

National Oilwell Varco - Certification Sheet



FloSurvey - Real Time Survey Tool

1200 Cypress Creek Road

Cedar Park, TX 78613

Phone: (512) 340-5000

Fax: (512) 340-5441

HOBBS OCD

MAR 16 2015

RECEIVED

I, Jose Olivas certify that; I am employed by National Oilwell Varco, L.P.; that the surveys taken on the day(s) of March 17, 2014 through March 20, 2014, from a depth of 109.00 Ft feet to a depth of 1192 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 Copperhead 18 St3H Well (Original Hole) API No. 30-025-41461 in Lea 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

A handwritten signature in dark ink, appearing to read 'JO OLIVAS', written over a horizontal line.

Jose Olivas

Field Service Technician

MAR 19 2015

National Oilwell Varco - Certification Sheet



FloSurvey - Real Time Survey Tool

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

March 22, 2014

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

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CLIENT: OXY
WELL: Copperhead 18 St3H
FIELD: Copperhead
RIG: H&P 474
COUNTY: Lea
API NO: 30-025-41461

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>
Jose Olivas Field Service Technician	Copperhead 18 St3H Original Hole	109.00 Ft to 1192.00 Ft	March 17, 2014 to March 20, 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 Lea
State of New Mexico

Attn: R Chan Tysor
5 Greenway Plaza, Suite 110
Houston, TX 77046

Attn: Sebastian Millan
5 Greenway Plaza, Suite 110
Houston, TX 77046

OXY USA
Lea County
Copperhead 18 State 3H
FloSurvey: Surveys 109 - 1192 MD
UWI No. 30-025-41461

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National Oilwell Varco

Survey Report

22 March 2014

UWI No. 30-025-41461

Surface Coordinates: 445915.70 N, 722783.20 E (32° 13' 25.9904" N, 103° 36' 46.5040" W)
Grid Coordinate System: NAD27 New Mexico State Planes, Eastern Zone, US Foot

Surface Coordinates relative to Map Coordinates: 445915.70 N, 722783.20 E (Grid)
Surface Coordinates relative to Map Coordinates: 445915.70 N, 722783.20 E (Grid)

Kelly Bushing Elevation: 3592.30ft above Mean Sea Level
Kelly Bushing Elevation: 3592.30ft above Mean Sea Level

Kelly Bushing Elevation: 24.00ft above Ground Level
Ground Level: 3568.30ft

Survey Ref: svy42

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	
109.00	0.400	54.880	109.00	0.22 N	0.31 E	0.31	0.367
524.00	0.300	54.870	523.99	1.68 N	2.38 E	2.41	0.024
694.00	0.300	15.930	693.99	2.36 N	2.87 E	3.22	0.118
787.00	0.100	332.110	786.99	2.67 N	2.90 E	3.51	0.256
877.00	0.100	305.130	876.99	2.78 N	2.80 E	3.59	0.052
981.00	0.300	294.160	980.99	2.95 N	2.48 E	3.63	0.195
1076.00	0.300	303.050	1075.99	3.18 N	2.04 E	3.70	0.049
1192.00	0.500	300.140	1191.98	3.60 N	1.35 E	3.85	0.173

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

The dogleg severity is in Degrees per 100 feet (US Survey).
Vertical Section is from Copperhead calculated along an azimuth of 20.519° (Grid).

Based upon minimum curvature calculations, at a measured depth of 1192.00ft, the bottom hole displacement is 3.85ft, in the direction of 20.519° (Grid).

The along-hole displacement is 5.89ft. The total accumulated dogleg is 1.363°.
The measured tortuosity is 0.129°/100ft. The directional difficulty index is 0.4.

Survey Tool Program for Copperhead 18 State 3H, FloSurvey: Surveys 109 - 1

From		To		Survey Tool Description
Measured Depth (ft)	Vertical Depth (ft)	Measured Depth (ft)	Vertical Depth (ft)	
0.00	0.00	1192.00	1191.98	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 Mar, 2014		

LOCATION DATA			
RKB Elevation	3592.30ft above MSL	Total Field	48335.1 nT
Map North	445915.70 N	Magnetic Dip	60.112°
Map East	722783.20 E	Declination	7.268°
Latitude	32° 13' 25.9904" N	Convergence	0.384°
Longitude	103° 36' 46.5040" W		

NORTH REFERENCE DATA	
Magnetic Model	igrf2010.dat
Calculation Date	Saturday, March 15, 2014
Declination	7.268°
Inclination/Dip	60.112°
Horizontal Component	24085.9 nT
Northerly Component	23893.0 nT
Easterly Component	3046.5 nT
Vertical Component	41906.5 nT
Total Field Strength	48335.1 nT
Grid North is 0.384 degrees East of True North (Grid Convergence)	
Magnetic North is 7.268 degrees East of True North (Magnetic Declination)	
Magnetic North is 6.884 degrees East of Grid North (Magnetic Convergence)	
To convert a True Direction to a Grid Direction, Subtract 0.384 degrees.	
To convert a Magnetic Direction to a True Direction, Add 7.268 degrees.	
To convert a Magnetic Direction to a Grid Direction, Add 6.884 degrees.	

