00	0.27	210.32	5129.98	8.11	-5.55	-7.89	0.24	441772.46	655209.22	N 32 12 50.30 W 103 57 54.48		
5224.00	0.34	212.50	5223.96	8.38	-5.98	-8.16	0.08	441772.03	655208.96	N 32 12 50.30 W 103 57 54.49		
5319.00	0.49	230.57	5318.96	8.87	-6.47	-8.62	0.21	441771.54	655208.40	N 32 12 50.29 W 103 57 54.49		
5414.00	0.56	244.19	5413.96	9.62	-6.93	-9.35	0.15	441771.08	655207.76	N 32 12 50.29 W 103 57 54.50		
5508.00	0.61	246.40	5507.95	10.51	-7.33	-10.22	0.54	441770.68	655206.89	N 32 12 50.29 W 103 57 54.51		
5603.00	0.10	238.44	5602.95	11.05	-7.58	-10.76	0.08	441770.43	655206.35	N 32 12 50.28 W 103 57 54.52		
5697.00	0.07	139.70	5696.95	11.08	-7.67	-10.79	0.19	441770.34	655206.32	N 32 12 50.28 W 103 57 54.52		
5791.00	0.15	244.98	5790.95	11.16	-7.76	-10.87	0.14	441770.25	655206.25	N 32 12 50.28 W 103 57 54.52		
5886.00	0.14	105.78	5885.95	11.17	-7.85	-10.87	0.29	441770.16	655206.24	N 32 12 50.28 W 103 57 54.52		
5980.00	0.10	80.27	5979.95	10.98	-7.86	-10.68	0.07	441770.15	655206.44	N 32 12 50.28 W 103 57 54.52		
6075.00	0.21	110.08	6074.95	10.73	-7.91	-10.43	0.14	441770.10	655206.68	N 32 12 50.28 W 103 57 54.51		
6169.00	0.17	100.27	6168.95	10.44	-7.89	-10.13	0.05	441770.02	655206.98	N 32 12 50.28 W 103 57 54.51		
6264.00	0.21	115.46	6263.95	10.15	-8.09	-9.83	0.16	441769.92	655207.28	N 32 12 50.28 W 103 57 54.51		
6358.00	0.16	69.62	6357.95	9.87	-8.12	-9.56	0.16	441769.89	655207.55	N 32 12 50.28 W 103 57 54.51		
6453.00	0.05	255.53	6452.95	9.78	-8.08	-9.47	0.18	441769.89	655207.64	N 32 12 50.28 W 103 57 54.50		
6547.00	0.17	183.96	6546.95	9.84	-8.22	-9.52	0.18	441769.79	655207.59	N 32 12 50.28 W 103 57 54.50		
6736.00	0.16	349.89	6735.95	9.91	-8.24	-9.59	0.17	441769.77	655207.52	N 32 12 50.28 W 103 57 54.50		
6831.00	0.21	63.73	6830.95	9.77	-8.03	-9.46	0.24	441769.98	655207.68	N 32 12 50.28 W 103 57 54.50		
6925.00	0.19	307.63	6924.95	9.73	-7.86	-9.43	0.36	441770.15	655207.65	N 32 12 50.28 W 103 57 54.50		
7020.00	0.06	187.56	7019.95	9.86	-7.81	-9.56	0.24	441770.20	655207.55	N 32 12 50.28 W 103 57 54.50		
7114.00	0.12	16.00	7113.95	9.84	-7.77	-9.54	0.19	441770.24	655207.87	N 32 12 50.28 W 103 57 54.50		
7209.00	0.14	121.62	7208.94	9.71	-7.73	-9.41	0.22	441770.28	655207.70	N 32 12 50.28 W 103 57 54.50		
7303.00	0.15	102.98	7302.94	9.49	-7.82	-9.19	0.05	441770.19	655207.92	N 32 12 50.28 W 103 57 54.50		
7493.00	0.77	151.43	7492.94	8.69	-9.00	-8.34	0.36	441769.01	655208.77	N 32 12 50.27 W 103 57 54.49		
7682.00	2.34	137.37	7681.86	5.63	-12.95	-5.12	0.85	441765.06	655211.99	N 32 12 50.23 W 103 57 54.45		
7777.00	2.11	144.91	7776.79	3.42	-15.81	-2.80	0.39	441762.20	655214.31	N 32 12 50.20 W 103 57 54.43		
