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)
Fax : (432) 742-5606 (Shared)

Schlumberger

Well Reference:
28, 24S, 29E, Eddy NM
32.19305 103.99702

I, Ryland Matthews certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of November 16, 2018 through December 01, 2018, conduct or supervise the taking of the SlimPulse & Third Party Corrected surveys from a depth of 806.00 feet to a depth of 20085.00 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 Cedar Canyon 27-28 Federal 42H Well (Original Hole) API No. 30-015-44435 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
Ryland Matthews
FE

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

My Commission expires:

2-16-2022

D Adams
Notary Public (signature)

Adams County Colorado
(County State)

DONNA ADAMS
NOTARY PUBLIC
STATE OF COLORADO
NOTARY ID 20184007893
MY COMMISSION EXPIRES FEBRUARY 16, 2022

Schlumberger

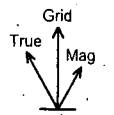
OXY

Borehole:	Well:	Field:	Structure:
Original Borehole	Cedar Canyon 27-28 Fed 42H	NM Eddy County (NAD 83)	OXY Cedar Canyon 27-28 Fed 42H

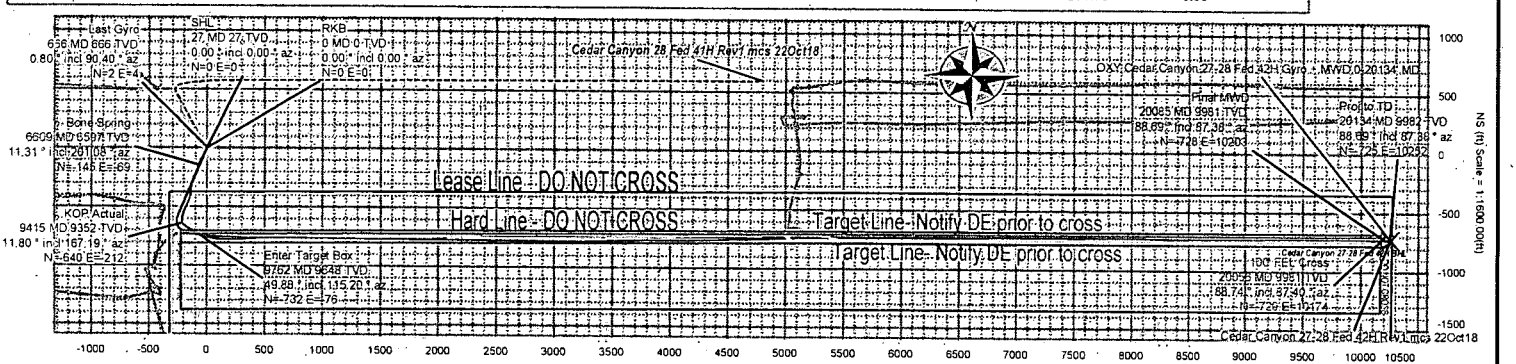
Gravity & Magnetic Parameters								Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet						Miscellaneous				
Model:	IFR	Dip:	59.95°	Date:	02-Nov-2018			Lat:	N 32 11 34.97	Northing:	434127.41ftUS	Grid Conv:	0.1792°		Slot:	OXY Cedar Canyon 27-28 Fed 42H	TVD Ref:	RKB(2974.3ft above MSL)	
MagDec:	6.986°	FS:	47960.8nT	Gravity FS:	998.465mgn (9.80665 Based)			Lon:	W 103 59 49.28	Easting:	645371.26ftUS	Scale Fact:	0.99992148		Plan:	OXY Cedar Canyon 27-28 Fed 42H Gyro + MWD 0-20134' MD			

