

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

30-015-40075

December 5, 2018

Oxy USA Incorporated
5 Greenway Plaza Suite 110
Houston, TX 77046

NM OIL CONSERVATION
ARTESIA DISTRICT

MAR 15 2019

RECEIVED

Re:

28, 23S, 31E, Eddy NM
N 32.26985 W -103.78908

CLIENT: Oxy USA Incorporated
WELL: Iridium MDP1 28-21 Federal Com 41H
FIELD: Ingle Wells Bone Spring

RIG: H&P 617
COUNTY: Eddy
API NO: 30-015-45075
JOB NO: 18MLD4181

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>
Chris Heimann FE	Iridium MDP1 28-21 Federal Com 41H Original Hole	695.00 Ft to 18028.00 Ft	October 13, 2018 to November 18, 2018	TelePacer/SlimPulse Third Party Corrected

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

Cody Nelms
Field Service Manager

Schlumberger-Private

01211

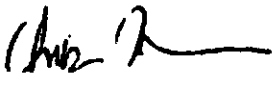
Oilfield Services, Central U.S. Land
Schlumberger Drilling and Measurements
Drilling Group
Geo Market Area: South West Texas Basin
7220 W I-H 20
Midland, Texas 79706
Phone : (432) 742-5400 (Main)
Fax : (432) 742-5606 (Shared)

Schlumberger

Well Reference:

28, 23S, 31E, Eddy NM
N 32.26985 W -103.78908

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 October 13, 2018 through November 18, 2018, conduct or supervise the taking of the TelePacer/SlimPulse & Third Party Corrected surveys from a depth of 695.00 feet to a depth of 18028.00 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 Incorporated for the Iridium MDP1 28-21 Federal Corn 41H Well (Original Hole) API No. 30-015-45075 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 5th day of December (month) 2018 (yr)

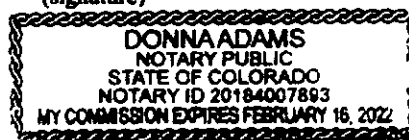
My Commission expires:

2-16-2022

D. Adams
Notary Public

Adams County Colorado
(County State)

(signature)



Survey Geodetic Report

(Def Survey)

[illegible]

