



FloSurvey - Real Time Survey Tool

1200 Cypress Creek Road
Cedar Park, TX 78613
Phone: (512)340-5000
Fax: (512)340-5441

May 22, 2014

Oil Conservation Division
1220 South St. Francis Dr.
Santa Fe, NM 87505

CLIENT: OXY
WELL: AYFU #27Y
FIELD: N/A
RIG: H&P 344
COUNTY: Eddy
API NO: 30-015-42378

We hereby certify that the enclosed field survey data performed on the referenced well by National Oilwell Varco, contained in this report represents to the best of our knowledge, a true and accurate survey of the surveyed section of the well at the time the survey was run.

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>
José Olivas Field Service Technician	AYFU #27Y Original Hole	455.00 Ft to 4821.00 Ft	May 18, 2014 to May 19, 2014	FloSurvey

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

Tyler Andreason
Field Service Manager

CC: OXY
Enclosures: [2]
County of Eddy
State of New Mexico

Attn: Linsay Earle
5 Greenway Plaza, Suite 110
Houston, Texas 77406

Attn: Ryan Yeatman
5 Greenway Plaza, Suite 110
Houston, Texas 77406

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1200 Cypress Creek Road

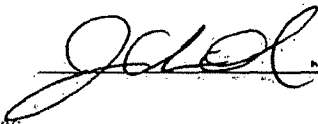
Cedar Park, TX 78613

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I, Jose Olivas certify that; I am employed by National Oilwell Varco, L.P.; that the surveys taken on the day(s) of May 18, 2014 through May 19, 2014, from a depth of 455.00 Ft feet to a depth of 4821 feet; are to the best of my knowledge, the data is true, correct, complete and within the limitations of the tool as set forth by National Oilwell Varco, L.P.; that I am authorized and qualified to make this report; that this survey was conducted at the request of OXY for the AYFU #27Y Well (Original Hole) API No. 30-015-42378 in Eddy County, New Mexico; and that I have reviewed this report and find that it conforms to the principals and procedures as set forth by National Oilwell Varco, L.P.

Signature



Jose Olivas

Field Service Technician

OXY USA
Eddy County
AYFU #27Y
Surveys: 455`MD - 4821`MD
UWI No. 30-015-42378

National Oilwell Varco

Survey Report

21 May 2014

UWI No. 30-015-42378

Surface Coordinates: 664019.80 N, 540833.70 E (32° 49' 31.4647" N, 104° 12' 01.4579" W)
Grid Coordinate System: NAD27 New Mexico State Planes, Eastern Zone, US Foot

Surface Coordinates relative to Map Coordinates: 664019.80 N, 540833.70 E (Grid)
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Kelly Bushing Elevation: 3655.30ft above Mean Sea Level
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Kelly Bushing Elevation: 16.80ft above Ground Level
Ground Level: 3638.50ft

Survey Ref: svy65

Survey Depth (ft)	Incl. (°)	(Grid) Azim. (°)	Vertical Depth (ft)	Northings (ft)	Eastings (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)
0.00	0.000	0.000	0.00	0.00 N	0.00 E	0.00	
455.00	0.240	1.920	455.00	0.95 N	0.03 E	0.78	0.053
890.00	0.200	238.640	890.00	1.47 N	0.59 W	1.55	0.089
1094.00	0.110	15.530	1094.00	1.47 N	0.84 W	1.69	0.142
1300.00	0.100	354.230	1300.00	1.84 N	0.80 W	1.98	0.019
2042.00	0.690	19.490	2041.98	6.70 N	0.62 E	5.30	0.081
2355.00	0.850	46.120	2354.95	10.08 N	2.93 E	6.91	0.124
2668.00	0.760	24.310	2667.92	13.58 N	5.45 E	8.49	0.101
2983.00	0.550	8.990	2982.90	16.98 N	6.55 E	10.76	0.086
3298.00	0.150	3.290	3297.89	18.89 N	6.81 E	12.23	0.127
3613.00	0.390	278.160	3612.89	19.45 N	5.77 E	13.26	0.129
4595.00	1.330	273.960	4594.77	20.71 N	8.91 W	22.24	0.096
4821.00	1.110	281.440	4820.72	21.33 N	13.67 W	25.33	0.120

All data is in Feet (US Survey) unless otherwise stated. Directions and coordinates are relative to Grid North. Vertical depths are relative to AYFU #27Y. Northings and Eastings are relative to AYFU #27Y.

The dogleg severity is in Degrees per 100 feet (US Survey).

Vertical Section is from AYFU #27Y calculated along an azimuth of 327.344° (Grid).

Based upon minimum curvature calculations, at a measured depth of 4821.00ft, the bottom hole displacement is 25.33ft, in the direction of 327.344° (Grid).

The along-hole displacement is 42.63ft. The total accumulated dogleg is 4.342°. The measured tortuosity is 0.092°/100ft. The directional difficulty index is 1.8.

Survey Tool Program for AYFU #27Y, Surveys: 455`MD - 4821`MD

From Measured Depth (ft)	Vertical Depth (ft)	To Measured Depth (ft)	Vertical Depth (ft)	Survey Tool Description
0.00	0.00	4821.00	4820.72	FloSurvey TiltOnlyMEM

REFERENCE DATA			
Ellipsoid	Clarke - 1866	Unit System	Feet (Us Survey)
Coord. System	NAD27 New Mexico State Planes, Eastern Zone, US Foc	North Ref.	Grid North
Mag. Model	igrf2010.dat	Vertical Ref.	Mean Sea Level
Calc. Date	15 May, 2014		

LOCATION DATA			
RKB Elevation	3655.30ft above MSL	Total Field	48614.7 nT
Map North	664019.80 N	Magnetic Dip	60.563°
Map East	540833.70 E	Declination	7.565°
Latitude	32° 49' 31.4647" N	Convergence	0.072°
Longitude	104° 12' 01.4579" W		

NORTH REFERENCE DATA			
Magnetic Model	igrf2010.dat		
Calculation Date	Thursday, May 15, 2014		
Declination	7.565°		
Inclination/Dip	60.563°		
Horizontal Component	23892.8 nT		
Northerly Component	23685.5 nT		
Easterly Component	3145.0 nT		
Vertical Component	42338.3 nT		
Total Field Strength	48614.7 nT		
Grid North is 0.072 degrees East of True North (Grid Convergence)			
Magnetic North is 7.565 degrees East of True North (Magnetic Declination)			
Magnetic North is 7.493 degrees East of Grid North (Magnetic Convergence)			
To convert a True Direction to a Grid Direction, Subtract 0.072 degrees.			
To convert a Magnetic Direction to a True Direction, Add 7.565 degrees.			
To convert a Magnetic Direction to a Grid Direction, Add 7.493 degrees.			

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