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

Schlumberger

30-015-44546

November 16, 2018

OXY USA INC.
5 Greenway Plaza, Suite 110
Houston, TX 77046

Re:

13, 24S, 31E, Eddy NM
32.21059 -103.73732

CLIENT: OXY USA INC.
WELL: Mesa Verde BS Unit 21H
FIELD: Mesa Verde Bone Spring

RIG: H&P 639
COUNTY: Eddy
API NO: 30-015-44546
JOB NO: 18MLD3563

Enclosed, please find the original copy of the survey performed on the referenced well by Drilling & Measurements, a division of Schlumberger Technology Corporation (P-5 No. 754900).
Other information required by your office is as follows.

Name & Title of Surveyor	Drainhole Number	Surveyed Depths		Dates Performed		Type of Survey
Perry Hawks FE	Mesa Verde BS Unit 21H Original Hole	1091.00 Ft 15346.00 Ft	to	October 9, 2018 October 25, 2018	to	SlimPulse Third Party Correcte

If any other information is required, please contact the undersigned at the above letterhead and phone number.
Sincerely,

Blake Jones
Field Service Manager

3/21/19

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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Schlumberger

Well Reference:
13, 24S, 31E, Eddy NM
32.21059 -103.73732

I, Perry Hawks certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of October 09, 2018 through October 25, 2018, conduct or supervise the taking of the SlimPulse & Third Party Corrected surveys from a depth of 1091.00 feet to a depth of 15346.00 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 Mesa Verde BS Unit 21H Well (Original Hole) API No. 30-015-44546 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
Perry Hawks
FE

Subscribed and Sworn to before me this 16th day of November. (month) 2018 (yr)

My Commission expires:

8-16-2022

D. Adams (signature)
Notary Public

Adams County Colorado
(County State)

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

Schlumberger

Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 - 15389'MD Survey Geodetic Report

(Def Survey)

