

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

July 30, 2018

OXY USA INC.

HOBBS OCD
NOV 06 2018
RECEIVED

18, 24S, 32E, Lea NM
32.21080 103.71460

Re:

CLIENT: OXY USA INC.
WELL: Mesa Verde BS Unit 12H
FIELD: Mesa Verde Bone Spring

RIG: H & P 657
COUNTY: Lea
API NO: 30-025-44186
JOB NO: 18MLD3087

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.

<u>Name & Title of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Kristina Hansen FE	Mesa Verde BS Unit 12H Original Hole	10719.00 to 18117.00 Ft	June 20, 2018 to June 25, 2018	TelePacer SlimPulse

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

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

Well Reference:

18, 24S, 32E, Lea NM
32.21080 103.71460

I, Kristina Hansen certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of June 20, 2018 through June 25, 2018, conduct or supervise the taking of the TelePacer & SlimPulse surveys from a depth of 10719.00 feet to a depth of 18117.00 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 12H Well (Original Hole) API No. 30-025-44186 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 
Kristina Hansen
FE

Subscribed and Sworn to before me this 30th day of July (month) 2018 (yr)

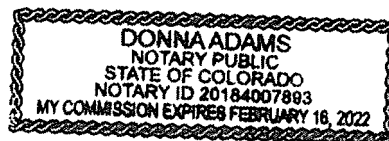
My Commission expires:

2-16-2022

D. Adams
Notary Public

(signature)

Adams County Colorado
(County State)

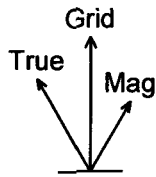


Schlumberger

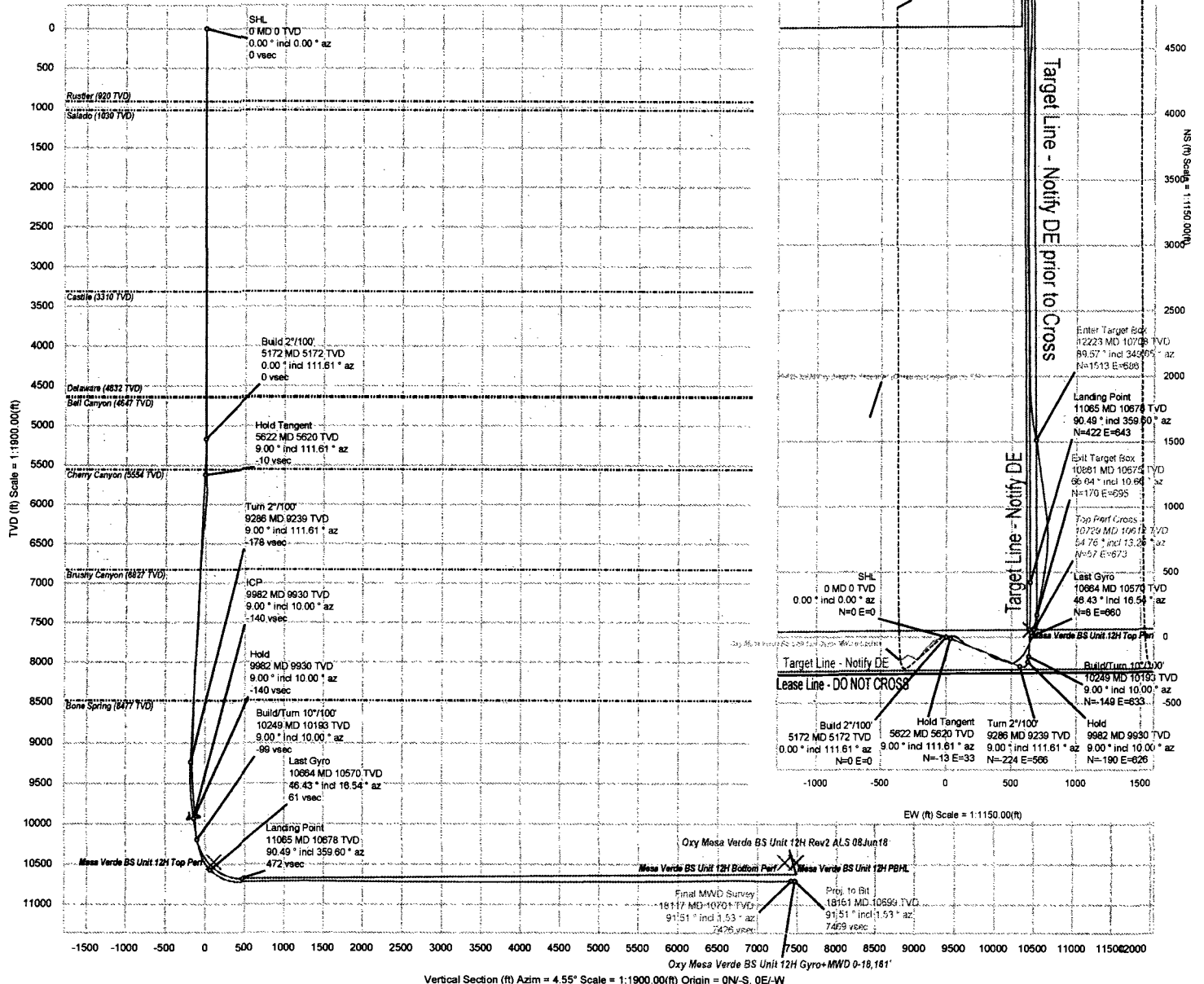
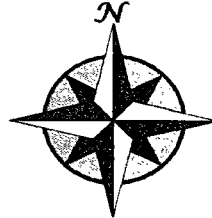
OXY