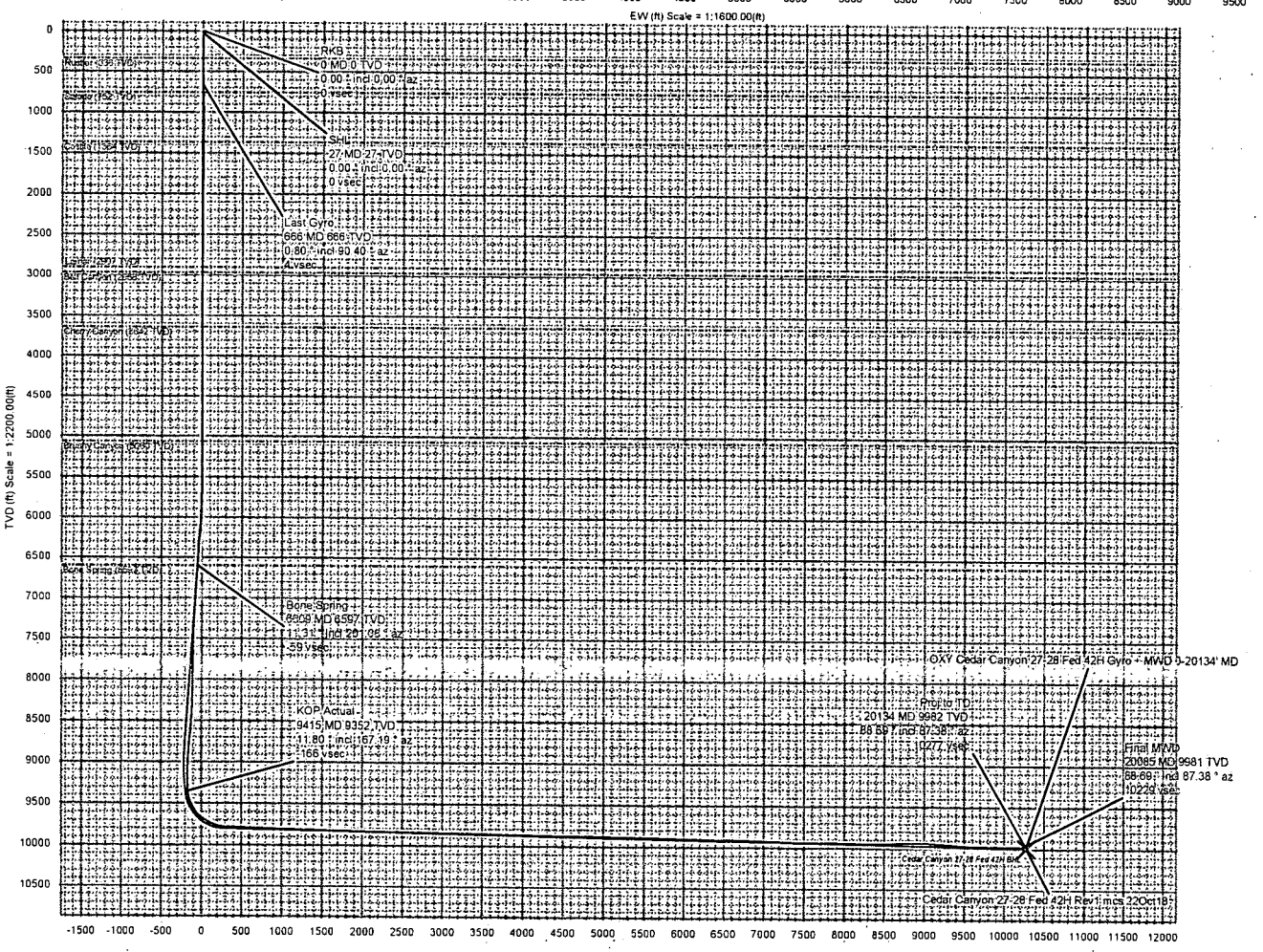
Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
RKB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00
Last Gyro	666.20	0.80	90.40	666.17	3.76	2.03	3.92	0.62
Bone Spring	6609.32	11.31	201.08	6597.00	-58.66	-145.49	-69.16	0.41
KOP Actual	9415.00	11.80	167.19	9352.03	-166.22	-639.69	-212.16	2.91
Enter Target Box	9762.00	49.88	115.20	9648.44	-23.83	-731.66	-75.95	12.99
100' FEL Cross	20056.00	88.74	87.40	9980.58	10199.88	-728.86	10173.80	0.20
Final MWD	20085.00	88.69	87.38	9981.23	10228.67	-727.54	10202.77	0.20
Proj to TD	20134.00	88.69	87.38	9982.35	10277.33	-725.30	10251.70	0.00



Grid North
Tot Corr (M->G 6.807°)
Mag Dec (6.986°)
Grid Conv (0.179°)





Schlumberger

OXY Cedar Canyon 27-28 Fed 42H Gyro + MWD 0-20134' MD Survey
Geodetic Report
(Def Survey)

Report Date:	December 03, 2018 - 02:02 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	94.070 ° (Grid North)
Field:	NM Eddy County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	OXY Cedar Canyon 27-28 Fed 42H / OXY Cedar Canyon 27-28 Fed 42H	**TVD Reference Datum:**	RKB
Well:	Cedar Canyon 27-28 Fed 42H	**TVD Reference Elevation:**	2974.300 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	2947.800 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.986 °
Survey Name:	OXY Cedar Canyon 27-28 Fed 42H Gyro + MWD 0-20134' MD	**Total Gravity Field Strength:**	998.4645mgn (9.80665 Based)
Survey Date:	September 25, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	233.269 ° / 11218.022 ft / 6.722 / 1.124	**Total Magnetic Field Strength:**	47960.800 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.950 °
Location Lat / Long:	N 32° 11' 34.96725", W 103° 59' 49.27893"	**Declination Date:**	November 02, 2018
Location Grid N/E Y/X:	N 434127.410 ftUS, E 645371.260 ftUS	**Magnetic Declination Model:**	IFR
CRS Grid Convergence Angle:	0.1792 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99992149	**Grid Convergence Used:**	0.1792 °
Version / Patch:	2.10.753.0	**Total Corr Mag North->Grid North:**	6.8068 °
		Local Coord Referenced To:	Well Head