Report Date:	November 01, 2018 - 03:59 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	355.070 ° (Grid North)
Field:	NM Eddy County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy Mesa Verde BS Unit 21H / Oxy Mesa Verde BS Unit 21H	**TVD Reference Datum:**	RKB
Well:	Mesa Verde BS Unit 21H	**TVD Reference Elevation:**	3615.900 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3589.400 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.760 °
Survey Name:	Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 - 15389'MD	**Total Gravity Field Strength:**	998.4252mgn (9.80665 Based)
Survey Date:	August 01, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	201.803 ° / 5616.426 ft / 6.224 / 0.540	**Total Magnetic Field Strength:**	47978.800 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.894 °
Location Lat / Long:	N 32° 12' 38.11168", W 103° 44' 14.35574"	**Declination Date:**	October 04, 2018
Location Grid N/E Y/X:	N 440856.540 ftUS, E 725672.120 ftUS	**Magnetic Declination Model:**	IIFR1
CRS Grid Convergence Angle:	0.3177 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99994801	**Grid Convergence Used:**	0.3177 °
Version / Patch:	2.10.740.0	**Total Corr Mag North->Grid North:**	6.4423 °
		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	440856.54	725672.12	N 32 12 38.11	W 103 44 14.36
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	440856.54	725672.12	N 32 12 38.11	W 103 44 14.36
	96.57	0.78	253.88	96.57	-0.09	-0.13	-0.46	1.11	440856.41	725671.66	N 32 12 38.11	W 103 44 14.36
	187.73	0.84	247.46	187.72	-0.42	-0.56	-1.67	0.12	440855.98	725670.45	N 32 12 38.11	W 103 44 14.38
	276.60	0.88	250.03	276.58	-0.79	-1.04	-2.91	0.06	440855.50	725669.21	N 32 12 38.10	W 103 44 14.39
	370.99	1.00	251.84	370.96	-1.17	-1.55	-4.38	0.13	440854.99	725667.74	N 32 12 38.10	W 103 44 14.41
	465.23	1.03	251.64	465.18	-1.55	-2.07	-5.96	0.03	440854.47	725666.16	N 32 12 38.09	W 103 44 14.43
	559.53	1.12	257.85	559.46	-1.86	-2.53	-7.67	0.16	440854.01	725664.45	N 32 12 38.09	W 103 44 14.45
	653.88	1.09	259.14	653.80	-2.07	-2.90	-9.45	0.04	440853.65	725662.67	N 32 12 38.08	W 103 44 14.47
	748.41	1.16	270.73	748.31	-2.07	-3.05	-11.29	0.25	440853.49	725660.83	N 32 12 38.08	W 103 44 14.49
	842.96	1.24	271.52	842.84	-1.86	-3.01	-13.27	0.09	440853.53	725658.85	N 32 12 38.08	W 103 44 14.51
	937.34	1.18	262.98	937.20	-1.78	-3.10	-15.26	0.20	440853.44	725656.86	N 32 12 38.08	W 103 44 14.53
Last Gyro	1010.14	1.15	258.47	1009.98	-1.89	-3.34	-16.72	0.13	440853.20	725655.40	N 32 12 38.08	W 103 44 14.55
	1091.00	0.05	112.35	1090.84	-2.00	-3.52	-17.48	1.47	440853.02	725654.64	N 32 12 38.08	W 103 44 14.56
	1182.00	0.08	334.36	1181.84	-1.96	-3.48	-17.47	0.13	440853.06	725654.65	N 32 12 38.08	W 103 44 14.56
	1365.00	0.09	69.37	1364.84	-1.80	-3.31	-17.39	0.07	440853.23	725654.73	N 32 12 38.08	W 103 44 14.56
	1456.00	0.05	261.15	1455.84	-1.79	-3.29	-17.36	0.15	440853.25	725654.76	N 32 12 38.08	W 103 44 14.56
	1638.00	0.08	307.74	1637.84	-1.71	-3.23	-17.54	0.03	440853.31	725654.58	N 32 12 38.08	W 103 44 14.56