Borehole:			Well:			Field:			Structure:		
Original Borehole			Oxy Mesa Verde BS Unit 12H			NM Lea County (NAD 83)			Oxy Mesa Verde BS Unit 12H		
Gravity & Magnetic Parameters						Surface Location			Miscellaneous		
Model: HD01 2018			Date: 07-Jun-2018			NAD83 New Mexico State Plane, Eastern Zone, US Feet			Oxy Mesa Verde BS Unit 12H		
Dip: 59.923°			FS: 47996.797nT			Lat: N 32 12 38.28			TVD Ref: RKB=26.5' (3588' above MSL)		
MagDec: 6.822°			Gravity PS: 988.429mgn (9.80665 Based)			Northings: 441014.48713			Plan: Oxy Mesa Verde BS Unit 12H Rev2 ALS 08Jun18		
						Lon: W 103 42 52.88			Scale Fact: 0.99995102		
						Eastings: 732649.96713					



Grid North
Tot Corr (M->G 6.492°)
Mag Dec (6.822°)
Grid Conv (0.330°)



Oxy Mesa Verde BS Unit 12H Gyro+MWD 0-18,161' Survey Geodetic Report

(Def Survey)



Report Date: June 25, 2018 - 10:23 AM
 Client: OXY
 Field: NM Lea County (NAD 83)
 Structure / Slot: Oxy Mesa Verde BS Unit 12H / Oxy Mesa Verde BS Unit 12H
 Well: Oxy Mesa Verde BS Unit 12H
 Borehole: Original Borehole
 UWI / API#: Unknown / 30-025-44186
 Survey Name: Oxy Mesa Verde BS Unit 12H Gyro+MWD 0-18,161'
 Survey Date: June 07, 2018
 Tort / AHD / DDI / ERD Ratio: 250.550' / 8319.025 ft / 6.548 / 0.776
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 12' 39.28331", W 103° 42' 52.89471"
 Location Grid N/E Y/X: N 441014.480 ftUS, E 732669.960 ftUS
 CRS Grid Convergence Angle: 0.3298°
 Grid Scale Factor: 0.99995102
 Version / Patch: 2.10.720.0

