30 015 41329

RYAN DIRECTIONAL SERVICES, INC.
A NABORS COMPANY

19510 Oil Center Blvd
Houston, TX 77073
Bus 281.443.1414
Fax 281.443.1676

Tuesday, December 10, 2013

N/A

Subject: **Survey Certification Letter**

Re: **OXY, USA**
AYFU #15
Eddy, NM

I, Chris Thoma, certify that; I am employed by Ryan Directional Services, Inc.; that I did on the conduct or supervise the taking of the following MWD surveys:

on the day(s) of 11/17/2013 thru 11/24/2013 from a depth of 446' MD to a depth of 4876' MD and Straight line projection to TD 4933' MD;

that the data is true, correct, complete, and within the limitations of the tool as set forth by Ryan Directional Services, Inc.; that I am authorized and qualified to make this report; that this survey was conducted at the request of OXY, USA for the AYFU #15; in Eddy, NM.

Chris Thoma
MWD Operator
Ryan Directional Services, Inc.

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Tuesday, December 10, 2013

N/A

Subject: **Surveys**

Re: **OXY, USA**
AYFU #15
Eddy, NM

Enclosed, please find the original and one copy of the survey performed on the above-referenced well by Ryan Directional Services, Inc. (Operator #:). Other information required by your office is as follows:

Surveyor Name	*Surveyor Title*	*Borehole Number*	*Start Depth*	*End Depth*	*Start Date*	*End Date*	*Type of*	*TD Straight Line Projection*
Thoma, Chris	MWD Operator	O.H.	446'	4876'	11/17/13	11/24/13	MWD	4933'

A certified plat on which the bottom hole location is oriented both to the surface location and to the lease lines (or unit lines in case of pooling) is attached to the survey report. If any other information is required please contact the undersigned at the letterhead address or phone number.

Alex Karpiuk
Coordinator

Report No.: 1
Date: 25-Nov-13

RYAN DIRECTIONAL SERVICES, INC.

A NABORS COMPANY

Ryan Job #: 6991
Kit #:

SURVEY REPORT

Customer: OXY
Well Name & No.: AYFU #15
County, State: Eddy, NM
Rig Contractor & No.: Savannah 415
Surface Location: Y or Lat: 32.82018
X or Long: -104.17986
NAD27 or NAD83: NAD27
Survey Corrected To: Grid North

MWD Operator: Rig / Ryan Directional
RKB: 14
Ground Elevation: 3854.8
Vertical Section Direction: 0.00
Magnetic Declination: 7.62
Convergence: 0.08
API Number: 30-015-41329