	1728.00	0.08	157.71	1727.84	-1.72	-3.24	-17.57	0.17	440853.30	725654.55	N 32 12 38.08	W 103 44 14.56
	1820.00	0.11	284.05	1819.84	-1.76	-3.28	-17.63	0.18	440853.26	725654.49	N 32 12 38.08	W 103 44 14.56
	1911.00	0.05	5.63	1910.84	-1.69	-3.22	-17.71	0.13	440853.32	725654.41	N 32 12 38.08	W 103 44 14.56
	2096.00	0.06	359.31	2095.84	-1.51	-3.05	-17.70	0.01	440853.50	725654.42	N 32 12 38.08	W 103 44 14.56
	2191.00	0.05	286.65	2190.84	-1.45	-2.98	-17.74	0.07	440853.56	725654.38	N 32 12 38.08	W 103 44 14.56
	2380.00	0.05	209.69	2379.84	-1.49	-3.03	-17.86	0.03	440853.51	725654.26	N 32 12 38.08	W 103 44 14.56
	2474.00	0.09	341.29	2473.84	-1.45	-3.00	-17.91	0.14	440853.54	725654.21	N 32 12 38.08	W 103 44 14.56
	2569.00	0.11	138.48	2568.84	-1.45	-2.99	-17.87	0.21	440853.55	725654.25	N 32 12 38.08	W 103 44 14.56
	2663.00	0.05	304.09	2662.84	-1.49	-3.04	-17.84	0.17	440853.50	725654.28	N 32 12 38.08	W 103 44 14.56
	2758.00	0.06	47.32	2757.84	-1.44	-2.98	-17.84	0.09	440853.56	725654.28	N 32 12 38.08	W 103 44 14.56
	2947.00	0.05	310.41	2946.84	-1.32	-2.86	-17.83	0.04	440853.68	725654.29	N 32 12 38.08	W 103 44 14.56
	3136.00	0.12	147.01	3135.84	-1.43	-2.97	-17.79	0.09	440853.57	725654.33	N 32 12 38.08	W 103 44 14.56
	3231.00	0.06	177.60	3230.84	-1.57	-3.11	-17.73	0.08	440853.43	725654.39	N 32 12 38.08	W 103 44 14.56
	3326.00	0.12	18.29	3325.84	-1.53	-3.06	-17.70	0.19	440853.48	725654.42	N 32 12 38.08	W 103 44 14.56
	3420.00	0.09	43.92	3419.84	-1.39	-2.92	-17.62	0.06	440853.62	725654.50	N 32 12 38.08	W 103 44 14.56
	3515.00	0.17	24.81	3514.84	-1.22	-2.73	-17.51	0.09	440853.81	725654.62	N 32 12 38.09	W 103 44 14.56
	3609.00	0.12	130.29	3608.84	-1.17	-2.67	-17.37	0.25	440853.87	725654.75	N 32 12 38.09	W 103 44 14.56
	3799.00	0.08	51.12	3798.84	-1.24	-2.72	-17.12	0.07	440853.82	725655.00	N 32 12 38.09	W 103 44 14.56
	3894.00	0.11	95.33	3893.83	-1.22	-2.68	-16.97	0.08	440853.86	725655.15	N 32 12 38.09	W 103 44 14.55
	4083.00	0.11	106.22	4082.83	-1.31	-2.75	-16.62	0.01	440853.79	725655.50	N 32 12 38.09	W 103 44 14.55
	4272.00	0.11	177.08	4271.83	-1.56	-2.98	-16.44	0.07	440853.56	725655.69	N 32 12 38.08	W 103 44 14.55
	4464.00	0.11	243.79	4463.83	-1.81	-3.25	-16.59	0.06	440853.29	725655.53	N 32 12 38.08	W 103 44 14.55
	4653.00	0.44	328.28	4652.83	-1.23	-2.71	-17.14	0.23	440853.83	725654.98	N 32 12 38.09	W 103 44 14.56
	4748.00	0.04	202.37	4747.83	-0.93	-2.43	-17.34	0.49	440854.11	725654.78	N 32 12 38.09	W 103 44 14.56
	4937.00	0.06	119.29	4936.83	-1.05	-2.54	-17.28	0.04	440854.00	725654.84	N 32 12 38.09	W 103 44 14.56
	5032.00	0.09	124.93	5031.83	-1.12	-2.61	-17.17	0.03	440853.93	725654.95	N 32 12 38.09	W 103 44 14.56
	5221.00	0.08	306.55	5220.83	-1.13	-2.61	-17.16	0.09	440853.93	725654.96	N 32 12 38.09	W 103 44 14.56
	5410.00	0.08	198.25	5409.83	-1.16	-2.66	-17.31	0.07	440853.88	725654.81	N 32 12 38.09	W 103 44 14.56
	5600.00	0.04	130.01	5589.83	-1.33	-2.83	-17.30	0.04	440853.71	725654.82	N 32 12 38.08	W 103 44 14.56
	5695.00	0.04	16.24	5694.83	-1.33	-2.82	-17.26	0.07	440853.72	725654.86	N 32 12 38.08	W 103 44 14.56
	5789.00	0.08	346.48	5788.83	-1.23	-2.72	-17.27	0.05	440853.82	725654.85	N 32 12 38.09	W 103 44 14.56