Survey / DLS Computation: Minimum Curvature / Lubinski
 Vertical Section Azimuth: 4.549° (Grid North)
 Vertical Section Origin: 0.000 ft, 0.000 ft
 TVD Reference Datum: RKB=26.5'
 TVD Reference Elevation: 3598.000 ft above MSL
 Seabed / Ground Elevation: 3571.500 ft above MSL
 Magnetic Declination: 6.822°
 Total Gravity Field Strength: 998.4290mgn (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 47996.797 nT
 Magnetic Dip Angle: 59.923°
 Declination Date: June 07, 2018
 Magnetic Declination Model: HDGM 2018
 North Reference: Grid North
 Grid Convergence Used: 0.3298°
 Total Corr Mag North->Grid: 6.4920°
 North: Well Head
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/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	441014.48	732669.96	N 32° 12' 39.28"	W 103° 42' 52.89"
SHL	26.50	0.00	0.00	26.50	0.00	0.00	0.00	0.00	441014.48	732669.96	N 32° 12' 39.28"	W 103° 42' 52.89"
	84.83	0.95	337.23	84.83	0.43	0.45	-0.19	1.63	441014.93	732669.77	N 32° 12' 39.29"	W 103° 42' 52.90"
	178.16	0.96	335.99	178.14	1.80	1.87	-0.80	0.02	441016.35	732669.16	N 32° 12' 39.30"	W 103° 42' 52.90"
	271.41	0.81	327.42	271.38	3.02	3.14	-1.48	0.21	441017.62	732668.48	N 32° 12' 39.31"	W 103° 42' 52.91"
	364.72	0.58	309.38	364.69	3.81	4.00	-2.20	0.34	441018.48	732667.76	N 32° 12' 39.32"	W 103° 42' 52.92"
	458.12	0.50	287.80	458.08	4.17	4.42	-2.95	0.23	441018.90	732667.01	N 32° 12' 39.33"	W 103° 42' 52.93"
	551.46	0.66	264.25	551.42	4.17	4.49	-3.87	0.30	441018.97	732666.09	N 32° 12' 39.33"	W 103° 42' 52.94"
	644.76	0.91	263.36	644.71	3.93	4.35	-5.14	0.27	441018.83	732664.82	N 32° 12' 39.33"	W 103° 42' 52.95"
	738.01	0.97	266.88	737.95	3.68	4.22	-6.67	0.09	441018.70	732663.29	N 32° 12' 39.33"	W 103° 42' 52.97"
	831.30	0.93	267.32	831.22	3.48	4.15	-8.21	0.04	441018.63	732661.75	N 32° 12' 39.32"	W 103° 42' 52.99"
	924.66	0.77	271.99	924.57	3.36	4.13	-9.60	0.19	441018.61	732660.36	N 32° 12' 39.32"	W 103° 42' 53.01"
	1017.95	0.46	279.06	1017.86	3.36	4.21	-10.59	0.34	441018.69	732659.37	N 32° 12' 39.33"	W 103° 42' 53.02"
	1111.20	0.05	69.67	1111.11	3.41	4.29	-10.92	0.54	441018.77	732659.04	N 32° 12' 39.33"	W 103° 42' 53.02"
	1204.51	0.06	68.17	1204.42	3.45	4.32	-10.84	0.01	441018.80	732659.12	N 32° 12' 39.33"	W 103° 42' 53.02"
	1297.79	0.03	74.30	1297.70	3.48	4.34	-10.77	0.03	441018.82	732659.19	N 32° 12' 39.33"	W 103° 42' 53.02"
	1390.85	0.06	63.39	1390.76	3.51	4.37	-10.70	0.03	441018.85	732659.26	N 32° 12' 39.33"	W 103° 42' 53.02"
	1484.17	0.03	60.40	1484.08	3.55	4.41	-10.64	0.03	441018.89	732659.32	N 32° 12' 39.33"	W 103° 42' 53.02"
	1577.46	0.07	59.64	1577.37	3.59	4.45	-10.57	0.04	441018.93	732659.39	N 32° 12' 39.33"	W 103° 42' 53.02"
	1670.80	0.06	73.21	1670.71	3.65	4.49	-10.47	0.02	441018.97	732659.49	N 32° 12' 39.33"	W 103° 42' 53.02"
	1764.09	0.06	9.38	1764.00	3.71	4.55	-10.42	0.07	441019.03	732659.54	N 32° 12' 39.33"	W 103° 42' 53.02"
	1857.47	0.05	1.46	1857.38	3.80	4.64	-10.41	0.01	441019.12	732659.55	N 32° 12' 39.33"	W 103° 42' 53.02"