7871.00	3.72	128.37	7870.67	0.10	-19.04	0.65	1.96	441758.98	655217.76	N 32 12 50.17 W 103 57 54.34		

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ft)	Easting (ft)	Latitude (N/S ° ' '')	Longitude (E/W ° ' '')
	7966.00	5.89	116.96	7965.33	-0.56	-23.07	7.48	2.42	441754.94	655224.59	N 32 12 50.13 W 103 57 54.31	
	8060.00	6.99	112.21	8058.74	-15.98	-27.42	17.07	1.30	441750.59	655234.18	N 32 12 50.09 W 103 57 54.19	
	8155.00	8.57	115.49	8152.86	-27.50	-32.65	28.81	1.73	441745.38	655245.92	N 32 12 50.03 W 103 57 54.10	
	8250.00	11.13	116.60	8246.45	-41.80	-39.81	43.40	2.70	441738.21	655260.51	N 32 12 49.98 W 103 57 53.89	
	8344.00	11.84	116.83	8338.57	-58.17	-48.22	60.12	0.78	441729.79	655277.23	N 32 12 49.88 W 103 57 53.69	
	8439.00	11.65	118.25	8431.58	-74.98	-57.16	77.27	0.36	441720.85	655294.37	N 32 12 49.79 W 103 57 53.50	
	8533.00	13.67	120.60	8523.20	-92.46	-67.31	95.19	2.22	441710.71	655312.29	N 32 12 49.69 W 103 57 53.29	
	8627.00	14.48	126.51	8614.47	-110.96	-78.95	114.20	1.75	441698.08	655331.30	N 32 12 49.56 W 103 57 53.07	
	8722.00	13.73	130.00	8706.61	-128.58	-94.27	132.38	1.19	441683.75	655348.48	N 32 12 49.42 W 103 57 52.86	
	8816.00	14.63	129.60	8797.74	-145.65	-108.01	150.08	0.96	441669.01	655365.77	N 32 12 49.13 W 103 57 52.43	
	8910.00	14.33	126.15	8888.76	-163.62	-123.44	168.62	0.97	441654.58	655385.11	N 32 12 49.00 W 103 57 52.21	
	9005.00	14.61	123.20	8980.75	-182.59	-136.93	188.13	0.83	441641.09	655405.23	N 32 12 48.87 W 103 57 51.99	
	9099.00	13.90	125.74	9071.85	-201.14	-150.02	207.22	1.01	441628.00	655424.31	N 32 12 48.74 W 103 57 51.77	
	9288.00	14.93	134.41	9254.92	-235.75	-180.32	243.04	1.26	441597.70	655460.13	N 32 12 48.57 W 103 57 51.57	
	9383.00	13.95	131.89	9346.92	-252.36	-190.53	260.31	1.23	441581.49	655477.40	N 32 12 48.40 W 103 57 51.37	
	9477.00	12.27	132.68	9438.47	-267.56	-210.87	276.09	1.80	441567.16	655493.18	N 32 12 48.26 W 103 57 51.19	
	9572.00	10.62	133.92	9531.58	-280.08	-224.41	289.15	2.30	441551.62	655506.24	N 32 12 48.13 W 103 57 51.04	
	9666.00	9.24	156.48	9624.19	-288.13	-237.98	297.74	3.36	441540.07	655514.83	N 32 12 47.99 W 103 57 50.94	
	9760.00	10.13	166.01	9716.85	-292.55	-252.91	302.75	1.95	441525.12	655519.84	N 32 12 47.84 W 103 57 50.88	
	9855.00	11.10	173.67	9810.23	-294.69	-270.10	305.78	1.80	441507.93	655522.86	N 32 12 47.67 W 103 57 50.84	
	9950.00	11.14	183.22	9903.46	-294.67	-288.36	308.27	1.94	441489.68	655523.38	N 32 12 47.49 W 103 57 50.84	
	10044.00	10.78	194.49	9995.75	-291.27	-305.94	303.56	2.31	441472.10	655526.85	N 32 12 47.32 W 103 57 50.87	