	5979.00	1.18	298.44	5978.82	-0.04	-1.68	-18.99	0.58	440854.86	725653.13	N 32 12 38.10	W 103 44 14.58
	6073.00	2.82	296.40	6072.76	1.68	-0.20	-21.90	1.77	440856.34	725650.22	N 32 12 38.11	W 103 44 14.61
	6168.00	3.65	277.14	6167.61	3.53	1.22	-26.99	1.43	440857.76	725645.13	N 32 12 38.13	W 103 44 14.67
	6263.00	4.57	261.39	6262.37	3.92	1.03	-33.74	1.52	440857.57	725638.39	N 32 12 38.12	W 103 44 14.75
	6358.00	6.21	251.98	6356.94	2.51	-1.13	-42.36	1.96	440855.41	725629.76	N 32 12 38.10	W 103 44 14.85
	6452.00	7.66	248.57	6450.25	-0.62	-5.19	-52.95	1.69	440851.35	725619.17	N 32 12 38.06	W 103 44 14.97
	6547.00	8.98	243.03	6544.25	-5.42	-11.07	-65.37	1.49	440845.47	725606.76	N 32 12 38.01	W 103 44 15.12
	6641.00	9.49	243.22	6637.03	-11.05	-17.89	-78.82	0.54	440838.65	725593.30	N 32 12 37.94	W 103 44 15.27
	6736.00	9.13	246.40	6730.78	-16.38	-24.44	-92.72	0.66	440832.10	725579.40	N 32 12 37.87	W 103 44 15.44
	6831.00	9.53	247.83	6824.53	-21.12	-30.42	-106.91	0.49	440826.12	725565.22	N 32 12 37.82	W 103 44 15.60
	6925.00	9.09	247.34	6917.29	-25.69	-36.22	-120.97	0.48	440820.32	725551.16	N 32 12 37.76	W 103 44 15.77
	7020.00	8.49	248.58	7011.17	-29.97	-41.67	-134.42	0.66	440814.87	725537.70	N 32 12 37.71	W 103 44 15.92
	7115.00	8.37	247.97	7105.15	-33.99	-46.83	-147.36	0.16	440809.71	725524.77	N 32 12 37.66	W 103 44 16.07
	7209.00	7.88	248.57	7198.20	-37.83	-51.75	-159.70	0.53	440804.79	725512.43	N 32 12 37.61	W 103 44 16.22
	7398.00	7.16	246.33	7385.58	-45.30	-61.21	-182.55	0.41	440795.33	725489.58	N 32 12 37.52	W 103 44 16.48
	7493.00	6.38	250.84	7479.91	-48.50	-65.32	-192.96	0.99	440791.22	725479.17	N 32 12 37.48	W 103 44 16.61
	7588.00	6.65	248.99	7574.30	-51.32	-69.03	-203.08	0.36	440787.52	725469.05	N 32 12 37.44	W 103 44 16.72
	7682.00	6.65	249.31	7667.67	-54.30	-72.90	-213.25	0.04	440783.64	725458.88	N 32 12 37.40	W 103 44 16.84
	7777.00	6.50	249.83	7762.04	-57.21	-76.70	-223.44	0.17	440779.85	725448.69	N 32 12 37.37	W 103 44 16.96
	7872.00	6.66	251.25	7856.42	-59.94	-80.32	-233.71	0.24	440776.22	725438.42	N 32 12 37.33	W 103 44 17.08
	7966.00	6.51	253.48	7949.80	-62.31	-83.59	-243.98	0.32	440772.96	725428.15	N 32 12 37.30	W 103 44 17.20
	8061.00	6.57	255.88	8044.18	-64.26	-86.45	-254.41	0.29	440770.10	725417.72	N 32 12 37.27	W 103 44 17.32
	8203.00	6.22	257.55	8185.30	-66.57	-90.09	-269.80	0.28	440766.46	725402.33	N 32 12 37.24	W 103 44 17.50
	8251.00	6.27	256.76	8233.01	-67.29	-91.25	-274.89	0.21	440765.30	725397.24	N 32 12 37.22	W 103 44 17.56
	8345.00	5.93	254.50	8326.48	-68.92	-93.72	-284.57	0.44	440762.82	725387.57	N 32 12 37.20	W 103 44 17.67
Bones Spring Intersection	*8453.04*	*5.30*	*254.06*	*8434.00*	*-70.90*	*-96.58*	*-294.75*	*0.58*	*440759.96*	*725377.39*	*N 32 12 37.17*	*W 103 44 17.79*
	8535.00	4.83	253.66	8515.64	-72.30	-98.59	-301.70	0.58	440757.95	725370.43	N 32 12 37.15	W 103 44 17.87
	8629.00	3.90	258.79	8609.36	-73.43	-100.33	-308.64	1.07	440756.22	725363.50	N 32 12 37.14	W 103 44 17.95
	8819.00	2.34	232.41	8799.09	-76.23	-103.95	-318.05	1.10	440752.59	725354.09	N 32 12 37.10	W 103 44 18.06