	1952.16	0.06	354.79	1952.07	3.89	4.73	-10.41	0.01	441019.21	732659.55	N 32° 12' 39.33"	W 103° 42' 53.02"
	2046.99	0.06	0.72	2046.90	3.99	4.83	-10.42	0.01	441019.31	732659.54	N 32° 12' 39.33"	W 103° 42' 53.02"
	2141.59	0.06	9.62	2141.50	4.09	4.93	-10.41	0.01	441019.41	732659.55	N 32° 12' 39.33"	W 103° 42' 53.02"
	2236.07	0.05	17.62	2235.98	4.18	5.02	-10.39	0.01	441019.50	732659.57	N 32° 12' 39.33"	W 103° 42' 53.02"
	2330.87	0.05	12.20	2330.78	4.26	5.10	-10.37	0.00	441019.58	732659.59	N 32° 12' 39.33"	W 103° 42' 53.02"
	2425.49	0.05	16.07	2425.40	4.34	5.18	-10.35	0.00	441019.66	732659.61	N 32° 12' 39.34"	W 103° 42' 53.01"
	2520.05	0.05	13.25	2519.96	4.42	5.26	-10.33	0.00	441019.74	732659.64	N 32° 12' 39.34"	W 103° 42' 53.01"
	2614.71	0.03	301.96	2614.62	4.47	5.31	-10.34	0.05	441019.79	732659.62	N 32° 12' 39.34"	W 103° 42' 53.01"
	2709.13	0.04	334.35	2709.04	4.51	5.35	-10.37	0.02	441019.83	732659.59	N 32° 12' 39.34"	W 103° 42' 53.02"
	2803.71	0.03	347.02	2803.62	4.57	5.41	-10.39	0.01	441019.89	732659.57	N 32° 12' 39.34"	W 103° 42' 53.02"
	2898.24	0.02	313.77	2898.15	4.60	5.44	-10.41	0.02	441019.92	732659.55	N 32° 12' 39.34"	W 103° 42' 53.02"
	2992.90	0.04	335.18	2992.81	4.64	5.48	-10.44	0.02	441019.96	732659.53	N 32° 12' 39.34"	W 103° 42' 53.02"
	3087.64	0.03	297.34	3087.55	4.68	5.53	-10.47	0.03	441020.01	732659.49	N 32° 12' 39.34"	W 103° 42' 53.02"
	3182.35	0.04	326.96	3182.26	4.71	5.56	-10.51	0.02	441020.04	732659.45	N 32° 12' 39.34"	W 103° 42' 53.02"
	3277.06	0.07	334.77	3276.97	4.79	5.64	-10.55	0.03	441020.12	732659.41	N 32° 12' 39.34"	W 103° 42' 53.02"
	3371.77	0.07	321.78	3371.68	4.88	5.74	-10.61	0.02	441020.22	732659.35	N 32° 12' 39.34"	W 103° 42' 53.02"
	3466.32	0.07	319.38	3466.23	4.97	5.83	-10.69	0.00	441020.31	732659.27	N 32° 12' 39.34"	W 103° 42' 53.02"
	3560.94	0.07	332.96	3560.85	5.06	5.93	-10.75	0.02	441020.41	732659.21	N 32° 12' 39.34"	W 103° 42' 53.02"
	3655.59	0.07	321.12	3655.50	5.15	6.02	-10.81	0.02	441020.50	732659.15	N 32° 12' 39.34"	W 103° 42' 53.02"
	3750.32	0.06	314.04	3750.23	5.22	6.10	-10.89	0.01	441020.58	732659.07	N 32° 12' 39.34"	W 103° 42' 53.02"
	3844.93	0.03	304.28	3844.84	5.26	6.15	-10.94	0.03	441020.63	732659.02	N 32° 12' 39.34"	W 103° 42' 53.02"
	3939.69	0.02	250.02	3939.60	5.27	6.16	-10.98	0.03	441020.64	732658.98	N 32° 12' 39.34"	W 103° 42' 53.02"
	4034.16	0.03	278.02	4034.07	5.26	6.16	-11.02	0.02	441020.64	732658.94	N 32° 12' 39.34"	W 103° 42' 53.02"
	4128.84	0.02	276.67	4128.75	5.27	6.16	-11.06	0.01	441020.64	732658.90	N 32° 12' 39.34"	W 103° 42' 53.02"
	4223.59	0.04	260.15	4223.50	5.26	6.16	-11.11	0.02	441020.64	732658.85	N 32° 12' 39.34"	W 103° 42' 53.02"
	4318.29	0.03	260.69	4318.20	5.24	6.15	-11.17	0.01	441020.63	732658.80	N 32° 12' 39.34"	W 103° 42' 53.02"
	4413.06	0.02	299.10	4412.97	5.25	6.15	-11.20	0.02	441020.63	732658.76	N 32° 12' 39.34"	W 103° 42' 53.02"
	4507.65	0.03	354.82	4507.56	5.28	6.19	-11.22	0.03	441020.67	732658.74	N 32° 12' 39.35"	W 103° 42' 53.02"