The diagram illustrates the angular relationships between three types of north: True North, Grid North, and Magnetic North. True North is represented by a vertical arrow pointing upwards. Grid North is an arrow pointing slightly to the right of True North, with an angle of 0.384° indicated between them. Magnetic North is an arrow pointing further to the right, with an angle of 6.884° indicated between it and Grid North. A fourth arrow, labeled 'Hole Direction', points horizontally to the right from the base of the True North arrow. The angles are marked with arcs and numerical labels.

Disclaimer Notice

National Oilwell Varco makes no warranty of any kind with respect to the subject matter included herein or the completeness or accuracy of this document.

National Oilwell Varco are not responsible for any actions (or lack thereof) taken as a result of relying on or in any way using information contained in this document and in no event shall be liable for any damages resulting from reliance on or use of this information.

HOBBS OCD
MAR 16 2015
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OCCIDENTAL PERMIAN LTD.

Triple X Bone Spring
Lea County, NM (Grid North)
Copperhead "18" State #3H
DH - Job #320314-MPH-368

Survey: MWD - Tie-In @ 1192' by NOV

SDI Survey Report

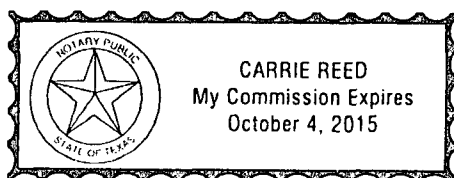
This survey is correct to the best of my knowledge and is supported by actual field data.

Reubart

Notarized this date 1st of October, 2014.

Carrie Reed

Notary Signature
County of Midland
State of Texas



SDI
SDI Survey Report

Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well Copperhead "18" State #3H
Project:	Triple X Bone Spring	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (Grid North)	MD Reference:	Mean Sea Level (System)
Well:	Copperhead "18" State #3H	North Reference:	Grid
Wellbore:	DH - Job #320314-MPH-368	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #320314-MPH-368	Database:	EDM-Regulatory

Project	Triple X Bone Spring		
Map System:	US State Plane 1927 (Exact solution)	System Datum:	Mean Sea Level
Geo Datum:	NAD 1927 (NADCON CONUS)		
Map Zone:	New Mexico East 3001		

Site	Lea County, NM (Grid North)		
Site Position:		Northing:	445,907.51 usft
From:	Lat/Long	Easting:	721,463.19 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16"
		Latitude:	32° 13' 25.997 N
		Longitude:	103° 37' 1.870 W
		Grid Convergence:	0.38 °

Well	Copperhead "18" State #3H, Horizontal		
Well Position	+N/-S	0.0 usft	Northing: 445,915.66 usft
	+E/-W	0.0 usft	Easting: 722,783.16 usft
Position Uncertainty	0.0 usft	Wellhead Elevation:	0.0 usft
		Latitude:	32° 13' 25.990 N
		Longitude:	103° 36' 46.504 W
		Ground Level:	0.0 usft

Wellbore	DH - Job #320314-MPH-368				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	3/22/2014	7.27	60.11	48,360

Design	DH - Job #320314-MPH-368			
Audit Notes:				
Version:	1.0	Phase:	ACTUAL	Tie On Depth: 0.0
Vertical Section:	Depth From (TVD) (usft)	+N/-S (usft)	+E/-W (usft)	Direction (°)
	0.0	0.0	0.0	179.51

Survey Program	Date	10/7/2014			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
1,242.0	15,515.0	MWD - Tie-In @ 1192' by NOV (DH - Job #	MWD	MWD	