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 ° ' ")
	8913.00	4.10	224.70	8892.93	-79.45	-107.51	-321.93	1.92	440749.03	725350.20	N 32 12 37.07	W 103 44 18.11
	9008.00	4.01	229.17	8987.70	-83.59	-112.10	-326.84	0.35	440744.45	725345.30	N 32 12 37.02	W 103 44 18.17
	9198.00	3.25	263.64	9177.34	-87.63	-117.04	-337.22	1.19	440739.51	725334.92	N 32 12 36.97	W 103 44 18.29
	9292.00	3.91	277.00	9271.15	-87.03	-116.94	-343.05	1.13	440739.60	725329.08	N 32 12 36.97	W 103 44 18.36
	9387.00	4.53	281.01	9365.90	-85.33	-115.83	-349.94	0.72	440740.71	725322.20	N 32 12 36.98	W 103 44 18.44
	9482.00	5.02	295.53	9460.57	-82.19	-113.32	-357.38	1.37	440743.22	725314.76	N 32 12 37.01	W 103 44 18.52
	9576.00	4.84	312.65	9554.23	-77.18	-108.86	-364.01	1.57	440747.68	725308.13	N 32 12 37.05	W 103 44 18.60
	9671.00	4.26	323.43	9648.93	-71.22	-103.31	-369.06	1.09	440753.23	725303.08	N 32 12 37.11	W 103 44 18.66
	9727.00	4.25	334.87	9704.78	-67.50	-99.77	-371.18	1.51	440756.78	725300.96	N 32 12 37.14	W 103 44 18.68
	9767.00	4.37	337.43	9744.68	-64.65	-97.02	-372.39	0.57	440759.53	725299.75	N 32 12 37.17	W 103 44 18.70
	9862.00	8.36	292.52	9839.11	-58.02	-91.02	-380.17	6.42	440765.52	725291.97	N 32 12 37.23	W 103 44 18.79
	9956.00	15.04	328.43	9931.21	-43.93	-77.98	-392.89	10.20	440778.56	725279.25	N 32 12 37.36	W 103 44 18.93
100' FSL Cross	*9980.92*	*15.34*	*331.33*	*9955.26*	*-38.02*	*-72.34*	*-396.17*	*3.28*	*440784.21*	*725275.97*	*N 32 12 37.42*	*W 103 44 18.97*
	10052.00	16.39	338.97	10023.64	-19.76	-54.72	-404.28	3.28	440801.82	725267.86	N 32 12 37.59	W 103 44 19.06
	10146.00	23.41	9.33	10112.20	11.18	-23.80	-406.02	13.06	440832.74	725266.13	N 32 12 37.90	W 103 44 19.08
	10241.00	33.55	10.84	10195.60	54.85	20.72	-398.00	10.70	440877.26	725274.14	N 32 12 38.34	W 103 44 18.99
	10336.00	44.43	10.69	10269.33	112.31	79.36	-386.86	11.45	440935.89	725285.28	N 32 12 38.92	W 103 44 18.85
	10431.00	57.34	4.82	10329.17	184.09	152.23	-377.29	14.40	441008.76	725294.85	N 32 12 39.64	W 103 44 18.74
	10525.00	67.29	354.34	10372.88	266.82	235.19	-378.24	14.46	441091.72	725293.90	N 32 12 40.46	W 103 44 18.74
	10620.00	81.23	355.12	10398.59	358.03	326.02	-386.60	14.69	441182.54	725285.54	N 32 12 41.36	W 103 44 18.83
	10715.00	89.79	353.47	10406.02	452.64	420.16	-396.01	9.18	441276.68	725276.13	N 32 12 42.29	W 103 44 18.94
	10761.00	90.14	352.57	10406.05	498.61	465.82	-401.60	2.10	441322.34	725270.54	N 32 12 42.74	W 103 44 19.00
