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

30-015-44989

January 22, 2019

Oxy USA INC.
5 Greenway Plaza
Houston, Texas 77046

Re:

17, T24S, R31E, Eddy NM
N 32.22357 -103.80339

CLIENT: Oxy USA INC.
WELL: Patton MDP1 17 Federal 171H
FIELD: Purple Sage WolfCamp

RIG: H&P 656
COUNTY: Eddy
API NO: 30-015-44989
JOB NO: 18MLD3584

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
Orlando Williams FE	Patton MDP1 17 Federal 171H Original Hole	802.00 Ft 16830.00 Ft	to	August 25, 2018 September 6, 2018	to	SlimPulse Third Party Corrected

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

Jermaine Allen
Field Service Manager

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:
17, T24S, R31E, Eddy NM
N 32.22357 -103.80339

I, Orlando Williams certify that; I am employed by Drilling & Measurements, a division of Schlumberger Technology Corporation; that I did on the day(s) of August 25, 2018 through September 06, 2018, conduct or supervise the taking of the SlimPulse & Third Party Corrected surveys from a depth of 802.00 feet to a depth of 16830.00 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 Patton MDP1 17 Federal 171H Well (Original Hole) API No. 30-015-44989 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 Orlando Williams
Orlando Williams
FE

Subscribed and Sworn to before me this 22nd day of January (month) 2019 (yr)

My Commission expires:
2-16-2022

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

Borehole:	Well:	Field:	Structure:
Original Borehole	Patton MDP1 17 Federal 171H	NM Eddy County (NAD 83)	Oxy Patton MDP1 17 Federal 171H

Gravity & Magnetic Parameters

Model:	HDGM 2018	Dip:	59.954°	Date:	22-Aug-2018
MagDec:	6.868°	FS:	47994.73nT	Gravity FS:	998.423mgn (9.80665 Based)

Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet

Lat:	N 32 13 24.83	Northing:	446476.92RUS	Grid Conv:	0.2728°
Lon:	W 103 49 12.22	Easting:	706213.25RUS	Scale Fact:	0.99983985