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
1,192.0	0.50	300.00	1,192.0	3.8	1.7	23.57	4.2	
1,242.0	0.53	280.05	1,242.0	4.0	1.3	17.53	4.2	
1,337.0	0.53	292.97	1,337.0	4.2	0.4	5.73	4.3	
1,431.0	0.53	287.78	1,431.0	4.6	-0.4	355.12	4.6	
1,525.0	0.62	273.37	1,525.0	4.7	-1.3	344.47	4.9	
1,620.0	0.62	269.94	1,620.0	4.7	-2.3	333.77	5.3	
1,714.0	0.53	268.36	1,714.0	4.7	-3.3	325.26	5.8	
1,808.0	0.53	268.36	1,808.0	4.7	-4.1	318.59	6.3	
1,903.0	0.53	276.09	1,902.9	4.7	-5.0	313.32	6.9	
1,997.0	0.53	287.96	1,996.9	4.9	-5.9	309.96	7.7	
2,092.0	0.62	282.07	2,091.9	5.2	-6.8	307.23	8.5	
2,186.0	0.70	286.64	2,185.9	5.4	-7.8	304.72	9.5	

SDI

SDI Survey Report

Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well Copperhead "18" State #3H
Project:	Triple X Bone Spring	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (Grid North)	MD Reference:	Mean Sea Level (System)
Well:	Copperhead "18" State #3H	North Reference:	Grid
Wellbore:	DH - Job #320314-MPH-368	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #320314-MPH-368	Database:	EDM-Regulatory

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
2,281.0	0.70	289.89	2,280.9	5.8	-8.9	302.95	10.7	
2,375.0	0.70	287.08	2,374.9	6.2	-10.0	301.56	11.8	
2,469.0	0.79	294.64	2,468.9	6.6	-11.2	300.58	13.0	
2,564.0	0.79	282.77	2,563.9	7.0	-12.4	299.50	14.2	
2,658.0	0.79	281.37	2,657.9	7.3	-13.7	298.06	15.5	
2,753.0	0.79	287.17	2,752.9	7.6	-14.9	297.00	16.8	
2,847.0	0.79	286.99	2,846.9	8.0	-16.2	296.29	18.0	
2,941.0	0.79	281.10	2,940.9	8.3	-17.4	295.47	19.3	
3,036.0	0.79	285.15	3,035.9	8.6	-18.7	294.70	20.6	
3,130.0	0.79	285.15	3,129.8	8.9	-20.0	294.13	21.9	
3,225.0	0.79	283.04	3,224.8	9.3	-21.2	293.57	23.2	
3,319.0	0.79	282.68	3,318.8	9.5	-22.5	293.00	24.4	
3,413.0	0.70	288.84	3,412.8	9.9	-23.7	292.65	25.6	
3,508.0	0.79	283.30	3,507.8	10.2	-24.9	292.34	26.9	
3,602.0	0.85	293.42	3,601.8	10.6	-26.1	292.16	28.2	
3,696.0	0.88	286.02	3,695.8	11.1	-27.5	292.04	29.6	
3,791.0	1.06	285.15	3,790.8	11.5	-29.0	291.71	31.2	
3,885.0	0.79	285.59	3,884.8	11.9	-30.5	291.41	32.7	
3,980.0	0.18	307.03	3,979.8	12.2	-31.2	291.37	33.5	
4,074.0	0.70	100.75	4,073.8	12.2	-30.8	291.62	33.1	
4,168.0	1.06	99.43	4,167.7	11.9	-29.4	292.15	31.7	
4,263.0	1.23	99.87	4,262.7	11.6	-27.5	292.94	29.8	
4,357.0	1.58	102.95	4,356.7	11.2	-25.2	293.88	27.6	
4,452.0	1.67	101.28	4,451.7	10.6	-22.6	295.14	25.0	
4,546.0	1.76	99.08	4,545.6	10.1	-19.8	297.01	22.2	
4,640.0	2.11	103.83	4,639.6	9.5	-16.7	299.52	19.2	
4,734.0	1.67	115.78	4,733.5	8.5	-13.8	301.49	16.2	
4,829.0	1.41	120.09	4,828.5	7.3	-11.5	302.19	13.6	
4,923.0	1.49	120.09	4,922.5	6.1	-9.5	302.63	11.3	
5,018.0	1.32	120.44	5,017.4	4.9	-7.5	303.25	8.9	
5,101.0	1.49	114.11	5,100.4	4.0	-5.7	305.06	6.9	
5,196.0	1.58	113.67	5,195.4	2.9	-3.3	311.42	4.5	
5,290.0	1.58	112.79	5,289.3	1.9	-1.0	333.56	2.1	
5,385.0	1.67	118.94	5,384.3	0.7	1.5	63.02	1.6	
5,479.0	0.97	134.06	5,478.3	-0.5	3.2	98.29	3.3	
5,573.0	0.88	133.80	5,572.3	-1.5	4.3	109.41	4.6	
5,667.0	0.88	132.13	5,666.2	-2.5	5.4	114.98	5.9	
5,761.0	0.87	136.01	5,760.2	-3.5	6.4	118.66	7.3	
5,856.0	0.70	146.98	5,855.2	-4.5	7.2	121.96	8.5	
5,950.0	0.70	161.40	5,949.2	-5.5	7.7	125.62	9.5	
6,045.0	0.62	172.73	6,044.2	-6.6	8.0	129.59	10.4	
6,139.0	0.53	174.76	6,138.2	-7.5	8.1	132.99	11.0	
6,234.0	0.53	194.88	6,233.2	-8.4	8.0	136.35	11.6	
6,328.0	0.62	189.96	6,327.2	-9.3	7.8	140.03	12.2	