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 ° ' ")
RKB	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	434127.41	645371.26	N 32 11 34.97	W 103 59 49.28
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	434127.41	645371.26	N 32 11 34.97	W 103 59 49.28
	66.69	0.13	283.92	66.69	-0.04	0.01	-0.04	0.32	434127.42	645371.22	N 32 11 34.97	W 103 59 49.28
	123.44	0.06	259.23	123.44	-0.14	0.02	-0.14	0.14	434127.43	645371.12	N 32 11 34.97	W 103 59 49.28
	210.79	0.11	166.78	210.79	-0.16	-0.07	-0.16	0.15	434127.34	645371.10	N 32 11 34.97	W 103 59 49.28
	298.30	0.14	93.22	298.30	-0.02	-0.16	-0.04	0.17	434127.25	645371.22	N 32 11 34.97	W 103 59 49.28
	392.82	0.59	30.22	392.82	0.31	0.26	0.32	0.57	434127.67	645371.58	N 32 11 34.97	W 103 59 49.28
	487.32	0.88	66.80	487.31	1.16	0.96	1.24	0.57	434128.37	645372.50	N 32 11 34.98	W 103 59 49.26
	581.91	1.04	61.21	581.89	2.53	1.66	2.66	0.20	434129.07	645373.92	N 32 11 34.98	W 103 59 49.25
Last Gyro	666.20	0.80	90.40	666.17	3.76	2.03	3.92	0.62	434129.44	645375.17	N 32 11 34.99	W 103 59 49.23
	806.00	1.93	76.34	805.92	6.98	2.58	7.18	0.84	434129.99	645378.44	N 32 11 34.99	W 103 59 49.20
	988.00	1.19	72.16	987.86	11.65	3.88	11.96	0.41	434131.29	645383.21	N 32 11 35.01	W 103 59 49.14
	1078.00	0.30	356.55	1077.85	12.49	4.40	12.83	1.28	434131.81	645384.09	N 32 11 35.01	W 103 59 49.13
	1261.00	1.14	186.28	1260.84	12.35	3.07	12.60	0.79	434130.48	645383.86	N 32 11 35.00	W 103 59 49.13
	1351.00	0.28	295.18	1350.83	12.11	2.27	12.31	1.40	434129.68	645383.57	N 32 11 34.99	W 103 59 49.14
	1440.00	0.14	318.76	1439.83	11.83	2.45	12.04	0.18	434129.86	645383.30	N 32 11 34.99	W 103 59 49.14
	1532.00	0.25	158.78	1531.83	11.84	2.34	12.04	0.42	434129.75	645383.30	N 32 11 34.99	W 103 59 49.14
	1624.00	0.44	242.15	1623.83	11.63	1.99	11.80	0.52	434129.40	645383.06	N 32 11 34.99	W 103 59 49.14
	1717.00	0.71	235.94	1716.83	10.87	1.50	11.00	0.30	434128.91	645382.26	N 32 11 34.98	W 103 59 49.15
	1807.00	0.96	258.98	1806.82	9.70	1.05	9.80	0.46	434128.46	645381.06	N 32 11 34.98	W 103 59 49.16
	1990.00	1.98	250.09	1989.75	5.33	-0.32	5.32	0.57	434127.09	645376.58	N 32 11 34.96	W 103 59 49.22
	2085.00	1.89	227.44	2084.70	2.76	-1.94	2.63	0.81	434125.47	645373.89	N 32 11 34.95	W 103 59 49.25
	2179.00	0.49	128.14	2178.68	2.03	-3.24	1.80	2.16	434124.17	645373.06	N 32 11 34.94	W 103 59 49.26
	2274.00	0.77	166.69	2273.68	2.55	-4.11	2.27	0.52	434123.30	645373.53	N 32 11 34.93	W 103 59 49.25
	2369.00	0.31	167.54	2368.67	2.82	-4.98	2.47	0.48	434122.43	645373.73	N 32 11 34.92	W 103 59 49.25
	2463.00	0.88	170.20	2462.67	3.06	-5.94	2.65	0.61	434121.47	645373.91	N 32 11 34.91	W 103 59 49.25
	2558.00	0.73	218.87	2557.66	2.89	-7.13	2.39	0.71	434120.28	645373.65	N 32 11 34.90	W 103 59 49.25
	2652.00	0.81	236.92	2651.65	2.02	-7.96	1.46	0.27	434119.45	645372.72	N 32 11 34.89	W 103 59 49.26
	2747.00	0.55	120.81	2746.65	1.89	-8.56	1.29	1.22	434118.85	645372.55	N 32 11 34.88	W 103 59 49.26
	2841.00	0.63	314.27	2840.65	1.90	-8.43	1.31	1.25	434118.98	645372.57	N 32 11 34.88	W 103 59 49.26
	3031.00	0.17	345.37	3030.64	1.01	-7.43	0.49	0.26	434119.98	645371.75	N 32 11 34.89	W 103 59 49.27
	3126.00	0.08	30.94	3125.64	1.00	-7.24	0.49	0.13	434120.17	645371.75	N 32 11 34.90	W 103 59 49.27
	3220.00	0.14	172.01	3219.64	1.05	-7.29	0.54	0.22	434120.12	645371.80	N 32 11 34.90	W 103 59 49.27
	3409.00	0.14	303.72	3408.64	0.90	-7.39	0.38	0.14	434120.02	645371.64	N 32 11 34.89	W 103 59 49.27
	3504.00	0.17	274.09	3503.64	0.66	-7.32	0.14	0.09	434120.09	645371.40	N 32 11 34.89	W 103 59 49.28
	3599.00	0.14	312.25	3598.64	0.43	-7.23	-0.09	0.11	434120.18	645371.17	N 32 11 34.90	W 103 59 49.28
	3788.00	0.07	255.87	3787.64	0.13	-7.10	-0.37	0.06	434120.31	645370.89	N 32 11 34.90	W 103 59 49.28
	3883.00	0.28	217.27	3882.64	-0.05	-7.30	-0.57	0.24	434120.11	645370.69	N 32 11 34.89	W 103 59 49.29
	3978.00	0.25	220.55	3977.64	-0.30	-7.65	-0.84	0.04	434119.76	645370.42	N 32 11 34.89	W 103 59 49.29