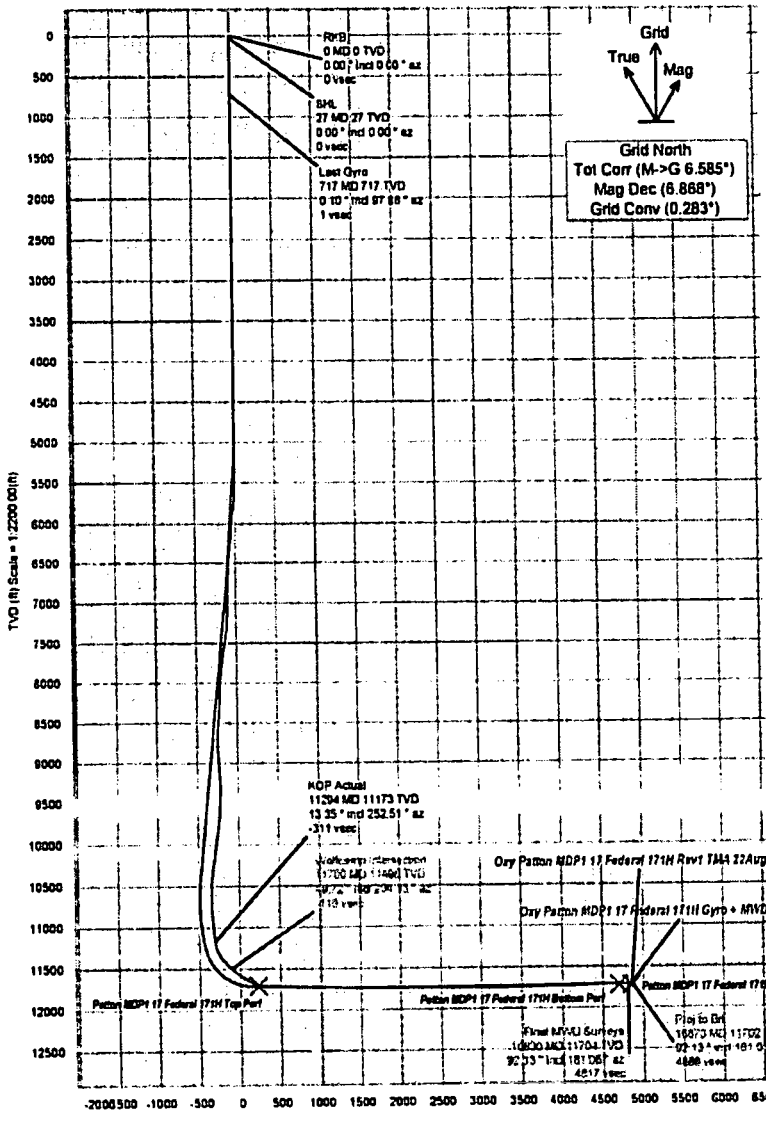
Miscellaneous

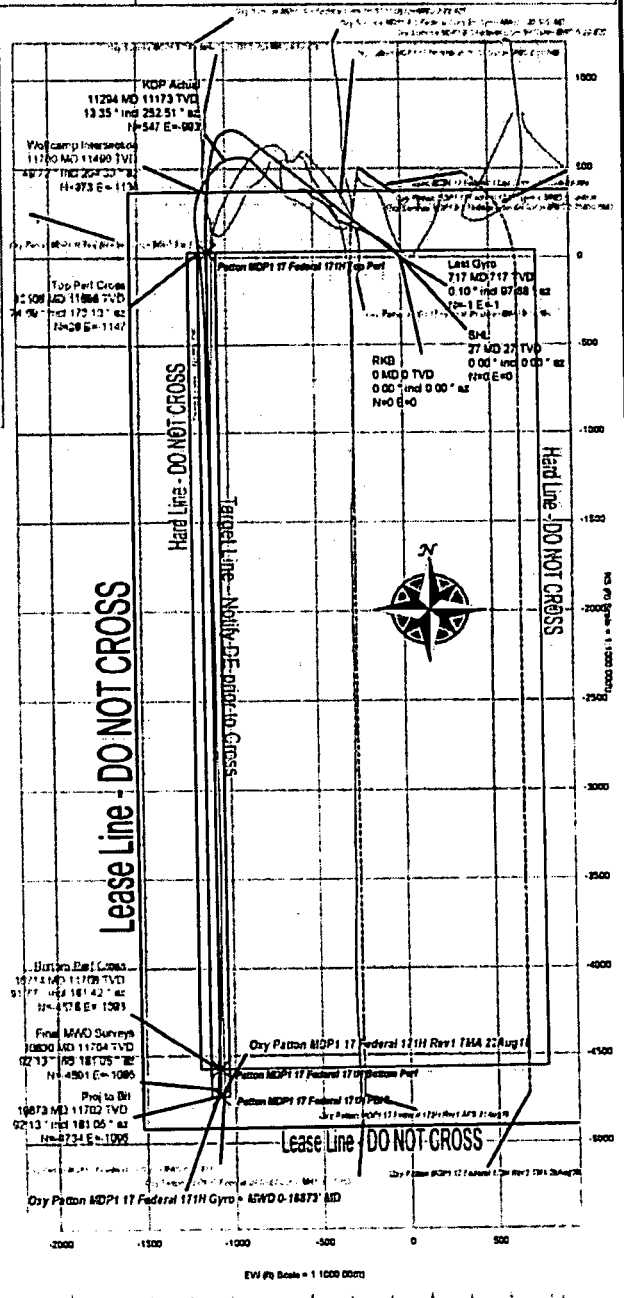
Slot: Patton MDP1 17 Federal 171H TVD Ref: RKB=26.5' (3636.5ft above MSL)

Plan: Oxy Patton MDP1 17 Federal 171H Gyro + MWD 0-16873' MD

Critical Points

Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
	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	717.05	0.10	97.88	717.05	0.71	-0.51	-0.97	0.02
KOP Actual	11294.00	13.35	252.51	11172.52	-311.44	546.77	-993.15	1.11
Wolfcamp Intersection	11700.00	49.72	204.33	11498.07	-110.14	373.36	-1137.73	10.44
Top Perf Cross	12108.00	74.89	173.13	11695.60	228.48	28.09	-1146.99	12.18
Bottom Perf Cross	16714.00	91.77	181.42	11707.87	4703.80	-4575.31	-1092.82	2.12
Final MWD Surveys	16830.00	92.13	181.05	11703.98	4817.32	-4691.22	-1095.23	0.42
Proj to Bit	16873.00	92.13	181.05	11702.36	4859.38	-4734.18	-1096.02	0.00





Schlumberger

Oxy Patton MDP1 17 Federal 171H Gyro + MWD 0-16873' MD Survey
Geodetic Report
(Def Survey)