	10856.00	93.65	353.81	10402.91	593.49	560.08	-412.86	3.92	441416.59	725259.28	N 32 12 43.68	W 103 44 19.12
	10950.00	95.92	353.69	10395.06	687.13	653.19	-423.06	2.42	441509.70	725249.09	N 32 12 44.60	W 103 44 19.24
	11045.00	95.68	354.58	10385.46	781.63	747.21	-432.71	0.97	441603.71	725239.43	N 32 12 45.53	W 103 44 19.34
	11140.00	92.34	354.69	10378.82	876.38	841.55	-441.57	3.52	441698.04	725230.57	N 32 12 46.46	W 103 44 19.44
	11234.00	88.66	356.87	10378.00	970.35	935.27	-448.49	4.55	441791.76	725223.66	N 32 12 47.39	W 103 44 19.52
	11424.00	85.66	356.63	10387.41	1160.02	1124.71	-459.25	1.58	441981.19	725212.90	N 32 12 49.27	W 103 44 19.63
	11519.00	89.76	359.24	10391.21	1254.79	1219.54	-462.66	5.11	442076.02	725209.48	N 32 12 50.20	W 103 44 19.66
	11614.00	92.78	1.10	10389.10	1349.38	1314.50	-462.38	3.73	442170.97	725209.76	N 32 12 51.14	W 103 44 19.65
	11709.00	93.23	2.03	10384.12	1443.64	1408.34	-459.79	1.09	442265.80	725212.36	N 32 12 52.08	W 103 44 19.62
	11804.00	93.06	1.91	10378.91	1537.81	1504.14	-456.53	0.22	442360.60	725215.62	N 32 12 53.02	W 103 44 19.57
	11898.00	93.20	2.00	10373.78	1630.99	1597.94	-453.33	0.18	442454.40	725218.82	N 32 12 53.95	W 103 44 19.53
	11993.00	92.58	1.85	10368.99	1725.19	1692.77	-450.14	0.67	442549.22	725222.00	N 32 12 54.89	W 103 44 19.49
	12088.00	93.02	1.66	10364.35	1819.43	1787.61	-447.23	0.50	442644.05	725224.91	N 32 12 55.82	W 103 44 19.45
	12182.00	92.10	0.70	10360.15	1912.80	1881.49	-445.30	1.41	442737.93	725226.84	N 32 12 56.75	W 103 44 19.42
	12277.00	92.92	0.02	10355.99	2007.31	1976.40	-444.70	1.12	442832.83	725227.44	N 32 12 57.69	W 103 44 19.40
	12372.00	91.13	0.45	10352.63	2101.86	2071.34	-444.31	1.94	442927.76	725227.83	N 32 12 58.63	W 103 44 19.39
	12466.00	93.02	2.18	10349.23	2195.23	2165.24	-442.16	2.72	443021.66	725229.98	N 32 12 59.56	W 103 44 19.36
	12561.00	92.16	0.87	10344.94	2289.53	2260.11	-439.63	1.65	443116.53	725232.51	N 32 13 0.50	W 103 44 19.33
	12656.00	93.02	1.77	10340.64	2383.87	2354.98	-437.45	1.31	443211.40	725234.70	N 32 13 1.44	W 103 44 19.30
	12845.00	92.09	1.92	10332.22	2571.36	2543.70	-431.37	0.50	443400.10	725240.77	N 32 13 3.31	W 103 44 19.21
	12940.00	91.17	0.86	10328.52	2665.74	2638.63	-429.07	1.48	443495.02	725243.08	N 32 13 4.24	W 103 44 19.18
	13129.00	90.65	0.37	10326.51	2853.83	2827.59	-427.04	0.38	443683.98	725245.11	N 32 13 6.11	W 103 44 19.14