	4072.00	0.15	194.82	4071.64	-0.44	-7.92	-1.01	0.14	434119.49	645370.25	N 32 11 34.89	W 103 59 49.29
	4167.00	0.29	208.67	4166.64	-0.57	-8.25	-1.15	0.16	434119.16	645370.11	N 32 11 34.89	W 103 59 49.29
	4262.00	0.16	178.99	4261.64	-0.65	-8.60	-1.27	0.18	434118.82	645369.99	N 32 11 34.88	W 103 59 49.29
	4356.00	0.20	220.65	4355.64	-0.74	-8.85	-1.37	0.14	434118.56	645369.89	N 32 11 34.88	W 103 59 49.30
	4451.00	0.05	303.41	4450.64	-0.88	-8.95	-1.52	0.21	434118.46	645369.74	N 32 11 34.88	W 103 59 49.30
	4546.00	0.24	229.20	4545.64	-1.05	-9.06	-1.70	0.24	434118.35	645369.56	N 32 11 34.88	W 103 59 49.30
	4640.00	0.19	143.68	4639.64	-1.09	-9.32	-1.76	0.31	434118.10	645369.50	N 32 11 34.88	W 103 59 49.30
	4735.00	0.28	193.55	4734.63	-1.03	-9.67	-1.72	0.23	434117.74	645369.54	N 32 11 34.87	W 103 59 49.30
	4830.00	0.14	198.76	4829.63	-1.10	-10.00	-1.81	0.15	434117.41	645369.45	N 32 11 34.87	W 103 59 49.30
	4924.00	0.11	162.45	4923.63	-1.09	-10.20	-1.82	0.09	434117.21	645369.44	N 32 11 34.87	W 103 59 49.30
	5019.00	0.60	167.21	5018.63	-0.91	-10.77	-1.68	0.52	434116.64	645369.58	N 32 11 34.86	W 103 59 49.30
	5114.00	0.69	200.96	5113.63	-0.94	-11.79	-1.78	0.40	434115.62	645369.48	N 32 11 34.85	W 103 59 49.30
	5209.00	0.70	196.02	5208.62	-1.22	-12.88	-2.14	0.06	434114.53	645369.12	N 32 11 34.84	W 103 59 49.30
	5303.00	0.71	200.16	5302.61	-1.50	-13.98	-2.50	0.06	434113.43	645368.76	N 32 11 34.83	W 103 59 49.31
	5398.00	0.57	193.68	5397.61	-1.74	-14.99	-2.82	0.17	434112.42	645368.45	N 32 11 34.82	W 103 59 49.31
	5493.00	0.73	187.17	5492.60	-1.86	-16.05	-3.00	0.19	434111.36	645368.26	N 32 11 34.81	W 103 59 49.31
	5587.00	1.17	205.54	5586.59	-2.24	-17.51	-3.49	0.56	434109.90	645367.77	N 32 11 34.79	W 103 59 49.32
	5681.00	2.73	208.95	5680.53	-3.53	-20.34	-4.99	1.66	434107.08	645366.27	N 32 11 34.77	W 103 59 49.34
	5776.00	4.21	209.82	5775.35	-6.00	-25.34	-7.82	1.56	434102.07	645363.44	N 32 11 34.72	W 103 59 49.37
	5870.00	5.86	210.57	5868.99	-9.64	-32.47	-11.97	1.76	434094.95	645359.29	N 32 11 34.65	W 103 59 49.42
	5965.00	7.37	211.40	5963.35	-14.60	-41.84	-17.62	1.59	434085.57	645353.65	N 32 11 34.55	W 103 59 49.49
	6060.00	8.85	211.04	6057.40	-20.71	-53.31	-24.56	1.56	434074.11	645346.70	N 32 11 34.44	W 103 59 49.57
	6154.00	10.03	210.91	6150.12	-27.69	-66.53	-32.49	1.26	434060.89	645338.77	N 32 11 34.31	W 103 59 49.66
	6344.00	10.95	205.94	6336.95	-41.88	-96.95	-48.89	0.68	434030.47	645322.38	N 32 11 34.01	W 103 59 49.85
	6438.00	11.57	202.88	6429.14	-48.25	-113.66	-56.46	0.92	434013.76	645314.81	N 32 11 33.84	W 103 59 49.94
	6533.00	11.62	201.44	6522.20	-54.17	-131.35	-63.66	0.31	433996.07	645307.61	N 32 11 33.67	W 103 59 50.02
Bone Spring Intersection	*6609.32*	*11.31*	*201.08*	*6597.00*	*-58.66*	*-145.49*	*-69.16*	*0.41*	*433981.93*	*645302.11*	*N 32 11 33.53*	*W 103 59 50.09*
	6628.00	11.24	200.99	6615.32	-59.73	-148.90	-70.47	0.41	433978.53	645300.79	N 32 11 33.50	W 103 59 50.10
	6722.00	10.05	198.31	6707.70	-64.41	-165.24	-76.33	1.37	433962.19	645294.94	N 32 11 33.33	W 103 59 50.17
	6816.00	9.06	203.11	6800.40	-68.84	-179.83	-81.81	1.35	433947.59	645289.45	N 32 11 33.19	W 103 59 50.24
	7006.00	8.41	208.75	6988.20	-79.52	-205.77	-94.37	0.57	433921.65	645276.90	N 32 11 32.93	W 103 59 50.38
	7100.00	9.58	201.66	7081.04	-84.76	-219.07	-100.56	1.71	433908.36	645270.71	N 32 11 32.80	W 103 59 50.46
	7289.00	7.65	212.22	7267.91	-95.45	-244.33	-113.07	1.32	433883.10	645258.19	N 32 11 32.55	W 103 59 50.60
	7478.00	7.57	196.17	7455.27	-103.99	-266.94	-123.25	1.12	433860.50	645248.02	N 32 11 32.33	W 103 59 50.72
	7573.00	8.29	188.59	7549.36	-105.84	-279.72	-126.02	1.33	433847.71	645245.25	N 32 11 32.20	W 103 59 50.76
	7666.00	9.70	187.87	7641.22	-106.89	-294.11	-128.09	1.52	433833.32	645243.18	N 32 11 32.06	W 103 59 50.78
	7762.00	10.47	188.71	7735.73	-108.13	-310.74	-130.52	0.82	433816.69	645240.75	N 32 11 31.90	W 103 59 50.81
	7856.00	10.71	189.72	7828.13	-109.68	-327.79	-133.29	0.32	433799.64	645237.98	N 32 11 31.73	W 103 59 50.84