SDI

SDI Survey Report

Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well Copperhead "18" State #3H
Project:	Triple X Bone Spring	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (Grid North)	MD Reference:	Mean Sea Level (System)
Well:	Copperhead "18" State #3H	North Reference:	Grid
Wellbore:	DH - Job #320314-MPH-368	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #320314-MPH-368	Database:	EDM-Regulatory

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
6,422.0	0.53	196.55	6,421.2	-10.2	7.6	143.41	12.7	
6,517.0	0.18	165.61	6,516.2	-10.8	7.5	145.19	13.2	
6,611.0	0.26	80.27	6,610.2	-10.9	7.8	144.59	13.4	
6,706.0	0.44	81.77	6,705.2	-10.8	8.3	142.41	13.7	
6,800.0	0.26	39.14	6,799.2	-10.6	8.8	140.24	13.8	
6,894.0	0.26	36.15	6,893.2	-10.3	9.1	138.50	13.7	
6,989.0	0.18	54.61	6,988.2	-10.0	9.3	136.99	13.7	
7,083.0	0.53	296.75	7,082.2	-9.7	9.1	137.01	13.3	
7,178.0	0.62	277.32	7,177.2	-9.5	8.2	139.22	12.5	
7,272.0	0.53	274.77	7,271.2	-9.4	7.2	142.34	11.8	
7,366.0	0.62	264.67	7,365.2	-9.4	6.3	146.15	11.3	
7,460.0	0.97	276.62	7,459.2	-9.3	5.0	151.87	10.6	
7,555.0	0.97	275.39	7,554.1	-9.2	3.4	159.70	9.8	
7,649.0	0.97	268.45	7,648.1	-9.1	1.8	168.82	9.3	
7,743.0	1.06	260.27	7,742.1	-9.3	0.1	179.09	9.3	
7,838.0	0.97	248.50	7,837.1	-9.7	-1.5	188.59	9.8	
7,932.0	1.06	263.88	7,931.1	-10.1	-3.1	196.92	10.6	
8,026.0	0.26	251.84	8,025.1	-10.3	-4.1	201.97	11.1	
8,120.0	0.26	226.79	8,119.1	-10.5	-4.5	203.24	11.4	
8,215.0	0.35	244.80	8,214.1	-10.7	-4.9	204.59	11.8	
8,309.0	0.53	258.16	8,308.1	-11.0	-5.6	207.09	12.3	
8,403.0	0.79	333.84	8,402.1	-10.5	-6.3	211.11	12.2	
8,498.0	1.23	325.49	8,497.1	-9.0	-7.2	218.48	11.5	
8,592.0	1.23	331.29	8,591.0	-7.3	-8.2	228.38	11.0	
8,686.0	1.23	331.11	8,685.0	-5.5	-9.2	238.93	10.8	
8,781.0	0.53	19.54	8,780.0	-4.2	-9.6	246.06	10.5	
8,875.0	0.62	104.79	8,874.0	-4.0	-8.9	246.04	9.8	
8,969.0	0.35	88.71	8,968.0	-4.1	-8.1	243.34	9.1	
9,063.0	0.53	135.20	9,062.0	-4.4	-7.5	239.82	8.7	
9,157.0	0.18	220.46	9,156.0	-4.8	-7.3	236.75	8.8	
9,252.0	0.44	209.56	9,251.0	-5.2	-7.6	235.46	9.2	
9,346.0	0.70	283.39	9,345.0	-5.4	-8.3	237.00	10.0	
9,441.0	0.79	253.51	9,440.0	-5.5	-9.5	240.16	11.0	
9,535.0	0.70	255.53	9,534.0	-5.8	-10.7	241.58	12.2	
9,630.0	1.23	331.38	9,629.0	-5.0	-11.8	246.78	12.8	
9,724.0	1.49	321.71	9,722.9	-3.2	-13.0	256.16	13.4	
9,818.0	1.93	314.33	9,816.9	-1.1	-14.9	265.63	14.9	
9,913.0	2.02	317.23	9,911.8	1.2	-17.2	274.02	17.2	
10,007.0	2.73	301.32	10,005.8	3.6	-20.2	280.06	20.5	
10,102.0	2.02	305.62	10,100.7	5.7	-23.5	283.72	24.2	
10,196.0	1.41	306.24	10,194.6	7.4	-25.8	285.98	26.8	
10,291.0	1.67	291.30	10,289.6	8.6	-28.0	287.03	29.3	
10,304.0	1.41	298.59	10,302.6	8.7	-28.3	287.12	29.7	
10,336.0	1.23	303.25	10,334.6	9.1	-29.0	287.44	30.4	