Report Date:	September 06, 2018 - 05:04 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	OXY	**Vertical Section Azimuth:**	192.890 ° (Grid North)
Field:	NM Eddy County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Oxy Patton MDP1 17 Federal 171H / Patton MDP1 17 Federal 171H	**TVD Reference Datum:**	RKB=28.5'
Well:	Patton MDP1 17 Federal 171H	**TVD Reference Elevation:**	3556.500 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	3530.000 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.868 °
Survey Name:	Oxy Patton MDP1 17 Federal 171H Gyro + MWD 0-16873' MD	**Total Gravity Field Strength:**	998.4285mgn (9.80665 Based)
Survey Date:	August 22, 2018	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	225.119 ° / 6553.876 ft / 6.326 / 0.558	**Total Magnetic Field Strength:**	47984.724 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.954 °
Location Lat / Long:	N 32° 13' 24.83429", W 103° 48' 12.22166"	**Declination Date:**	August 22, 2018
Location Grid N/E Y/X:	N 445470.920 ftUS, E 705213.250 ftUS	**Magnetic Declination Model:**	HDGM 2018
CRS Grid Convergence Angle:	0.2626 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99993885	**Grid Convergence Used:**	0.2626 °
Version / Patch:	2.10.740.0	**Total Corr Mag North->Grid North:**	6.5852 °
		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	445470.92	705213.25	N 32 13 24.83	W 103 48 12.22
SHL	28.50	0.00	0.00	28.50	0.00	0.00	0.00	0.00	445470.92	705213.25	N 32 13 24.83	W 103 48 12.22
	97.13	0.19	244.16	97.13	0.07	-0.05	-0.11	0.27	445470.87	705213.14	N 32 13 24.83	W 103 48 12.22
	212.80	0.42	255.77	212.80	0.39	-0.24	-0.69	0.20	445470.68	705212.56	N 32 13 24.83	W 103 48 12.23
	394.96	0.02	337.46	394.96	0.68	-0.37	-1.35	0.23	445470.55	705211.90	N 32 13 24.83	W 103 48 12.24
	489.48	0.06	118.30	489.48	0.68	-0.36	-1.31	0.08	445470.54	705211.94	N 32 13 24.83	W 103 48 12.24
	584.12	0.10	113.74	584.12	0.70	-0.44	-1.18	0.04	445470.48	705212.06	N 32 13 24.83	W 103 48 12.24
Last Gyro	717.05	0.10	97.88	717.05	0.71	-0.51	-0.97	0.02	445470.41	705212.28	N 32 13 24.83	W 103 48 12.23
	802.00	0.08	67.80	802.00	0.67	-0.50	-0.85	0.06	445470.42	705212.40	N 32 13 24.83	W 103 48 12.23
	892.00	0.03	351.82	892.00	0.61	-0.45	-0.79	0.09	445470.47	705212.46	N 32 13 24.83	W 103 48 12.23
	1082.00	0.03	70.97	1082.00	0.54	-0.38	-0.75	0.02	445470.54	705212.50	N 32 13 24.83	W 103 48 12.23
	1176.00	0.03	248.49	1176.00	0.54	-0.38	-0.75	0.06	445470.54	705212.50	N 32 13 24.83	W 103 48 12.23
	1270.00	0.03	304.98	1270.00	0.55	-0.38	-0.79	0.03	445470.54	705212.46	N 32 13 24.83	W 103 48 12.23
	1457.00	0.03	83.09	1457.00	0.51	-0.34	-0.78	0.03	445470.58	705212.47	N 32 13 24.83	W 103 48 12.23
	1553.00	0.08	246.76	1553.00	0.54	-0.37	-0.82	0.11	445470.55	705212.43	N 32 13 24.83	W 103 48 12.23
	1647.00	0.08	70.71	1647.00	0.55	-0.37	-0.82	0.17	445470.55	705212.43	N 32 13 24.83	W 103 48 12.23
	1838.00	0.03	255.66	1838.00	0.60	-0.34	-0.74	0.06	445470.58	705212.51	N 32 13 24.83	W 103 48 12.23
	1930.00	0.08	275.93	1930.00	0.52	-0.34	-0.83	0.06	445470.58	705212.42	N 32 13 24.83	W 103 48 12.23