Original BoreholeXy Indium MDP1 28-21 Gyro + MWD 0-18072R MD

Comments	MD	Ind	Actm Gnd	TVD	VSEC	NS	EW	DLS	Northing	Eastng	Lat/Long	FW
	1562.00	11.18	116.07	5831.31	-152.11	34.21	34.21	6.38	462181.34	706567.22	N 32 16 5.88 W	103 47 20.31
	1563.00	11.05	117.41	5831.73	-154.04	38.32	38.32	6.50	462178.60	706563.03	N 32 16 9.85 W	103 47 20.25
	1564.00	10.94	118.49	5830.56	-154.81	41.04	41.04	6.58	462177.80	706564.55	N 32 16 9.82 W	103 47 20.23
	1565.00	10.83	119.25	5830.17	-155.80	44.69	44.69	6.62	462175.64	706568.20	N 32 16 9.82 W	103 47 20.19
	1566.00	10.78	120.00	5829.80	-156.83	48.32	48.32	6.66	462172.52	706562.63	N 32 16 9.80 W	103 47 20.14
	1567.00	10.70	120.70	5829.00	-157.47	52.14	52.14	6.68	462168.91	706560.64	N 32 16 9.85 W	103 47 20.09
	1568.00	10.63	121.00	5828.30	-158.03	55.96	55.96	6.70	462164.95	706558.64	N 32 16 9.85 W	103 47 20.05
	1569.00	10.53	121.61	5827.47	-158.87	59.78	59.78	6.72	462160.91	706556.64	N 32 16 9.85 W	103 47 19.99
	1570.00	10.43	122.00	5826.80	-159.55	63.60	63.60	6.74	462156.82	706554.64	N 32 16 9.85 W	103 47 19.95
	1571.00	10.33	122.30	5826.10	-160.23	67.42	67.42	6.76	462152.75	706552.64	N 32 16 9.85 W	103 47 19.91
	1572.00	10.23	122.60	5825.40	-160.91	71.24	71.24	6.78	462148.68	706550.64	N 32 16 9.85 W	103 47 19.87
	1573.00	10.13	122.90	5824.70	-161.59	75.06	75.06	6.80	462144.60	706548.64	N 32 16 9.85 W	103 47 19.83
	1574.00	10.03	123.20	5824.00	-162.27	78.88	78.88	6.82	462140.52	706546.64	N 32 16 9.85 W	103 47 19.79
	1575.00	9.93	123.50	5823.30	-162.95	82.70	82.70	6.84	462136.44	706544.64	N 32 16 9.85 W	103 47 19.75
	1576.00	9.83	123.80	5822.60	-163.63	86.52	86.52	6.86	462132.36	706542.64	N 32 16 9.85 W	103 47 19.71
	1577.00	9.73	124.10	5821.90	-164.31	90.34	90.34	6.88	462128.28	706540.64	N 32 16 9.85 W	103 47 19.67
	1578.00	9.63	124.40	5821.20	-164.99	94.16	94.16	6.90	462124.20	706538.64	N 32 16 9.85 W	103 47 19.63
	1579.00	9.53	124.70	5820.50	-165.67	97.98	97.98	6.92	462120.12	706536.64	N 32 16 9.85 W	103 47 19.59
	1580.00	9.43	125.00	5819.80	-166.35	101.80	101.80	6.94	462116.04	706534.64	N 32 16 9.85 W	103 47 19.55
	1581.00	9.33	125.30	5819.10	-167.03	105.62	105.62	6.96	462111.96	706532.64	N 32 16 9.85 W	103 47 19.51
	1582.00	9.23	125.60	5818.40	-167.71	109.44	109.44	6.98	462107.88	706530.64	N 32 16 9.85 W	103 47 19.47
	1583.00	9.13	125.90	5817.70	-168.39	113.26	113.26	7.00	462103.80	706528.64	N 32 16 9.85 W	103 47 19.43
	1584.00	9.03	126.20	5817.00	-169.07	117.08	117.08	7.02	462099.72	706526.64	N 32 16 9.85 W	103 47 19.39
	1585.00	8.93	126.50	5816.30	-169.75	120.90	120.90	7.04	462095.64	706524.64	N 32 16 9.85 W	103 47 19.35
	1586.00	8.83	126.80	5815.60	-170.43	124.72	124.72	7.06	462091.56	706522.64	N 32 16 9.85 W	103 47 19.31
	1587.00	8.73	127.10	5814.90	-171.11	128.54	128.54	7.08	462087.48	706520.64	N 32 16 9.85 W	103 47 19.27
	1588.00	8.63	127.40	5814.20	-171.79	132.36	132.36	7.10	462083.40	706518.64	N 32 16 9.85 W	103 47 19.23
	1589.00	8.53	127.70	5813.50	-172.47	136.18	136.18	7.12	462079.32	706516.64	N 32 16 9.85 W	103 47 19.19
	1590.00	8.43	128.00	5812.80	-173.15	140.00	140.00	7.14	462075.24	706514.64	N 32 16 9.85 W	103 47 19.15
	1591.00	8.33	128.30	5812.10	-173.83	143.82	143.82	7.16	462071.16	706512.64	N 32 16 9.85 W	103 47 19.11
	1592.00	8.23	128.60	5811.40	-174.51	147.64	147.64	7.18	462067.08	706510.64	N 32 16 9.85 W	103 47 19.07
	1593.00	8.13	128.90	5810.70	-175.19	151.46	151.46	7.20	462063.00	706508.64	N 32 16 9.85 W	103 47 19.03
	1594.00	8.03	129.20	5810.00	-175.87	155.28	155.28	7.22	462058.92	706506.64	N 32 16 9.85 W	103 47 18.99
	1595.00	7.93	129.50	5809.30	-176.55	159.10	159.10	7.24	462054.84	706504.64	N 32 16 9.85 W	103 47 18.95
	1596.00	7.83	129.80	5808.60	-177.23	162.92	162.92	7.26	462050.76	706502.64	N 32 16 9.85 W	103 47 18.91
	1597.00	7.73	130.10	5807.90	-177.91	166.74	166.74	7.28	462046.68	706500.64	N 32 16 9.85 W	103 47 18.87
	1598.00	7.63	130.40	5807.20	-178.59	170.56	170.56	7.30	462042.60	706498.64	N 32 16 9.85 W	103 47 18.83
	1599.00	7.53	130.70	5806.50	-179.27	174.38	174.38	7.32	462038.52	706496.64	N 32 16 9.85 W	103 47 18.79