	13318.00	91.06	359.92	10323.69	3042.07	3016.57	-426.56	0.32	443872.95	725245.58	N 32 13 7.98	W 103 44 19.13
	13507.00	90.34	359.57	10321.39	3230.42	3205.55	-427.40	0.42	444061.92	725244.74	N 32 13 9.85	W 103 44 19.12
	13697.00	89.82	359.80	10321.12	3419.81	3395.55	-428.45	0.30	444251.90	725243.70	N 32 13 11.73	W 103 44 19.12
	13791.00	89.96	359.73	10321.30	3513.49	3489.55	-428.83	0.17	444345.90	725243.31	N 32 13 12.66	W 103 44 19.12
	13886.00	89.72	359.54	10321.57	3608.19	3584.54	-429.44	0.32	444440.89	725242.71	N 32 13 13.60	W 103 44 19.12
	13980.00	89.58	359.02	10322.14	3701.93	3678.53	-430.62	0.57	444534.88	725241.53	N 32 13 14.53	W 103 44 19.13
	14075.00	89.96	359.44	10322.52	3796.68	3773.52	-431.89	0.60	444629.86	725240.25	N 32 13 15.47	W 103 44 19.14
	14170.00	90.68	0.07	10321.99	3891.38	3868.52	-432.30	1.01	444724.85	725239.84	N 32 13 16.41	W 103 44 19.14
	14264.00	90.07	359.44	10321.38	3985.04	3962.52	-432.70	0.93	444818.84	725239.44	N 32 13 17.34	W 103 44 19.14
	14359.00	88.28	359.59	10322.74	4079.74	4057.50	-433.51	1.89	444913.82	725238.64	N 32 13 18.28	W 103 44 19.14
	14548.00	90.92	3.65	10324.06	4267.45	4246.36	-428.16	2.56	445102.67	725243.98	N 32 13 20.15	W 103 44 19.07
	14643.00	91.44	2.17	10322.11	4361.54	4341.22	-423.34	1.65	445197.52	725248.80	N 32 13 21.09	W 103 44 19.00
	14737.00	91.17	0.76	10319.97	4454.93	4435.16	-420.94	1.53	445291.46	725251.20	N 32 13 22.02	W 103 44 18.97
	14926.00	91.03	359.74	10316.34	4643.12	4624.12	-420.11	0.54	445480.41	725252.03	N 32 13 23.89	W 103 44 18.95
	15020.00	90.93	359.63	10314.73	4736.80	4718.11	-420.63	0.16	445574.39	725251.51	N 32 13 24.82	W 103 44 18.95
	15115.00	90.96	359.49	10313.16	4831.50	4813.09	-421.36	0.15	445669.37	725250.78	N 32 13 25.76	W 103 44 18.95
	15209.00	91.20	359.59	10311.39	4925.19	4907.07	-422.12	0.28	445763.35	725250.03	N 32 13 26.69	W 103 44 18.95
	15304.00	90.86	359.74	10309.88	5019.87	5002.05	-422.67	0.39	445858.32	725249.47	N 32 13 27.63	W 103 44 18.95
100' FNL Cross	*15311.00*	*90.88*	*359.74*	*10309.58*	*5026.85*	*5009.05*	*-422.70*	*0.31*	*445865.32*	*725249.44*	*N 32 13 27.70*	*W 103 44 18.95*
Final MWD	15348.00	90.99	359.72	10309.01	5061.73	5044.05	-422.87	0.31	445900.32	725249.27	N 32 13 28.05	W 103 44 18.95
Proj to TD	15389.00	90.99	359.72	10308.26	5104.58	5087.04	-423.08	0.00	445943.31	725249.06	N 32 13 28.47	W 103 44 18.95