	2025.00	0.08	323.71	2025.00	0.48	-0.28	-0.94	0.07	445470.64	705212.31	N 32 13 24.83	W 103 48 12.23
	2119.00	0.03	51.43	2119.00	0.42	-0.21	-0.90	0.09	445470.71	705212.29	N 32 13 24.83	W 103 48 12.23
	2214.00	0.03	323.42	2214.00	0.38	-0.18	-0.95	0.04	445470.74	705212.30	N 32 13 24.83	W 103 48 12.23
	2308.00	0.03	230.21	2308.00	0.39	-0.17	-0.99	0.05	445470.75	705212.26	N 32 13 24.83	W 103 48 12.23
	2402.00	0.03	53.51	2402.00	0.39	-0.17	-0.99	0.06	445470.75	705212.26	N 32 13 24.83	W 103 48 12.23
	2503.00	0.03	339.43	2503.00	0.35	-0.13	-0.97	0.04	445470.79	705212.28	N 32 13 24.83	W 103 48 12.23
	2597.00	0.03	161.59	2597.00	0.35	-0.13	-0.97	0.06	445470.79	705212.28	N 32 13 24.83	W 103 48 12.23
	2692.00	0.03	245.13	2692.00	0.38	-0.17	-0.99	0.04	445470.75	705212.26	N 32 13 24.83	W 103 48 12.23
	2786.00	0.03	308.96	2786.00	0.39	-0.16	-1.03	0.03	445470.76	705212.22	N 32 13 24.83	W 103 48 12.23
	2881.00	0.11	139.74	2881.00	0.43	-0.22	-0.99	0.15	445470.70	705212.26	N 32 13 24.83	W 103 48 12.23
	2975.00	0.16	89.80	2975.00	0.46	-0.28	-0.80	0.13	445470.64	705212.45	N 32 13 24.83	W 103 48 12.23
	3070.00	0.09	96.58	3070.00	0.42	-0.29	-0.59	0.08	445470.63	705212.66	N 32 13 24.83	W 103 48 12.23
	3164.00	0.03	2.70	3164.00	0.39	-0.28	-0.52	0.10	445470.64	705212.73	N 32 13 24.83	W 103 48 12.23
	3353.00	0.05	230.39	3353.00	0.40	-0.28	-0.58	0.04	445470.64	705212.67	N 32 13 24.83	W 103 48 12.23
	3448.00	0.13	211.77	3448.00	0.54	-0.40	-0.67	0.09	445470.52	705212.58	N 32 13 24.83	W 103 48 12.23
	3543.00	0.11	223.94	3542.99	0.72	-0.55	-0.79	0.03	445470.37	705212.46	N 32 13 24.83	W 103 48 12.23
	3637.00	0.03	268.46	3636.99	0.80	-0.62	-0.88	0.10	445470.30	705212.37	N 32 13 24.83	W 103 48 12.23
	3732.00	0.08	278.81	3731.99	0.81	-0.61	-0.97	0.05	445470.31	705212.28	N 32 13 24.83	W 103 48 12.23
	3826.00	0.03	220.84	3825.99	0.84	-0.62	-1.05	0.07	445470.30	705212.20	N 32 13 24.83	W 103 48 12.23
	3921.00	0.03	22.31	3920.99	0.84	-0.62	-1.06	0.06	445470.30	705212.19	N 32 13 24.83	W 103 48 12.23
	4015.00	0.08	207.28	4014.99	0.87	-0.65	-1.08	0.12	445470.27	705212.17	N 32 13 24.83	W 103 48 12.23
	4109.00	0.08	215.26	4108.99	1.00	-0.76	-1.14	0.01	445470.16	705212.11	N 32 13 24.83	W 103 48 12.24
	4210.00	0.09	106.25	4209.99	1.07	-0.84	-1.11	0.14	445470.08	705212.14	N 32 13 24.83	W 103 48 12.23
	4398.00	0.09	85.34	4397.99	1.03	-0.87	-0.82	0.02	445470.05	705212.43	N 32 13 24.83	W 103 48 12.23
	4493.00	0.03	234.88	4492.99	1.03	-0.88	-0.77	0.12	445470.04	705212.48	N 32 13 24.83	W 103 48 12.23
	4588.00	0.03	114.00	4587.99	1.05	-0.91	-0.76	0.05	445470.01	705212.49	N 32 13 24.83	W 103 48 12.23
	4682.00	0.08	183.79	4681.99	1.12	-0.98	-0.74	0.08	445469.94	705212.51	N 32 13 24.82	W 103 48 12.23
	4777.00	0.03	160.55	4776.99	1.21	-1.07	-0.74	0.06	445469.85	705212.51	N 32 13 24.82	W 103 48 12.23
	4871.00	0.03	83.34	4870.99	1.22	-1.09	-0.71	0.04	445469.83	705212.54	N 32 13 24.82	W 103 48 12.23
	4966.00	0.05	274.02	4965.99	1.22	-1.08	-0.72	0.08	445469.84	705212.53	N 32 13 24.82	W 103 48 12.23
	5060.00	2.55	322.11	5059.96	-0.10	0.57	-2.05	2.68	445471.49	705211.20	N 32 13 24.84	W 103 48 12.25