	4602.45	0.02	227.01	4602.36	5.29	6.20	-11.24	0.05	441020.68	732658.73	N 32° 12' 39.35"	W 103° 42' 53.03"
	4697.12	0.03	262.06	4697.03	5.27	6.19	-11.27	0.02	441020.66	732658.69	N 32° 12' 39.35"	W 103° 42' 53.03"
	4791.88	0.05	237.98	4791.79	5.24	6.16	-11.33	0.03	441020.64	732658.63	N 32° 12' 39.34"	W 103° 42' 53.03"
	4886.64	0.07	243.19	4886.55	5.19	6.11	-11.42	0.02	441020.59	732658.54	N 32° 12' 39.34"	W 103° 42' 53.03"
	4981.17	0.25	212.46	4981.08	4.97	5.91	-11.58	0.20	441020.39	732658.38	N 32° 12' 39.34"	W 103° 42' 53.03"
	5075.75	0.48	186.81	5075.65	4.40	5.34	-11.74	0.29	441018.82	732658.22	N 32° 12' 39.34"	W 103° 42' 53.03"
	5170.36	0.67	145.60	5170.26	3.57	4.49	-11.47	0.47	441018.97	732658.49	N 32° 12' 39.33"	W 103° 42' 53.03"
	5265.03	1.22	110.69	5264.92	2.86	3.68	-10.22	0.82	441018.16	732659.74	N 32° 12' 39.32"	W 103° 42' 53.01"
	5359.67	3.54	98.04	5359.47	2.40	2.92	-6.38	2.50	441017.40	732663.58	N 32° 12' 39.31"	W 103° 42' 52.97"
	5454.23	5.31	93.45	5453.74	2.31	2.24	0.88	1.91	441016.72	732670.84	N 32° 12' 39.31"	W 103° 42' 52.88"
	5549.03	6.97	85.50	5548.00	3.30	2.43	10.99	1.96	441016.91	732680.95	N 32° 12' 39.31"	W 103° 42' 52.77"
	5643.64	8.93	81.85	5641.69	5.81	3.92	23.98	2.14	441018.40	732693.94	N 32° 12' 39.32"	W 103° 42' 52.62"
	5738.14	10.62	81.02	5734.82	9.46	6.32	39.85	1.79	441020.80	732709.81	N 32° 12' 39.34"	W 103° 42' 52.43"
	5832.79	10.13	94.69	5827.94	11.48	7.00	56.76	2.65	441021.48	732726.72	N 32° 12' 39.35"	W 103° 42' 52.23"
	5927.51	9.66	113.40	5921.27	8.90	3.17	72.36	3.42	441017.65	732742.32	N 32° 12' 39.31"	W 103° 42' 52.05"
	6022.39	9.30	128.43	6014.87	2.05	-4.76	85.67	2.63	441009.72	732755.63	N 32° 12' 39.23"	W 103° 42' 51.90"
	6117.03	9.19	130.90	6108.28	-6.69	-14.46	97.38	0.44	441000.02	732767.33	N 32° 12' 39.13"	W 103° 42' 51.76"
	6212.03	8.90	130.23	6202.10	-15.48	-24.18	108.72	0.32	440990.30	732778.68	N 32° 12' 39.04"	W 103° 42' 51.63"
	6306.90	8.33	131.27	6295.90	-23.87	-33.45	119.49	0.62	440981.03	732789.44	N 32° 12' 38.95"	W 103° 42' 51.51"
	6401.57	8.43	129.74	6389.56	-31.97	-42.41	129.98	0.26	440972.07	732799.93	N 32° 12' 38.86"	W 103° 42' 51.38"
	6496.33	9.08	123.23	6483.22	-39.56	-50.95	141.58	1.25	440963.53	732811.53	N 32° 12' 38.77"	W 103° 42' 51.25"
	6591.15	10.09	117.30	6576.71	-46.36	-58.86	155.22	1.49	440955.63	732825.17	N 32° 12' 38.69"	W 103°

[illegible]

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 ° ' ")
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 12H Gyro+MWD 0-18,161'			
	1	26.500	26.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only		Original Borehole / Oxy Mesa Verde BS Unit 12H Gyro+MWD 0-18,161'			
	1	26.500	10663.860	Act Stns	30.000	30.000	NAL_NSG+MSHOT		Original Borehole / Oxy Mesa Verde BS Unit 12H Gyro+MWD 0-18,161'			
	1	10663.860	18161.000	Act Stns	30.000	30.000	NAL_MWD_PLUS_0.5_DEG		Original Borehole / Oxy Mesa Verde BS Unit 12H Gyro+MWD 0-			

...Oxy Mesa Verde BS Unit 12H\Original Borehole\Oxy Mesa Verde BS Unit 12H Gyro+MWD 0-18,161'

OXY USA Inc.
Mesa Verde BS Unit 12H
API No. 30-025-44186