	1600.00	7.43	131.00	5805.80	-179.95	178.20	178.20	7.34	462034.44	706494.64	N 32 16 9.85 W	103 47 18.75
	1601.00	7.33	131.30	5805.10	-180.63	182.02	182.02	7.36	462030.36	706492.64	N 32 16 9.85 W	103 47 18.71
	1602.00	7.23	131.60	5804.40	-181.31	185.84	185.84	7.38	462026.28	706490.64	N 32 16 9.85 W	103 47 18.67
	1603.00	7.13	131.90	5803.70	-181.99	189.66	189.66	7.40	462022.20	706488.64	N 32 16 9.85 W	103 47 18.63
	1604.00	7.03	132.20	5803.00	-182.67	193.48	193.48	7.42	462018.12	706486.64	N 32 16 9.85 W	103 47 18.59
	1605.00	6.93	132.50	5802.30	-183.35	197.30	197.30	7.44	462014.04	706484.64	N 32 16 9.85 W	103 47 18.55
	1606.00	6.83	132.80	5801.60	-184.03	201.12	201.12	7.46	462010.00	706482.64	N 32 16 9.85 W	103 47 18.51
	1607.00	6.73	133.10	5800.90	-184.71	204.94	204.94	7.48	462005.92	706480.64	N 32 16 9.85 W	103 47 18.47
	1608.00	6.63	133.40	5800.20	-185.39	208.76	208.76	7.50	462001.84	706478.64	N 32 16 9.85 W	103 47 18.43
	1609.00	6.53	133.70	5799.50	-186.07	212.58	212.58	7.52	462000.00	706476.64	N 32 16 9.85 W	103 47 18.39
	1610.00	6.43	134.00	5798.80	-186.75	216.40	216.40	7.54	462000.00	706474.64	N 32 16 9.85 W	103 47 18.35
	1611.00	6.33	134.30	5798.10	-187.43	220.22	220.22	7.56	462000.00	706472.64	N 32 16 9.85 W	103 47 18.31
	1612.00	6.23	134.60	5797.40	-188.11	224.04	224.04	7.58	462000.00	706470.64	N 32 16 9.85 W	103 47 18.27
	1613.00	6.13	134.90	5796.70	-188.79	227.86	227.86	7.60	462000.00	706468.64	N 32 16 9.85 W	103 47 18.23
	1614.00	6.03	135.20	5796.00	-189.47	231.68	231.68	7.62	462000.00	706466.64	N 32 16 9.85 W	103 47 18.19
	1615.00	5.93	135.50	5795.30	-190.15	235.50	235.50	7.64	462000.00	706464.64	N 32 16 9.85 W	103 47 18.15
	1616.00	5.83	135.80	5794.60	-190.83	239.32	239.32	7.66	462000.00	706462.64	N 32 16 9.85 W	103 47 18.11
	1617.00	5.73	136.10	5793.90	-191.51	243.14	243.14	7.68	462000.00	706460.64	N 32 16 9.85 W	103 47 18.07
	1618.00	5.63	136.40	5793.20	-192.19	246.96	246.96	7.70	462000.00	706458.64	N 32 16 9.85 W	103 47 18.03
	1619.00	5.53	136.70	5792.50	-192.87	250.78	250.78	7.72	462000.00	706456.64	N 32 16 9.85 W	103 47 17.99
	1620.00	5.43	137.00	5791.80	-193.55	254.60	254.60	7.74	462000.00	706454.64	N 32 16 9.85 W	103 47 17.95
	1621.00	5.33	137.30	5791.10	-194.23	258.42	258.42	7.76	462000.00	706452.64	N 32 16 9.85 W	103 47 17.91
	1622.00	5.23	137.60	5790.40	-194.91	262.24	262.24	7.78	462000.00	706450.64	N 32 16 9.85 W	103 47 17.87
	1623.00	5.13	137.90	5789.70	-195.59	266.06	266.06	7.80	462000.00	706448.64	N 32 16 9.85 W	103 47 17.83
	1624.00	5.03	138.20	5789.00	-196.27	269.88	269.88	7.82	462000.00	706446.64	N 32 16 9.85 W	103 47 17.79
	1625.00	4.93	138.50	5788.30	-196.95	273.70	273.70	7.84	462000.00	706444.64	N 32 16 9.85 W	103 47 17.75
	1626.00	4.83	138.80	5787.60	-197.63	277.52	277.52	7.86	462000.00	706442.64	N 32 16 9.85 W	103 47 17.71
	1627.00	4.73	139.10	5786.90	-198.31	281.34	281.34	7.88	462000.00	706440.64	N 32 16 9.85 W	103 47 17.67
	1628.00	4.63	139.40	5786.20	-198.99	285.16	285.16	7.90	462000.00	706438.64	N 32 16 9.85 W	103 47 17.63
	1629.00	4.53	139.70	5785.50	-199.67	288.98	288.98	7.92	462000.00	706436.64	N 32 16 9.85 W	103 47 17.59
	1630.00	4.43	140.00	5784.80	-200.35	292.80	292.80	7.94	462000.00	706434.64	N 32 16 9.85 W	103 47 17.55
	1631.00	4.33	140.30	5784.10	-201.03	296.62	296.62	7.96	462000.00	706432.64	N 32 16 9.85 W	103 47 17.51
	1632.00	4.23	140.60	5783.40	-201.71	300.44	300.44	7.98	462000.00	706430.64	N 32 16 9.85 W	103 47 17.47
	1633.00	4.13	140.90	5782.70	-202.39	304.26	304.26	8.00	462000.00	706428.64	N 32 16 9.85 W	103 47 17.43
	1634.00	4.03	141.20	5782.00	-203.07	308.08	308.08	8.02	462000.00	706426.64	N 32 16 9.85 W	103 47 17.39
	1635.00	3.93	141.50	5781.30	-203.75	311.90	311.90	8.04	462000.00	706424.64	N 32 16 9.85 W	103 47 17.35
	1636.00	3.83	141.80	5780.60	-204.43	315.72	315.72	8.06	462000.00	706422.64	N 32 16 9.85 W	103 47 17.31
	1637.00	3.73	142.10	5779.90	-205.11	319.54	319.54	8.08	462000.00	706420.64	N 32 16 9.85 W	103 47 17.27
	1638.00	3.63	142.40	5779.20	-205.79	323.36	323.36	8.				