Wellcamp Intersection	10065.12	10.77	199.34	10016.50	-290.07	-309.74	302.51	1.83	441459.29	655519.60	N 32 12 47.28 W 103 57 50.89	
	10139.00	10.80	202.79	10089.08	-284.84	-322.74	297.89	1.63	441455.29	655514.98	N 32 12 47.15 W 103 57 50.94	
	10233.00	11.44	208.77	10181.32	-278.28	-338.98	289.85	1.58	441439.08	655508.94	N 32 12 46.99 W 103 57 51.03	
	10328.00	10.89	215.91	10274.52	-265.72	-354.40	278.91	1.38	441423.63	655497.00	N 32 12 46.81 W 103 57 51.15	
KOP Actual Tie-In	10415.00	10.66	220.48	10356.95	-255.03	-367.35	269.72	1.00	441410.69	655486.81	N 32 12 46.71 W 103 57 51.27	
	10485.00	12.15	231.07	10428.54	-244.60	-377.04	259.67	3.47	441401.60	655478.76	N 32 12 46.62 W 103 57 51.38	
	10522.00	12.71	236.62	10464.67	-237.99	-381.73	253.24	3.50	441386.31	655470.33	N 32 12 46.57 W 103 57 51.48	
	10617.00	24.18	244.49	10554.65	-211.08	-395.91	226.86	12.33	441382.13	655443.95	N 32 12 46.43 W 103 57 51.77	
	10712.00	31.27	263.89	10638.86	-168.46	-406.95	184.65	12.00	441371.10	655401.74	N 32 12 46.32 W 103 57 52.26	
	10807.00	30.15	277.39	10710.54	-114.13	-405.71	130.22	11.62	441372.33	655347.32	N 32 12 46.34 W 103 57 52.89	
	10901.00	48.78	280.75	10783.28	-51.40	-395.48	67.04	8.47	441382.55	655284.15	N 32 12 46.44 W 103 57 53.63	
	10996.00	54.99	278.90	10845.17	-20.62	-382.93	-5.53	8.77	441395.05	655211.58	N 32 12 46.57 W 103 57 54.47	
	11091.00	62.95	273.96	10894.12	101.01	-374.03	-86.33	9.49	441404.01	655130.78	N 32 12 46.66 W 103 57 55.41	
	11188.00	72.29	270.10	10930.26	189.50	-371.02	-174.01	10.52	441407.02	655043.11	N 32 12 46.69 W 103 57 56.43	
	11281.00	83.91	269.02	10949.83	281.28	-373.41	-266.77	12.63	441404.63	654950.37	N 32 12 46.67 W 103 57 57.51	
Exit Target Box	11370.00	82.12	269.00	10952.91	370.15	-377.26	-355.55	9.29	441400.78	654901.59	N 32 12 46.64 W 103 57 58.55	
	11375.00	82.58	269.06	10952.70	375.14	-377.44	-369.54	9.29	441400.60	654856.59	N 32 12 46.64 W 103 57 58.60	
	11509.00	90.88	266.42	10948.66	509.07	-383.80	-494.32	1.78	441394.15	654722.83	N 32 12 46.56 W 103 58 0.16	
	11699.00	92.39	268.07	10943.23	698.97	-393.01	-684.01	1.19	441385.03	654533.15	N 32 12 46.49 W 103 58 2.37	
	11763.00	92.87	270.05	10938.92	792.84	-394.50	-777.89	2.17	441383.49	654339.28	N 32 12 46.48 W 103 58 3.48	
	11868.00	90.16	270.09	10936.41	887.72	-394.44	-872.85	2.85	441383.60	654344.33	N 32 12 46.48 W 103 58 4.87	
	12077.00	92.01	273.67	10932.83	1070.15	-388.24	-1061.88	2.13	441368.80	654155.52	N 32 12 46.55 W 103 58 6.78	
	12172.00	92.15	271.49	10929.38	1170.75	-383.97	-1156.51	2.30	441394.07	654060.69	N 32 12 46.60 W 103 58 7.87	
Enter Target Box	12352.00	93.85	272.78	10919.95	1349.98	-377.27	-1336.13	1.19	441400.77	653981.09	N 32 12 46.67 W 103 58 9.96	