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 ° ' ")
	7951.00	10.11	189.99	7921.57	-111.41	-344.71	-136.22	0.63	433782.73	645235.05	N 32 11 31.56	W 103 59 50.88
	8045.00	10.01	185.46	8014.12	-112.46	-360.96	-138.43	0.85	433766.47	645232.84	N 32 11 31.40	W 103 59 50.90
	8140.00	9.50	186.71	8107.75	-113.02	-376.97	-140.13	0.58	433750.47	645231.14	N 32 11 31.24	W 103 59 50.92
	8234.00	10.51	190.72	8200.32	-114.37	-393.10	-142.63	1.30	433734.34	645228.64	N 32 11 31.08	W 103 59 50.95
	8328.00	11.50	194.48	8292.59	-117.06	-410.59	-146.57	1.30	433716.85	645224.70	N 32 11 30.91	W 103 59 51.00
	8423.00	12.50	196.15	8385.51	-120.92	-429.64	-151.80	1.11	433697.81	645219.47	N 32 11 30.72	W 103 59 51.06
	8517.00	13.88	201.51	8477.04	-126.43	-449.90	-158.76	1.96	433677.54	645212.51	N 32 11 30.52	W 103 59 51.14
	8612.00	14.57	203.90	8569.12	-133.90	-471.43	-167.78	0.95	433656.02	645203.49	N 32 11 30.31	W 103 59 51.25
	8707.00	14.83	205.10	8661.01	-142.32	-493.36	-177.78	0.42	433634.09	645193.49	N 32 11 30.09	W 103 59 51.37
	8896.00	13.70	203.96	8844.18	-158.61	-535.72	-197.13	0.62	433591.73	645174.14	N 32 11 29.67	W 103 59 51.59
	8990.00	12.17	200.77	8935.80	-165.25	-555.16	-205.17	1.80	433572.30	645166.11	N 32 11 29.48	W 103 59 51.69
	9085.00	12.06	192.95	9028.69	-169.66	-574.19	-210.94	1.73	433553.26	645160.33	N 32 11 29.29	W 103 59 51.75
	9179.00	11.72	185.15	9120.68	-171.35	-593.27	-214.00	1.75	433534.18	645157.28	N 32 11 29.10	W 103 59 51.79
	9274.00	11.34	179.22	9213.76	-170.74	-612.22	-214.74	1.31	433515.24	645156.54	N 32 11 28.92	W 103 59 51.80
	9354.00	11.09	175.39	9292.24	-168.92	-627.76	-214.01	0.98	433499.70	645157.26	N 32 11 28.76	W 103 59 51.79
KOP Actual	9415.00	11.80	167.19	9352.03	-166.22	-639.69	-212.16	2.91	433487.77	645159.12	N 32 11 28.64	W 103 59 51.77
	9510.00	19.83	129.13	9443.58	-150.15	-659.41	-197.45	13.39	433468.05	645173.83	N 32 11 28.45	W 103 59 51.60
	9604.00	30.33	121.11	9528.62	-115.85	-681.80	-164.66	11.72	433445.66	645206.62	N 32 11 28.23	W 103 59 51.22
	9699.00	42.60	120.40	9604.88	-65.48	-710.58	-116.20	12.92	433416.89	645255.07	N 32 11 27.94	W 103 59 50.66
Enter Target Box	*9762.00*	*49.88*	*115.20*	*9648.44*	*-23.83*	*-731.66*	*-75.95*	*12.99*	*433395.81*	*645295.32*	*N 32 11 27.73*	*W 103 59 50.19*
	9794.00	53.65	112.98	9668.24	-0.22	-741.90	-53.01	12.99	433385.57	645318.26	N 32 11 27.63	W 103 59 49.92
	9889.00	61.97	100.98	9718.94	77.94	-764.93	23.71	13.80	433362.55	645394.97	N 32 11 27.40	W 103 59 49.03
	9984.00	70.83	93.27	9756.98	164.71	-775.51	109.95	11.92	433351.97	645481.20	N 32 11 27.29	W 103 59 48.03
	10079.00	82.65	89.50	9778.74	256.89	-777.66	202.21	13.03	433349.81	645573.45	N 32 11 27.27	W 103 59 46.95
	10174.00	90.03	87.41	9784.80	351.17	-775.10	296.91	8.07	433352.37	645668.14	N 32 11 27.29	W 103 59 45.85
	10244.00	88.35	84.94	9785.79	420.49	-770.43	366.74	4.27	433357.04	645737.97	N 32 11 27.33	W 103 59 45.04
	10339.00	88.04	86.89	9788.79	514.48	-763.67	461.44	2.08	433363.80	645832.67	N 32 11 27.40	W 103 59 43.94
	10434.00	88.31	89.41	9791.81	608.92	-760.60	556.34	2.67	433366.87	645927.55	N 32 11 27.42	W 103 59 42.83
	10529.00	88.21	90.86	9794.70	703.65	-760.83	651.29	1.53	433366.64	646022.50	N 32 11 27.42	W 103 59 41.73
	10624.00	88.24	90.57	9797.64	798.44	-762.01	746.24	0.31	433365.46	646117.44	N 32 11 27.40	W 103 59 40.62
	10812.00	88.04	90.56	9803.74	985.99	-763.87	934.13	0.11	433363.61	646305.31	N 32 11 27.38	W 103 59 38.44
	10906.00	88.42	90.49	9806.64	1079.76	-764.73	1028.08	0.41	433362.75	646399.26	N 32 11 27.37	W 103 59 37.34
	10999.00	88.45	90.56	9809.18	1172.55	-765.58	1121.04	0.08	433361.89	646492.21	N 32 11 27.36	W 103 59 36.26
	11093.00	88.31	90.56	9811.84	1266.34	-766.50	1215.00	0.15	433360.98	646586.16	N 32 11 27.34	W 103 59 35.17
	11186.00	88.69	90.46	9814.28	1359.13	-767.32	1307.96	0.42	433360.15	646679.12	N 32 11 27.33	W 103 59 34.09