	5155.00	5.40	322.89	5154.72	-4.31	5.80	-6.05	3.00	445476.72	705207.20	N 32 13 24.89	W 103 48 12.29
	5249.00	7.81	321.14	5248.09	-11.11	14.30	-12.72	2.57	445485.22	705200.53	N 32 13 24.98	W 103 48 12.37
	5344.00	9.66	319.81	5341.99	-19.69	25.42	-21.02	1.98	445496.34	705191.33	N 32 13 25.09	W 103 48 12.48
	5438.00	10.37	316.23	5434.56	-29.26	37.55	-32.86	1.00	445508.47	705180.39	N 32 13 25.21	W 103 48 12.60
	5533.00	10.93	312.54	5527.92	-38.43	49.82	-45.41	0.93	445520.74	705167.84	N 32 13 25.33	W 103 48 12.75
	5627.00	10.77	309.24	5620.24	-46.74	61.40	-58.78	0.66	445532.32	705154.47	N 32 13 25.44	W 103 48 12.90
	5722.00	10.60	305.81	5713.59	-54.08	72.13	-72.74	0.69	445543.04	705140.51	N 32 13 25.55	W 103 48 13.06
	5816.00	9.98	304.53	5806.06	-60.45	81.80	-86.46	0.70	445552.72	705126.79	N 32 13 25.65	W 103 48 13.22
	5910.00	10.00	303.42	5898.66	-66.32	90.91	-99.98	0.21	445561.83	705113.27	N 32 13 25.74	W 103 48 13.38
	6005.00	10.04	301.16	5992.21	-71.81	99.74	-113.95	0.42	445570.66	705099.30	N 32 13 25.83	W 103 48 13.54
	6194.00	10.19	297.38	6178.27	-81.16	115.96	-142.90	0.38	445586.87	705070.36	N 32 13 25.99	W 103 48 13.88
	6288.00	10.40	296.27	6270.76	-85.20	123.53	-157.89	0.31	445594.45	705055.37	N 32 13 26.06	W 103 48 14.05
	6383.00	10.55	295.48	6364.18	-89.08	131.07	-173.43	0.22	445601.98	705039.83	N 32 13 26.14	W 103 48 14.23
	6477.00	11.89	295.54	6456.41	-93.03	138.87	-189.79	1.21	445609.79	705023.47	N 32 13 26.22	W 103 48 14.42
	6571.00	12.09	293.90	6548.39	-97.00	146.97	-207.39	0.56	445617.88	705005.88	N 32 13 26.30	W 103 48 14.63
	6666.00	12.18	291.81	6641.27	-100.45	154.72	-225.79	0.47	445625.63	704987.48	N 32 13 26.38	W 103 48 14.84
	6760.00	11.51	291.55	6733.27	-103.40	161.85	-243.72	0.72	445632.76	704969.55	N 32 13 26.45	W 103 48 15.05
	6855.00	12.08	292.31	6826.26	-106.46	169.11	-261.73	0.62	445640.03	704951.54	N 32 13 26.52	W 103 48 15.26
	6949.00	11.94	292.25	6918.20	-109.65	176.52	-279.83	0.15	445647.43	704933.44	N 32 13 26.59	W 103 48 15.47
	7043.00	11.89	291.60	7010.18	-112.70	183.77	-297.83	0.15	445654.68	704915.44	N 32 13 26.67	W 103 48 15.68
	7138.00	11.87	292.38	7103.15	-115.79	191.09	-315.97	0.17	445662.00	704897.30	N 32 13 26.74	W 103 48 15.89
	7233.00	11.62	292.67	7196.16	-119.02	198.49	-333.83	0.27	445669.40	704879.44	N 32 13 26.81	W 103 48 16.10
	7327.00	12.29	304.97	7288.13	-124.39	207.88	-350.77	2.80	445678.78	704862.51	N 32 13 26.91	W 103 48 16.29
	7421.00	12.34	322.69	7380.00	-134.58	221.60	-365.06	4.01	445692.51	704848.21	N 32 13 27.04	W 103 48 16.46
	7516.00	12.12	329.31	7472.85	-148.31	238.26	-378.30	1.49	445709.18	704836.97	N 32 13 27.21	W 103 48 16.59
	7610.00	12.16	327.19	7564.75	-162.37	255.08	-388.70	0.48	445725.97	704826.57	N 32 13 27.38	W 103 48 16.71
	7705.00	12.03	323.21	7657.64	-175.76	271.40	-398.05	0.89	445742.30	704815.22	N 32 13 27.54	W 103 48 16.84
	7799.00	12.25	316.60	7749.54	-187.67	288.52	-410.75	1.45	445757.42	704802.53	N 32 13 27.69	W 103 48 16.99
	7893.00	12.24	310.21	7841.41	-197.80	306.22	-425.18	1.49	445771.12	704788.09	N 32 13 27.83	W 103 48 17.15