Minimun Curvature Calculation

Sur.#	Meas. Depth	Inc.	Azm.	Course Length	T.V.D.	Ver.Sect.	+N / -S	+E / -W	DLS	ClsD	Cls Az
Tie In to Gyro Surveys											
Tie In	0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
1	446.5	0.50	80.4	446.50	446.49	0.32	0.32	1.92	0.11	1.95	80.40
2	535.0	0.35	90.8	88.50	534.99	0.39	0.39	2.57	0.19	2.60	81.48
3	565.3	0.40	98.5	30.30	565.29	0.37	0.37	2.77	0.23	2.79	82.42
4	626.3	0.44	97.8	61.00	626.29	0.31	0.31	3.21	0.07	3.23	84.57
5	719.2	0.30	41.9	92.90	719.19	0.44	0.44	3.73	0.40	3.75	83.30
6	812.6	0.04	85.2	93.40	812.59	0.62	0.62	3.92	0.29	3.97	80.98
7	901.2	0.13	135.2	88.60	901.19	0.55	0.55	4.02	0.12	4.06	82.16
8	990.8	0.26	216.8	89.60	990.79	0.32	0.32	3.97	0.30	3.99	85.41
9	1074.9	0.26	163.9	84.10	1074.89	-0.02	-0.02	3.91	0.28	3.91	90.25
10	1160.6	0.48	162.5	85.70	1160.58	-0.55	-0.55	4.08	0.26	4.11	97.63
11	1251.2	2.42	11.6	90.60	1251.16	0.97	0.97	4.57	3.14	4.68	78.08
12	1336.7	4.79	2.8	85.50	1336.49	6.30	6.30	5.11	2.84	8.11	39.05
13	1423.9	5.36	15.1	87.20	1423.35	13.87	13.87	6.35	1.40	15.25	24.60
14	1509.5	7.60	25.5	85.60	1508.40	22.84	22.84	9.83	2.94	24.87	23.29
15	1594.8	9.50	42.5	85.30	1592.76	33.12	33.12	17.02	3.68	37.24	27.19
16	1680.6	8.97	49.1	85.80	1677.45	42.72	42.72	26.86	1.38	50.46	32.15
17	1766.7	8.70	55.4	86.10	1762.53	50.82	50.82	37.29	1.17	63.03	36.27
18	1856.5	8.48	56.1	89.80	1851.32	58.37	58.37	48.37	0.27	75.81	39.65
19	1942.8	8.26	55.2	86.30	1936.70	65.45	65.45	58.75	0.30	87.95	41.91
20	2028.6	7.78	54.4	85.80	2021.66	72.35	72.35	68.53	0.57	99.65	43.45
21	2111.4	9.10	49.8	82.80	2103.57	79.84	79.84	78.09	1.79	111.68	44.36
22	2198.6	9.23	49.0	87.20	2189.65	88.88	88.88	88.63	0.21	125.52	44.92
23	2284.5	9.01	50.4	85.90	2274.47	97.69	97.69	99.02	0.36	139.09	45.39
24	2370.9	8.83	51.8	86.40	2359.82	106.10	106.10	109.44	0.33	152.43	45.89
25	2459.2	8.70	50.3	88.30	2447.09	114.56	114.56	119.90	0.30	165.83	46.31
26	2502.1	8.70	49.1	42.90	2489.50	118.75	118.75	124.85	0.42	172.31	46.43
27	2588.3	8.52	48.8	86.20	2574.73	127.23	127.23	134.58	0.22	185.20	46.61
28	2631.3	8.26	49.6	43.00	2617.27	131.33	131.33	139.33	0.66	191.47	46.69
29	2717.3	8.48	55.4	86.00	2702.35	138.93	138.93	149.26	1.01	203.91	47.05
30	2803.4	8.97	53.8	86.10	2787.45	146.50	146.50	159.90	0.64	216.87	47.50
31	2889.5	8.52	53.9	86.10	2872.55	154.22	154.22	170.47	0.52	229.88	47.86
32	2977.1	9.32	48.5	87.60	2959.09	162.75	162.75	181.03	1.32	243.43	48.04
33	3062.4	9.14	49.9	85.30	3043.29	171.69	171.69	191.38	0.34	257.11	48.10
34	3148.1	9.05	48.1	85.70	3127.91	180.57	180.57	201.60	0.35	270.65	48.15
35	3236.1	9.01	46.6	88.00	3214.82	189.93	189.93	211.76	0.27	284.46	48.11
36	3321.8	8.70	46.1	85.70	3299.50	199.04	199.04	221.31	0.37	297.65	48.03
37	3408.1	8.52	45.1	86.30	3384.83	208.07	208.07	230.54	0.27	310.55	47.93
38	3487.9	5.71	48.5	79.80	3464.01	214.88	214.88	237.70	3.56	320.43	47.89
39	3573.6	2.90	70.6	85.70	3549.46	218.42	218.42	242.94	3.75	326.69	48.04
40	3659.5	3.03	112.0	85.90	3635.26	218.30	218.30	247.10	2.44	329.71	48.54
41	3744.9	0.40	87.3	85.40	3720.61	217.46	217.46	249.49	3.13	330.96	48.92
42	3830.5	0.35	70.9	85.60	3806.21	217.56	217.56	250.03	0.14	331.44	48.97
43	3915.1	0.62	65.0	84.60	3890.81	217.84	217.84	250.69	0.32	332.12	49.01
44	4001.1	0.35	54.1	86.00	3976.80	218.19	218.19	251.33	0.33	332.83	49.04
45	4135.1	0.57	58.5	134.00	4110.80	218.78	218.78	252.23	0.17	333.89	49.06
46	4222.7	0.57	28.4	87.60	4198.39	219.39	219.39	252.80	0.34	334.73	49.05
47	4308.0	0.70	34.3	85.30	4283.69	220.20	220.20	253.30	0.17	335.63	49.00
48	4393.6	0.48	42.5	85.60	4369.28	220.89	220.89	253.84	0.27	336.49	48.97
49	4479.1	0.66	56.5	85.50	4454.78	221.43	221.43	254.49	0.26	337.34	48.97
50	4565.1	0.83	41.3	86.00	4540.77	222.17	222.17	255.31	0.30	338.44	48.97
51	4651.3	0.62	45.9	86.20	4626.97	222.96	222.96	256.06	0.25	339.53	48.95
52	4741.2	0.79	33.9	89.90	4716.86	223.82	223.82	256.76	0.25	340.61	48.92
53	4876.4	0.83	32.1	135.20	4852.05	225.42	225.42	257.80	0.04	342.45	48.83
54	4933	0.83	32.10	56.60	4908.64	226.11	226.11	258.23	0.00	343.24	48.79
#######	#54 = PTB			######	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!	#VALUE!