	11279.00	88.31	90.57	9816.71	1451.92	-768.16	1400.93	0.43	433359.31	646772.08	N 32 11 27.32	W 103 59 33.01
	11373.00	88.11	90.23	9819.65	1545.68	-768.82	1494.88	0.42	433358.66	646866.02	N 32 11 27.31	W 103 59 31.91
	11466.00	88.97	90.48	9822.02	1638.45	-769.39	1587.85	0.96	433358.08	646958.98	N 32 11 27.30	W 103 59 30.83
	11559.00	88.86	90.42	9823.78	1731.25	-770.12	1680.83	0.13	433357.35	647051.95	N 32 11 27.29	W 103 59 29.75
	11653.00	88.76	90.38	9825.73	1825.03	-770.78	1774.80	0.11	433356.69	647145.92	N 32 11 27.28	W 103 59 28.65
	11746.00	88.79	90.42	9827.72	1917.82	-771.43	1867.78	0.05	433356.05	647238.89	N 32 11 27.28	W 103 59 27.57
	11839.00	88.69	90.58	9829.76	2010.62	-772.24	1960.75	0.20	433355.23	647331.86	N 32 11 27.26	W 103 59 26.49
	11933.00	88.90	90.24	9831.74	2104.41	-772.91	2054.73	0.43	433354.56	647425.83	N 32 11 27.25	W 103 59 25.40
	12120.00	88.83	90.31	9835.44	2290.96	-773.81	2241.69	0.05	433353.66	647612.77	N 32 11 27.24	W 103 59 23.22
	12213.00	88.76	90.71	9837.40	2383.76	-774.64	2334.67	0.44	433352.84	647705.74	N 32 11 27.23	W 103 59 22.14
	12400.00	89.00	90.64	9841.06	2570.40	-776.84	2521.62	0.13	433350.63	647892.68	N 32 11 27.20	W 103 59 19.96
	12493.00	88.86	90.09	9842.79	2663.19	-777.43	2614.60	0.61	433350.04	647985.65	N 32 11 27.19	W 103 59 18.88
	12588.00	89.07	91.09	9844.51	2757.99	-778.41	2709.58	1.08	433349.06	648080.62	N 32 11 27.18	W 103 59 17.78
	12683.00	88.73	90.42	9846.33	2852.82	-779.66	2804.55	0.79	433347.81	648175.59	N 32 11 27.16	W 103 59 16.67
	12778.00	89.00	90.28	9848.21	2947.60	-780.24	2899.53	0.32	433347.23	648270.56	N 32 11 27.16	W 103 59 15.57
	12873.00	89.21	90.71	9849.70	3042.40	-781.06	2994.52	0.50	433346.41	648365.54	N 32 11 27.14	W 103 59 14.46
	12967.00	89.31	90.21	9850.91	3136.21	-781.82	3088.51	0.54	433345.66	648459.52	N 32 11 27.13	W 103 59 13.37
	13063.00	88.86	90.19	9852.44	3231.97	-782.15	3184.49	0.47	433345.32	648555.50	N 32 11 27.13	W 103 59 12.25
	13158.00	88.86	88.41	9854.33	3326.62	-780.99	3279.46	1.87	433346.48	648650.46	N 32 11 27.14	W 103 59 11.15
	13253.00	89.00	88.56	9856.11	3421.16	-778.48	3374.41	0.22	433348.99	648745.40	N 32 11 27.16	W 103 59 10.04
	13343.00	88.97	88.15	9857.70	3510.69	-775.90	3464.36	0.46	433351.58	648835.34	N 32 11 27.18	W 103 59 8.99
	13538.00	88.62	88.76	9861.80	3704.71	-770.64	3659.25	0.36	433356.83	649030.21	N 32 11 27.23	W 103 59 6.73
	13633.00	88.83	88.28	9863.92	3799.25	-768.19	3754.19	0.55	433359.29	649125.15	N 32 11 27.25	W 103 59 5.62
	13728.00	88.73	89.62	9865.94	3893.84	-766.45	3849.15	1.41	433361.03	649220.10	N 32 11 27.26	W 103 59 4.52
	13823.00	89.21	90.39	9867.65	3988.59	-766.45	3944.13	0.96	433361.02	649315.08	N 32 11 27.26	W 103 59 3.41
	13918.00	88.79	90.31	9869.31	4083.37	-767.03	4039.12	0.45	433360.44	649410.05	N 32 11 27.25	W 103 59 2.31
	14013.00	89.03	89.54	9871.11	4178.11	-766.91	4134.10	0.85	433360.56	649505.03	N 32 11 27.25	W 103 59 1.20
	14108.00	89.07	88.46	9872.69	4272.72	-765.25	4229.07	1.14	433362.22	649599.99	N 32 11 27.26	W 103 59 0.10
	14298.00	89.34	88.43	9875.32	4461.79	-760.10	4418.98	0.14	433367.37	649789.89	N 32 11 27.31	W 103 58 57.89
	14393.00	89.55	87.59	9876.24	4556.25	-756.80	4513.92	0.91	433370.67	649884.82	N 32 11 27.34	W 103 58 56.78
	14488.00	89.96	89.13	9876.65	4650.78	-754.08	4608.88	1.68	433373.39	649979.77	N 32 11 27.36	W 103 58 55.68
	14678.00	89.62	87.81	9877.35	4839.86	-749.01	4798.80	0.72	433378.46	650169.68	N 32 11 27.40	W 103 58 53.47
	14773.00	88.83	88.25	9878.63	4934.33	-745.74	4893.74	0.95	433381.73	650264.60	N 32 11 27.43	W 103 58 52.36
	14868.00	89.07	88.32	9880.37	5028.83	-742.90	4988.68	0.26	433384.57	650359.54	N 32 11 27.46	W 103 58 51.26
	14963.00	88.66	87.52	9882.26	5123.26	-739.45	5083.60	0.95	433388.02	650454.45	N 32 11 27.49	W 103 58 50.15
	15058.00	89.07	88.56	9884.14	5217.71	-736.20	5178.52	1.18	433391.27	650549.36	N 32 11 27.52	W 103 58 49.05
	15247.00	88.93	88.30	9887.44	5405.77	-731.03	5367.42	0.16	433396.44	650738.25	N 32 11 27.56	W 103 58 46.85