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 ° ' ")
	7988.00	12.02	303.57	7934.29	-205.92	312.19	-441.12	1.49	445783.09	704772.16	N 32 13 27.84	W 103 48 17.34
	8083.00	11.99	298.70	8027.22	-212.10	322.40	-458.02	1.07	445793.30	704755.26	N 32 13 28.05	W 103 48 17.53
	8178.00	12.03	298.42	8119.25	-218.64	331.06	-474.82	0.53	445801.98	704738.68	N 32 13 28.13	W 103 48 17.73
	8267.00	10.41	298.23	8207.45	-221.38	339.44	-490.87	1.78	445810.34	704722.41	N 32 13 28.22	W 103 48 17.92
	8362.00	7.90	306.40	8301.24	-226.26	347.37	-503.69	2.97	445818.27	704709.59	N 32 13 28.30	W 103 48 18.08
	8457.00	6.67	322.49	8395.48	-232.36	355.63	-512.31	2.50	445826.52	704700.98	N 32 13 28.38	W 103 48 18.18
	8552.00	7.06	334.65	8489.80	-240.48	365.28	-518.17	1.58	445836.18	704695.12	N 32 13 28.47	W 103 48 18.23
	8646.00	6.53	321.20	8583.15	-248.33	374.67	-523.99	1.78	445845.56	704689.29	N 32 13 28.57	W 103 48 18.30
	8741.00	7.37	292.85	8677.47	-252.72	381.22	-533.00	3.70	445852.12	704680.28	N 32 13 28.63	W 103 48 18.40
	8835.00	8.10	285.59	8770.85	-251.77	383.04	-545.17	3.91	445853.93	704668.11	N 32 13 28.65	W 103 48 18.55
	8930.00	8.75	285.82	8864.83	-248.48	380.75	-558.85	1.65	445851.65	704654.43	N 32 13 28.63	W 103 48 18.71
	9024.00	9.06	285.19	8957.50	-239.80	377.11	-572.94	0.35	445848.01	704640.35	N 32 13 28.59	W 103 48 18.87
	9119.00	9.42	256.34	9051.26	-232.84	373.38	-587.72	0.43	445844.28	704625.58	N 32 13 28.56	W 103 48 19.04
	9214.00	9.69	263.63	9144.92	-226.68	370.62	-603.39	1.38	445841.52	704609.90	N 32 13 28.53	W 103 48 19.22
	9308.00	11.90	273.92	9237.23	-222.50	370.39	-621.08	2.97	445841.28	704592.21	N 32 13 28.53	W 103 48 19.43
	9403.00	12.66	281.31	9330.06	-220.69	373.10	-641.06	1.84	445844.00	704572.23	N 32 13 28.56	W 103 48 19.66
	9497.00	11.97	288.50	9421.90	-221.36	378.21	-660.41	1.79	445849.11	704552.88	N 32 13 28.61	W 103 48 19.89
	9592.00	12.81	298.19	9514.74	-225.06	386.24	-678.89	2.27	445857.13	704534.40	N 32 13 28.69	W 103 48 20.10
	9686.00	12.45	304.92	9606.50	-231.57	396.89	-696.25	1.56	445867.78	704517.05	N 32 13 28.80	W 103 48 20.30
	9780.00	13.01	310.29	9698.19	-240.22	409.52	-712.64	1.37	445880.41	704500.66	N 32 13 28.92	W 103 48 20.49
	9875.00	13.83	312.85	9790.60	-250.80	424.14	-729.13	1.08	445895.03	704484.17	N 32 13 29.07	W 103 48 20.68
	9970.00	12.97	318.02	9883.02	-262.60	439.78	-744.58	1.55	445910.68	704468.71	N 32 13 29.22	W 103 48 20.86
	10064.00	13.65	318.94	9974.49	-274.88	455.73	-759.21	0.77	445926.63	704454.08	N 32 13 29.38	W 103 48 21.03
	10159.00	15.21	317.30	10066.49	-288.20	473.08	-775.32	1.64	445943.97	704437.98	N 32 13 29.55	W 103 48 21.22
	10253.00	15.82	316.35	10157.07	-302.61	491.72	-792.20	0.71	445962.61	704421.10	N 32 13 29.74	W 103 48 21.42
	10348.00	14.77	317.12	10248.70	-316.93	510.27	-809.04	1.16	445981.16	704404.26	N 32 13 29.92	W 103 48 21.61
	10442.00	14.09	317.41	10339.73	-330.15	527.47	-824.94	0.73	445998.36	704388.36	N 32 13 30.09	W 103 48 21.79
	10537.00	13.19	307.24	10432.07	-341.18	542.55	-841.40	2.69	446013.44	704371.90	N 32 13 30.24	W 103 48 21.98
	10631.00	11.57	290.80	10523.91	-346.90	552.39	-858.75	4.11	446023.28	704354.55	N 32 13 30.34	W 103 48 22.19
	10726.00	10.40	282.98	10617.17	-348.22	557.70	-876.02	1.99	446028.59	704337.29	N 32 13 30.40	W 103 48 22.39
	10820.00	11.01	274.65	10709.54	-346.95	560.33	-893.23	1.77	446031.22	704320.07	N 32 13 30.42	W 103 48 22.59
	10915.00	12.86	269.46	10802.52	-343.23	560.97	-912.69	2.07	446031.86	704300.62	N 32 13 30.43	W 103 48 22.81
	11009.00	12.74	265.45	10894.22	-337.73	560.05	-933.32	0.94	446030.94	704279.99	N 32 13 30.42	W 103 48 23.05
	11104.00	11.96	256.71	10987.03	-330.56	557.29	-953.42	1.72	446028.18	704259.89	N 32 13 30.40	W 103 48 23.29
	11134.00	11.88	257.12	11016.38	-327.95	556.00	-959.47	1.13	446026.88	704253.84	N 32 13 30.38	W 103 48 23.36