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 Mesa Verde BS Unit 21H Gyro+MWD 0 - 15389'MD
	1	26.500	26.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 - 15389'MD
	1	26.500	1010.000	Act Stns	30.000	30.000	NAL_NSG+MSHOT	Original Borehole / Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 -
	1	1010.000	3609.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS	Original Borehole / Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 -
	1	3609.000	4653.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 -
	1	4653.000	9482.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS	Original Borehole / Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 -
	1	9482.000	10950.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 -
	1	10950.000	15389.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS	Original Borehole / Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 -

Schlumberger

OXY

Borehole:	Well:	Field:	Structure:
Original Borehole	Mesa Verde BS Unit 21H	NM Eddy County (NAD 83)	Oxy Mesa Verde BS Unit 21H

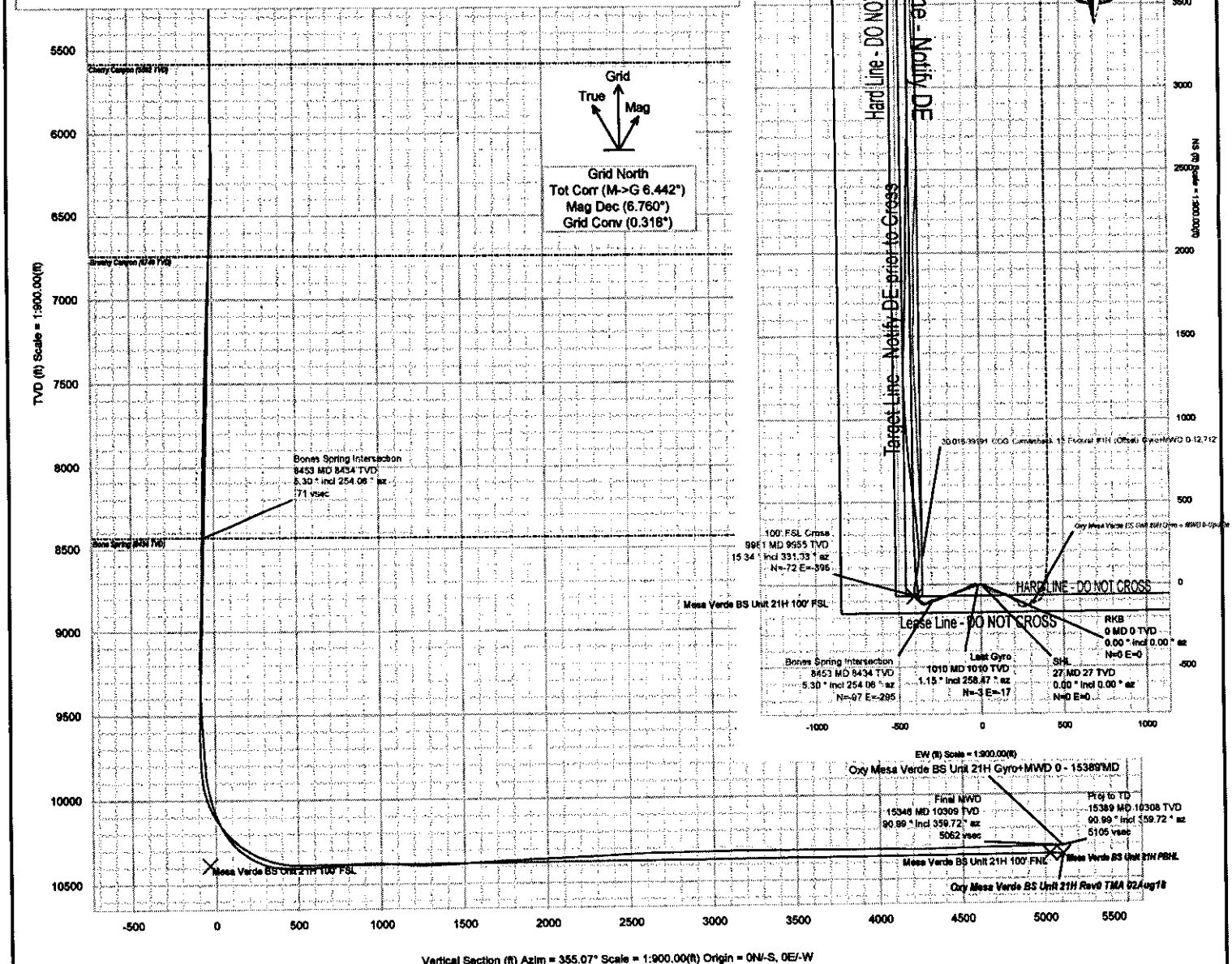
Gravity & Magnetic Parameters
Model: IIFR1 Dip: 59.894° Date: 04-Oct-2018
MagDec: 6.76° FS: 47975.8nT Gravity FS: 998.428mgn (9.80665 Based)

Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet
Lat: N 32 12 38.11 Northing: 440656.548US Grid Conv: 0.3177°
Lon: W 103 44 14.36 Easting: 728872.125US Scale Fact: 0.99994261

Miscellaneous
Slot: Oxy Mesa Verde BS Unit 21H TVD Ref: RKB(3616.8ft above MSL)
Plan: Oxy Mesa Verde BS Unit 21H Gyro+MWD 0 - 15389'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	1010.14	1.15	258.47	1009.98	-3.34	-3.34	-16.72	0.13
Bones Spring Intersection	8453.04	5.30	254.06	8434.00	-96.58	-96.58	-294.75	0.58
100' FSL Cross	9960.92	15.34	331.33	9955.26	-72.34	-72.34	-396.17	3.28
100' FNL Cross	15311.00	90.88	359.74	10309.58	5009.05	5009.05	-422.70	0.31
Final MWD	15346.00	90.99	359.72	10309.01	5044.05	5044.05	-422.87	0.31
Proj to TD	15389.00	90.99	359.72	10308.26	5087.04	5087.04	-423.08	0.00



Vertical Section (ft) Azim = 355.07° Scale = 1:900.00(ft) Origin = 0N/-S, 0E/-W