	15342.00	89.10	88.02	9889.07	5500.25	-727.98	5462.36	0.34	433399.49	650833.18	N 32 11 27.59	W 103 58 45.74
	15437.00	88.66	89.15	9890.93	5594.80	-725.63	5557.31	1.28	433401.84	650928.12	N 32 11 27.61	W 103 58 44.64
	15627.00	89.45	89.95	9894.06	5784.18	-724.14	5747.27	0.59	433403.33	651118.07	N 32 11 27.62	W 103 58 42.43
	15722.00	88.73	90.42	9895.57	5878.95	-724.45	5842.26	0.91	433403.02	651213.05	N 32 11 27.61	W 103 58 41.32
	15817.00	88.59	90.43	9897.79	5973.73	-725.15	5937.23	0.15	433402.32	651308.01	N 32 11 27.60	W 103 58 40.22
	15912.00	88.59	89.73	9900.13	6068.47	-725.28	6032.20	0.74	433402.19	651402.98	N 32 11 27.60	W 103 58 39.11
	16102.00	88.73	89.94	9904.57	6257.90	-724.74	6222.15	0.13	433402.73	651592.91	N 32 11 27.60	W 103 58 36.90
	16292.00	89.28	90.35	9907.87	6447.42	-725.22	6412.12	0.36	433402.25	651782.86	N 32 11 27.59	W 103 58 34.69
	16482.00	88.79	90.12	9911.07	6636.97	-726.00	6602.09	0.28	433401.47	651972.82	N 32 11 27.57	W 103 58 32.48
	16671.00	88.55	90.35	9915.46	6825.49	-726.77	6791.04	0.18	433400.70	652161.75	N 32 11 27.56	W 103 58 30.28
	16767.00	88.48	89.06	9917.94	6921.18	-726.28	6887.00	1.35	433401.19	652257.71	N 32 11 27.56	W 103 58 29.17
	16862.00	87.69	89.17	9921.12	7015.77	-724.81	6981.94	0.84	433402.66	652352.64	N 32 11 27.57	W 103 58 28.06
	16955.00	88.97	90.56	9923.83	7108.48	-724.59	7074.89	2.03	433402.88	652445.58	N 32 11 27.57	W 103 58 26.98
	17048.00	88.28	90.26	9926.06	7201.26	-725.26	7167.86	0.81	433402.21	652538.55	N 32 11 27.56	W 103 58 25.90
	17143.00	88.86	90.40	9928.43	7296.03	-725.80	7262.83	0.63	433401.67	652633.51	N 32 11 27.55	W 103 58 24.79
	17237.00	88.62	90.26	9930.50	7389.81	-726.34	7356.81	0.30	433401.12	652727.48	N 32 11 27.54	W 103 58 23.70
	17427.00	88.79	90.15	9934.79	7579.33	-727.02	7546.76	0.11	433400.44	652917.41	N 32 11 27.53	W 103 58 21.49
	17617.00	89.31	90.60	9937.94	7768.90	-728.27	7736.73	0.36	433399.20	653107.36	N 32 11 27.51	W 103 58 19.28
	17712.00	89.24	89.56	9939.15	7863.66	-728.40	7831.72	1.10	433399.07	653202.35	N 32 11 27.51	W 103 58 18.17
	17807.00	89.14	90.12	9940.49	7958.40	-728.13	7926.71	0.60	433399.33	653297.33	N 32 11 27.51	W 103 58 17.07
	17902.00	88.97	90.98	9942.06	8053.20	-729.05	8021.69	0.92	433398.42	653392.30	N 32 11 27.50	W 103 58 15.96
	18187.00	89.31	90.25	9946.33	8337.65	-732.11	8306.64	0.28	433395.36	653677.23	N 32 11 27.46	W 103 58 12.65
	18377.00	91.68	91.09	9944.69	8527.29	-734.33	8496.60	1.32	433393.14	653867.18	N 32 11 27.43	W 103 58 10.44
	18472.00	92.30	91.76	9941.39	8622.13	-736.69	8591.52	0.96	433390.78	653962.08	N 32 11 27.40	W 103 58 9.33
	18567.00	92.99	91.35	9937.01	8716.94	-739.26	8686.38	0.84	433388.21	654056.94	N 32 11 27.37	W 103 58 8.23
	18662.00	91.37	90.82	9933.39	8811.74	-741.06	8781.29	1.79	433386.41	654151.84	N 32 11 27.35	W 103 58 7.12
	18757.00	88.11	90.60	9933.83	8906.56	-742.24	8876.27	3.44	433385.23	654246.81	N 32 11 27.34	W 103 58 6.02
	18852.00	88.14	89.96	9936.93	9001.30	-742.70	8971.22	0.67	433384.77	654341.75	N 32 11 27.33	W 103 58 4.91
	18947.00	87.07	89.95	9940.90	9095.97	-742.63	9066.13	1.13	433384.84	654436.66	N 32 11 27.33	W 103 58 3.81
	19041.00	86.24	89.70	9946.39	9189.56	-742.34	9159.97	0.92	433385.13	654530.49	N 32 11 27.33	W 103 58 2.72
	19136.00	86.14	88.96	9952.70	9284.02	-741.23	9254.75	0.78	433386.24	654625.27	N 32 11 27.33	W 103 58 1.61
	19231.00	85.59	89.10	9959.55	9378.41	-739.63	9349.49	0.60	433387.84	654720.00	N 32 11 27.35	W 103 58 0.51
	19326.00	86.01	88.72	9966.51	9472.77	-737.83	9444.22	0.60	433389.64	654814.72	N 32 11 27.36	W 103 57 59.41
	19421.00	88.17	88.13	9971.33	9567.18	-735.22	9539.05	2.36	433392.25	654909.55	N 32 11 27.38	W 103 57 58.31
	19611.00	89.45	89.22	9975.28	9756.29	-730.83	9728.96	0.88	433396.64	655099.43	N 32 11 27.42	W 103 57 56.10
	19706.00	89.48	90.59	9976.16	9851.03	-730.67	9823.95	1.44	433396.80	655194.42	N 32 11 27.42	W 103 57 54.99