Comments	MD (ft)	Incl (°)	Azin Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	16380.00	91.55	0.35	9433.15	8593.20	6590.79	187.22	0.48	468823.83	708740.72	N 32 17 16.89	W 103 47 15.13
	16474.00	91.17	0.38	9430.82	8687.16	6684.76	187.80	0.40	469017.80	708741.30	N 32 17 17.62	W 103 47 15.12
	16569.00	89.21	359.98	9430.81	8782.14	6779.76	188.07	2.11	469112.79	708741.57	N 32 17 18.56	W 103 47 15.11
	16663.00	90.24	1.38	9431.08	8876.14	6873.75	189.15	1.85	469208.77	708742.05	N 32 17 19.49	W 103 47 15.09
	16758.00	90.51	1.41	9430.44	8971.13	6968.72	191.45	0.29	469301.74	708744.95	N 32 17 20.43	W 103 47 15.08
	16852.00	91.23	1.58	9429.01	9065.12	7062.67	193.90	0.79	469395.69	708747.40	N 32 17 21.36	W 103 47 15.02
	16946.00	88.06	358.13	9428.77	9159.06	7156.85	193.66	4.34	469486.66	708747.16	N 32 17 22.29	W 103 47 15.02
	17041.00	89.10	357.35	9430.30	9253.90	7251.57	189.82	0.82	469584.57	708743.42	N 32 17 23.23	W 103 47 15.06
	17136.00	87.38	358.98	9433.22	9348.82	7346.40	185.20	1.86	469679.40	708738.70	N 32 17 24.17	W 103 47 15.11
	17230.00	86.30	358.61	9435.94	9442.42	7440.29	181.74	2.84	469773.28	708735.24	N 32 17 25.10	W 103 47 15.14
	17324.00	90.85	359.71	9435.82	9536.37	7534.28	180.52	1.91	469867.26	708734.02	N 32 17 26.03	W 103 47 15.15
	17419.00	92.61	0.08	9432.95	9631.30	7629.23	180.33	1.89	469962.21	708733.83	N 32 17 26.97	W 103 47 15.15
	17513.00	91.92	0.68	9429.23	9725.22	7723.15	180.94	0.99	470056.13	708734.44	N 32 17 27.90	W 103 47 15.14
	17606.00	91.71	1.16	9428.22	9820.17	7818.09	182.46	0.55	470151.06	708735.86	N 32 17 28.83	W 103 47 15.11
	17702.00	93.36	1.38	9422.07	9914.07	7911.98	184.53	1.77	470244.94	708738.03	N 32 17 29.76	W 103 47 15.08
	17796.00	95.61	1.20	9414.72	8007.78	8005.86	186.62	2.40	470338.61	708740.12	N 32 17 30.69	W 103 47 15.05
	17891.00	96.13	1.24	9403.35	8102.09	8099.95	188.63	2.65	470432.90	708742.13	N 32 17 31.62	W 103 47 15.02
	17985.00	98.55	1.79	9389.72	8195.09	8192.92	191.09	0.73	470525.87	708744.59	N 32 17 32.54	W 103 47 17.99
Final MWD	18028.00	97.92	1.52	9383.56	8237.65	8235.46	192.32	1.59	470589.40	708745.82	N 32 17 32.98	W 103 47 17.97
Proj to TD	18073.00	97.92	1.52	9377.36	8282.22	8280.01	193.50	0.00	470612.95	708747.00	N 32 17 33.40	W 103 47 17.98