	12360.00	93.93	272.64	10919.41	1357.91	-376.88	-1344.10	1.19	441401.16	653873.11	N 32 12 46.67 W 103 58 10.05	
	12550.00	90.04	272.00	10912.83	1547.13	-368.87	-1533.78	2.09	441409.17	653680.45	N 32 12 46.76 W 103 58 12.20	
	12644.00	93.99	271.79	10909.85	1640.82	-365.76	-1627.67	3.78	441412.28	653589.57	N 32 12 46.79 W 103 58 13.35	
	12834.00	89.94	270.72	10904.00	1830.34	-361.60	-1817.50	2.00	441416.44	653399.76	N 32 12 46.84 W 103 58 15.56	
	12928.00	89.70	270.59	10904.30	1924.21	-360.53	-1911.49	0.29	441417.51	653305.77	N 32 12 46.85 W 103 58 16.65	
	13118.00	92.48	271.86	10900.68	2113.81	-356.47	-2101.39	1.61	441421.57	653115.69	N 32 12 46.90 W 103 58 18.86	
	13310.00	90.80	270.78	10895.30	2301.38	-352.17	-2289.25	1.07	441425.87	652928.04	N 32 12 46.95 W 103 58 21.05	
	13401.00	83.21	271.28	10891.98	2396.13	-350.48	-2384.17	2.60	441427.55	652833.12	N 32 12 46.97 W 103 58 22.16	
	13495.00	89.58	269.00	10885.71	2490.00	-350.25	-2478.12	4.58	441427.78	652739.18	N 32 12 46.97 W 103 58 23.25	
	13590.00	91.31	270.39	10888.99	2584.84	-350.78	-2573.11	2.35	441427.28	652644.20	N 32 12 46.97 W 103 58 24.36	
	13779.00	86.12	269.65	10893.22	2773.68	-350.60	-2769.00	2.77	441427.34	652455.33	N 32 12 46.98 W 103 58 26.55	
	13874.00	90.88	270.98	10888.89	2868.52	-350.19	-2865.93	4.67	441427.85	652360.40	N 32 12 46.99 W 103 58 27.66	
	13968.00	90.90	271.22	10894.81	2962.35	-348.40	-2959.91	0.35	441429.64	652266.43	N 32 12 47.01 W 103 58 28.75	
	14063.00	88.74	269.92	10894.91	3057.22	-347.45	-3045.89	2.63	441430.58	652171.45	N 32 12 47.02 W 103 58 29.86	
	14157.00	89.04	270.04	10896.73	3151.13	-347.49	-3139.88	0.34	441430.55	652077.48	N 32 12 47.02 W 103 58 30.95	
	14346.00	90.66	274.18	10897.23	3339.54	-340.53	-3328.70	2.35	441437.51	651888.87	N 32 12 47.10 W 103 58 33.15	
	14440.00	86.05	272.43	10899.82	3433.03	-335.11	-3422.48	5.25	441442.92	651794.80	N 32 12 47.16 W 103 58 34.24	
	14629.00	90.32	270.25	10905.01	3621.50	-330.68	-3611.27	2.53	441447.35	651606.12	N 32 12 47.21 W 103 58 36.44	
	14819.00	89.80	268.43	10905.71	3811.42	-332.86	-3801.25	1.00	441445.18	651416.15	N 32 12 47.19 W 103 58 38.65	
	15008.00	91.33	266.99	10903.02	4000.39	-340.41	-3990.07	1.32	441437.63	651227.35	N 32 12 47.12 W 103 58 40.85	
	15197.00	88.94	275.27	10901.75	4188.87	-336.68	-4178.84	4.84	441441.36	651038.59	N 32 12 47.17 W 103 58 43.04	
	15292.00	90.25	268.52	10902.42	4283.58	-333.54	-4273.73	7.24	441444.50	650943.71	N 32 12 47.20 W 103 58 44.15	
	15386.10	90.82	269.19	10901.48	4377.83	-335.42	-4367.81	1.01	441442.62	650849.64	N 32 12 47.18 W 103 58 45.24	