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 ° ' ")
	19801.00	89.58	91.11	9976.94	9945.88	-732.08	9918.93	0.56	433395.39	655289.40	N 32 11 27.40	W 103 57 53.89
	19896.00	89.41	90.54	9977.78	10040.72	-733.44	10013.92	0.63	433394.02	655384.37	N 32 11 27.38	W 103 57 52.78
	19991.00	88.86	87.45	9979.22	10135.33	-731.78	10108.88	3.30	433395.69	655479.33	N 32 11 27.40	W 103 57 51.67
100' FEL Cross	*20056.00*	*88.74*	*87.40*	*9980.58*	*10199.88*	*-728.86*	*10173.80*	*0.20*	*433398.61*	*655544.24*	*N 32 11 27.42*	*W 103 57 50.92*
Final MWD	20085.00	88.69	87.38	9981.23	10228.67	-727.54	10202.77	0.20	433399.93	655573.20	N 32 11 27.44	W 103 57 50.58
Proj to TD	20134.00	88.69	87.38	9982.35	10277.33	-725.30	10251.70	0.00	433402.17	655622.14	N 32 11 27.46	W 103 57 50.01

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	26.500	1/98.425	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / OXY Cedar Canyon 27-28 Fed 42H Gyro + MWD 0-20134' MD
	1	26.500	26.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / OXY Cedar Canyon 27-28 Fed 42H Gyro + MWD 0-20134' MD
	1	26.500	666.200	Act Stns	30.000	30.000	NAL_NSG+MSHOT	Original Borehole / OXY Cedar Canyon 27-28 Fed 42H Gyro +
	1	666.200	20134.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS	Original Borehole / OXY Cedar Canyon 27-28 Fed 42H Gyro +