KOP Actual	11294.00	13.35	252.51	11172.52	-311.44	548.77	-993.19	1.11	446017.66	704220.18	N 32 13 30.29	W 103 48 23.75
	11340.00	18.42	245.34	11216.75	-304.32	542.14	-1004.83	11.60	446013.03	704208.48	N 32 13 30.25	W 103 48 23.89
	11435.00	31.71	225.91	11302.75	-274.08	518.30	-1038.59	16.29	445989.25	704178.72	N 32 13 30.01	W 103 48 24.28
	11529.00	40.87	218.31	11378.50	-224.98	476.27	-1072.65	11.44	445947.16	704140.66	N 32 13 29.60	W 103 48 24.68
	11624.00	46.41	214.03	11447.22	-164.32	422.66	-1110.34	6.06	445893.56	704102.97	N 32 13 29.07	W 103 48 25.12
Wolfcamp Intersection	*11700.00*	*49.72*	*204.33*	*11498.07*	*-110.14*	*373.36*	*-1137.73*	*10.44*	*445844.28*	*704075.59*	*N 32 13 28.58*	*W 103 48 25.44*
	11716.00	50.62	202.18	11509.60	-96.55	360.66	-1143.19	10.44	445831.58	704070.13	N 32 13 28.46	W 103 48 25.51
	11813.00	54.14	188.47	11567.76	-21.69	288.35	-1162.79	12.00	445759.25	704050.54	N 32 13 27.74	W 103 48 25.74
	11907.00	59.28	178.39	11619.43	55.60	210.09	-1167.27	10.49	445681.00	704046.05	N 32 13 26.97	W 103 48 25.80
	12001.00	67.60	171.89	11661.48	135.52	128.45	-1160.06	10.74	445597.37	704053.26	N 32 13 26.14	W 103 48 25.72
	12096.00	73.73	172.74	11692.90	219.43	37.65	-1148.17	6.50	445508.57	704065.15	N 32 13 25.26	W 103 48 25.58
Top Perf Cross	*12106.00*	*74.89*	*173.13*	*11695.60*	*228.48*	*28.09*	*-1148.99*	*12.18*	*445499.01*	*704066.34*	*N 32 13 25.17*	*W 103 48 25.57*
	12191.00	84.77	176.27	11710.59	307.87	-55.10	-1139.30	12.16	445415.82	704074.02	N 32 13 24.34	W 103 48 25.49
	12254.00	86.09	175.34	11715.61	367.89	-117.73	-1134.71	2.56	445353.20	704078.61	N 32 13 23.72	W 103 48 25.44
	12256.94	86.83	175.21	11715.82	370.69	-120.65	-1134.48	9.88	445350.27	704078.86	N 32 13 23.70	W 103 48 25.43
	12368.00	87.80	176.70	11721.99	476.78	-231.26	-1126.64	2.22	445239.68	704086.68	N 32 13 22.60	W 103 48 25.35
	12463.00	88.46	177.14	11725.07	568.05	-326.07	-1121.54	0.85	445144.87	704091.78	N 32 13 21.66	W 103 48 25.30
	12558.00	89.31	176.83	11726.91	659.83	-420.99	-1116.20	1.98	445049.96	704095.12	N 32 13 20.72	W 103 48 25.26
	12652.00	89.93	176.91	11728.35	751.02	-514.96	-1110.35	0.41	444955.99	704098.97	N 32 13 19.79	W 103 48 25.25
	12747.00	89.55	179.09	11729.61	843.23	-609.94	-1114.69	0.68	444861.02	704098.63	N 32 13 18.85	W 103 48 25.23
	12842.00	89.52	179.03	11730.38	935.47	-704.92	-1113.13	0.07	444768.04	704100.19	N 32 13 17.91	W 103 48 25.22
	12938.00	89.48	179.28	11731.20	1028.78	-798.91	-1111.75	0.27	444672.06	704101.57	N 32 13 16.98	W 103 48 25.21
	13030.00	89.41	178.84	11732.11	1118.01	-892.89	-1110.04	0.68	444578.09	704103.28	N 32 13 16.05	W 103 48 25.19
	13125.00	89.24	178.77	11733.23	1210.11	-987.85	-1107.89	0.23	444483.13	704105.42	N 32 13 15.11	W 103 48 25.17
	13219.00	89.45	178.78	11734.31	1301.26	-1081.83	-1105.87	0.22	444389.16	704107.45	N 32 13 14.18	W 103 48 25.16
	13314.00	89.52	178.60	11735.18	1393.39	-1176.80	-1103.65	0.08	444294.19	704109.47	N 32 13 13.24	W 103 48 25.14
	13409.00	89.55	178.80	11735.93	1485.53	-1271.78	-1101.66	0.03	444199.22	704111.46	N 32 13 12.30	W 103 48 25.12
	13503.00	90.10	179.42	11736.22	1576.82	-1365.76	-1100.40	0.88	444105.24	704112.92	N 32 13 11.37	W 103 48 25.11
	13598.00	90.41	179.08	11735.80	1669.14	-1460.76	-1099.14	0.50	444010.26	704114.18	N 32 13 10.43	W 103 48 25.10
	13692.00	89.59	178.78	11735.60	1760.36	-1554.74	-1097.36	0.92	443916.28	704115.95	N 32 13 9.50	W 103 48 25.08
	13786.00	89.35	178.43	11736.08	1851.45	-1648.71	-1095.08	0.45	443822.32	704118.24	N 32 13 8.57	W 103 48 25.06
	13881.00	89.21	179.04	11737.88	1943.56	-1743.67	-1092.98	0.66	443727.35	704120.34	N 32 13 7.63	W 103 48 25.04
	14071.00	89.34	178.93	11740.26	2127.97	-1933.63	-1089.61	0.09	443537.41	704123.70	N 32 13 5.75	W 103 48 25.02