	15480.00	92.16	265.41	10899.50	4471.48	-341.13	-4461.48	5.74	441436.90	650755.98	N 32 12 47.13 W 103 58 46.33	
	15575.00	91.30	268.10	10895.31	4566.23	-330.03	-4555.98	2.43	441428.00	650661.49	N 32 12 47.05 W 103 58 47.43	
	15670.00	91.95	271.87	10892.80	4644.78	-350.77	-4634.39	1.73	441417.32	650472.98	N 32 12 46.95 W 103 58 49.63	
	15764.00	91.54	272.72	10890.03	4728.44	-357.01	-4712.77	2.01	441417.27	650283.10	N 32 12 46.95 W 103 58 51.84	
	15858.00	91.47	270.03	10885.04	4812.97	-352.45	-4791.13	1.01	441421.63	650189.23	N 32 12 46.99 W 103 58 52.93	
	15953.00	90.99	268.47	10873.00	4897.51	-353.69	-4869.50	1.42	441425.59	649999.38	N 32 12 47.04 W 103 58 55.14	
	16048.00	91.06	268.25	10871.30	4982.01	-356.41	-4947.87	1.72	441424.34	649804.42	N 32 1	

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 ° ° '")
	20699.00	90.98	287.40	10846.30	9680.02	-390.44	-9672.14	0.95	441387.88	845545.72	N 32 12 46.81	W 103 59 48.98
	20793.00	91.13	286.66	10844.67	9773.99	-385.31	-9766.00	0.84	441382.73	845451.87	N 32 12 46.76	W 103 59 48.08
	20982.00	90.07	290.43	10842.69	9962.38	-416.55	-9953.70	3.34	441361.49	845264.19	N 32 12 46.56	W 103 59 50.26
Est Target Bot	21022.00	89.81	282.79	10842.73	10002.15	-422.39	-9993.27	5.91	441355.65	845274.82	N 32 12 46.50	W 103 59 50.72
	21078.00	89.45	285.95	10843.08	10056.05	-427.69	-10047.00	5.91	441350.35	845170.80	N 32 12 46.45	W 103 59 51.35
100' FWL	21098.00	89.42	286.88	10843.28	10076.04	-428.95	-10069.96	4.57	441349.10	845150.94	N 32 12 46.44	W 103 59 51.58
Final MWD	21127.00	89.38	288.28	10843.90	10107.04	-430.26	-10097.93	4.57	441347.78	845119.57	N 32 12 46.43	W 103 59 51.94
Proj to TD	21170.00	89.33	288.28	10844.07	10150.03	-431.55	-10140.90	0.00	441346.49	845077.60	N 32 12 46.42	W 103 59 52.44

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 Casing Diameter (in)	Survey Tool Type	Borehole / Survey
	1	0.000	26.500	198.425	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / Whomping Willow CC 15_16 State Corn 44H Gyro + MWD 0-21174ft MD
	1	26.500	26.500	Act Sns	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / Whomping Willow CC 15_16 State Corn 44H Gyro + MWD 0-21174ft MD
	1	26.500	415.000	Act Sns	30.000	NAL_NSG+MSHOT	Original Borehole / Whomping Willow CC 15_16 State Corn 44H Gyro + MWD 0-21174ft MD
	1	415.000	10485.000	Act Sns	30.000	NAL_MWD_JFR1+MS	Original Borehole / Whomping Willow CC 15_16 State Corn 44H ST01 / Oxy Whomping Willow CC
	1	10485.000	21170.000	Act Sns	30.000	NAL_MWD_JFR1+MS	15_16 State Corn 44H ST01 0 to

...ST01\Oxy Whomping Willow CC 15_16 State Corn 44H ST01 0 to 21170' MD