Survey Type: Def Survey

Survey Error Model: ISCHSA Raw 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	1/88.425	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H Gyro + MWD 0-18072R MD
	1	26.500	26.500	Act Strs	30.000	NAL_NSG+MSHOT-Depth Only	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H Gyro + MWD 0-18072R MD
	1	26.500	591.500	Act Strs	30.000	NAL_NSG+MSHOT	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H Original Borehole / Oxy Iridium
	1	591.500	4164.000	Act Strs	30.000	NAL_MWD_IFR1+MS	MDP1 28-21 Federal Com 41H Original Borehole / Oxy Iridium
	1	4164.000	5794.000	Act Strs	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H Original Borehole / Oxy Iridium
	1	5794.000	6109.000	Act Strs	30.000	NAL_MWD_IFR1+MS	MDP1 28-21 Federal Com 41H Original Borehole / Oxy Iridium
	1	6109.000	6863.000	Act Strs	30.000	NAL_MWD_PLUS_0.5_DEG	Original Borehole / Oxy Iridium MDP1 28-21 Federal Com 41H Original Borehole / Oxy Iridium
	1	6863.000	18073.000	Act Strs	30.000	NAL_MWD_IFR1+MS	MDP1 28-21 Federal Com 41H Original Borehole / Oxy Iridium

...Original Borehole/Oxy Iridium MDP1 28-21 Federal Com 41H Gyro + MWD 0-18072R MD

Schlumberger

OXY



Borehole:	Well:	Field:	Structure:
Original Borehole	Iridium MDP1 28-21 Federal Com 41H	NM Eddy County (NAD 83)	Oxy Iridium MDP1 28-21 Federal Com 41H

Gravity & Magnetic Parameters				Surface Location				Miscellaneous			
Model:	WPR1	Dip:	00.007°	Date:	20-Oct-2018	Lat:	N 32 16 11.48	Magnetic:	482333.448118	Grid Conv:	0.2902°
Magnetic:	6.598°	FB:	49054.3mT	Gravity FB:	NEL 482333.448118 (Standard)	Long:	W 103 47 20.79	Easting:	708383.619028	Scale Fact:	0.9999415
								Well: Oxy Iridium MDP1 28-21 Federal Com 41H Rev5			

Critical Points							
Critical Point	MD	RIKL	AZRL	TVD	VSEC	N(+)/S(-)	E(+)/W(-)
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
Rustler	424.03	0.71	335.36	424.00	4.27	4.30	-1.23
Last Gyro	591.50	0.51	324.28	591.46	5.91	5.85	-2.02
Salado	782.04	0.01	58.03	782.00	7.25	7.30	-2.49
Castile	2718.04	0.05	28.65	2718.00	7.52	7.55	-1.65
Lamar	4202.05	0.06	218.65	4202.00	7.15	7.19	-1.68
Bel Canyon	4225.05	0.06	222.32	4225.00	7.13	7.17	-1.70
Cherry Canyon	5101.05	1.21	189.82	5101.00	6.44	6.48	-2.04
Brushy Canyon	6419.54	11.52	162.86	6391.00	-215.83	-217.35	85.51
Bone Spring	8075.42	9.82	170.00	8017.00	-521.80	-524.31	122.64
BS Intersection	8075.42	9.82	170.00	8017.00	-521.80	-524.31	122.64
KOP Actual	9003.00	9.96	35.78	8930.46	-507.13	-511.88	236.84
100' FSL Crossing	9023.00	11.25	25.74	8950.12	-503.93	-508.72	238.70
Final MWD	18028.00	97.92	1.52	9383.56	8237.65	8235.46	192.32
Proj to TD	18073.00	97.92	1.52	9377.36	8282.22	8280.01	193.50