	14165.00	89.31	179.19	11741.37	2219.24	-2027.61	-1088.07	0.28	443443.44	704125.25	N 32 13 4.82	W 103 48 25.00
	14260.00	89.34	178.99	11742.49	2311.49	-2122.59	-1086.58	0.21	443348.46	704126.75	N 32 13 3.88	W 103 48 24.99
	14354.00	89.48	179.56	11743.48	2402.85	-2216.58	-1085.37	0.62	443254.48	704127.94	N 32 13 2.95	W 103 48 24.98
	14543.00	89.52	179.13	11745.11	2586.58	-2405.56	-1083.21	0.23	443065.51	704130.10	N 32 13 1.08	W 103 48 24.97
	14637.00	90.31	179.81	11745.25	2678.01	-2499.55	-1082.34	1.11	442971.52	704130.97	N 32 13 0.15	W 103 48 24.96
	14732.00	90.27	179.15	11744.78	2770.42	-2594.55	-1081.48	0.70	442876.53	704131.84	N 32 12 59.21	W 103 48 24.96
	14827.00	90.00	178.60	11744.54	2862.59	-2689.53	-1079.62	0.64	442781.56	704133.70	N 32 12 58.27	W 103 48 24.94
	14921.00	89.45	179.33	11744.99	2953.83	-2783.51	-1077.92	0.97	442687.58	704135.40	N 32 12 57.34	W 103 48 24.93
	15016.00	89.65	178.24	11745.74	3045.96	-2878.49	-1075.90	1.17	442592.61	704137.41	N 32 12 56.40	W 103 48 24.91
	15110.00	89.83	178.60	11746.16	3137.02	-2972.45	-1073.48	0.63	442498.65	704139.84	N 32 12 55.47	W 103 48 24.89
	15205.00	90.27	178.97	11746.08	3229.19	-3067.43	-1071.83	0.50	442403.68	704141.49	N 32 12 54.53	W 103 48 24.87
	15300.00	91.17	179.64	11744.69	3321.53	-3162.42	-1070.48	1.18	442308.70	704142.84	N 32 12 53.59	W 103 48 24.86
	15394.00	89.79	178.82	11744.10	3412.86	-3256.40	-1068.21	1.71	442214.72	704144.10	N 32 12 52.66	W 103 48 24.85
	15489.00	90.69	178.49	11743.70	3504.94	-3351.38	-1066.98	1.01	442119.75	704146.33	N 32 12 51.72	W 103 48 24.83
	15584.00	91.03	180.31	11742.28	3597.31	-3446.36	-1065.99	1.95	442024.78	704147.33	N 32 12 50.78	W 103 48 24.83
	15678.00	91.37	180.87	11740.31	3689.13	-3540.33	-1066.96	0.70	441930.81	704146.36	N 32 12 49.85	W 103 48 24.84
	15867.00	91.13	180.96	11736.19	3873.97	-3729.26	-1069.97	0.14	441741.89	704143.34	N 32 12 47.99	W 103 48 24.89
	15962.00	91.17	180.73	11734.28	3966.86	-3824.23	-1071.37	0.25	441646.93	704141.94	N 32 12 47.05	W 103 48 24.91
	16151.00	90.96	180.43	11730.77	4151.48	-4013.19	-1073.29	0.19	441457.98	704140.03	N 32 12 45.18	W 103 48 24.94
	16246.00	92.48	181.59	11727.91	4244.40	-4108.13	-1074.98	2.01	441363.05	704138.36	N 32 12 44.24	W 103 48 24.97
	16340.00	92.10	181.19	11724.16	4336.44	-4202.02	-1077.24	0.58	441269.16	704136.08	N 32 12 43.31	W 103 48 25.00
	16530.00	93.27	182.91	11715.26	4522.64	-4391.68	-1084.03	1.09	441079.51	704129.29	N 32 12 41.43	W 103 48 25.09
	16825.00	92.08	183.29	11710.84	4816.35	-4686.44	-1099.18	1.33	440784.76	704124.16	N 32 12 40.49	W 103 48 25.16
Bottom Perf Cross	*16714.00*	*91.77*	*181.42*	*11707.87*	*4703.80*	*-4575.31*	*-1092.82*	*2.12*	*440895.89*	*704120.50*	*N 32 12 39.61*	*W 103 48 25.20*
	16719.00	91.75	181.32	11707.72	4708.70	-4580.31	-1092.94	2.12	440890.90	704120.38	N 32 12 39.57	W 103 48 25.21
Final MWD Survey+ Proj to Bit	16830.00	92.13	181.05	11703.96	4817.32	-4691.22	-1095.23	0.42	440779.99	704118.09	N 32 12 38.47	W 103 48 25.24
	16873.00	92.13	181.05	11702.36	4859.38	-4734.18	-1096.02	0.00	440737.03	704117.30	N 32 12 38.04	W 103 48 25.25

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)	(in)	Survey Tool Type	Borehole / Survey

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 ° ' ")
		1	0.000	26.500	1/88.425	30.000	30.000	NAL_NSG+MSHOT-Depth Only			Original Borehole / Oxy Patton MDP1 17 Federal 171H Gyro + MWD 0-16873' MD	
		1	26.500	26.500	Act Stns	30.000	30.000	NAL_NSG+MSHOT-Depth Only			Original Borehole / Oxy Patton MDP1 17 Federal 171H Gyro + MWD 0-16873' MD	
		1	26.500	717.050	Act Stns	30.000	30.000	NAL_NSG+MSHOT			Original Borehole / Oxy Patton MDP1 17 Federal 171H Gyro +	
		1	717.050	16873.000	Act Stns	30.000	30.000	NAL_MWD_IFR1+MS			Original Borehole / Oxy Patton MDP1 17 Federal 171H Gyro +	