SDI
SDI Survey Report

Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well Copperhead "18" State #3H
Project:	Triple X Bone Spring	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (Grid North)	MD Reference:	Mean Sea Level (System)
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Wellbore:	DH - Job #320314-MPH-368	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #320314-MPH-368	Database:	EDM-Regulatory

Survey								
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)	
10,367.0	0.97	210.35	10,365.6	9.1	-29.4	287.14	30.7	
10,398.0	5.63	183.54	10,396.5	7.3	-29.6	283.88	30.5	
10,430.0	10.55	184.30	10,428.2	2.8	-29.9	275.39	30.1	
10,461.0	13.72	182.84	10,458.5	-3.7	-30.3	263.08	30.5	
10,492.0	16.62	178.20	10,488.4	-11.8	-30.4	248.79	32.6	
10,523.0	18.99	174.32	10,517.9	-21.2	-29.7	234.46	36.5	
10,555.0	20.93	170.89	10,548.0	-32.1	-28.3	221.44	42.8	
10,586.0	23.48	166.41	10,576.7	-43.5	-26.0	210.82	50.7	
10,618.0	25.94	167.37	10,605.8	-56.6	-22.9	202.08	61.0	
10,649.0	28.23	169.48	10,633.4	-70.4	-20.1	195.96	73.2	
10,680.0	30.13	170.10	10,660.4	-85.3	-17.4	191.57	87.0	
10,712.0	32.18	169.66	10,687.8	-101.6	-14.5	188.15	102.6	
10,743.0	34.03	171.42	10,713.8	-118.3	-11.8	185.68	118.8	
10,775.0	35.53	173.96	10,740.1	-136.4	-9.4	183.96	136.7	
10,806.0	36.40	179.24	10,765.2	-154.5	-8.4	183.10	154.7	
10,837.0	37.02	181.87	10,790.0	-173.0	-8.6	182.83	173.3	
10,869.0	38.43	179.50	10,815.3	-192.6	-8.8	182.61	192.8	
10,900.0	40.36	178.89	10,839.3	-212.3	-8.5	182.30	212.5	
10,932.0	42.38	177.04	10,863.3	-233.4	-7.8	181.90	233.6	
10,963.0	44.14	176.40	10,885.9	-254.6	-6.5	181.47	254.7	
10,995.0	46.52	175.37	10,908.4	-277.3	-4.9	181.01	277.4	
11,026.0	47.92	176.95	10,929.4	-300.0	-3.4	180.65	300.1	
11,057.0	50.12	176.95	10,949.8	-323.4	-2.1	180.38	323.4	
11,089.0	52.85	178.80	10,969.7	-348.4	-1.2	180.20	348.4	
11,120.0	55.31	182.05	10,987.9	-373.5	-1.4	180.22	373.5	
11,152.0	57.42	182.75	11,005.6	-400.1	-2.5	180.36	400.1	
11,183.0	60.06	184.86	11,021.7	-426.6	-4.3	180.58	426.6	
11,215.0	63.58	184.60	11,036.8	-454.7	-6.6	180.83	454.7	
11,246.0	66.21	184.16	11,049.9	-482.7	-8.8	181.04	482.7	
11,277.0	69.20	184.95	11,061.7	-511.2	-11.0	181.24	511.4	
11,309.0	71.84	184.25	11,072.4	-541.3	-13.5	181.42	541.5	
11,340.0	74.39	183.54	11,081.4	-570.9	-15.5	181.55	571.1	
11,371.0	77.73	182.75	11,088.8	-600.9	-17.1	181.63	601.2	
11,402.0	80.28	182.10	11,094.8	-631.3	-18.4	181.67	631.6	
11,434.0	81.87	181.87	11,099.7	-662.9	-19.5	181.68	663.2	
11,465.0	83.10	181.61	11,103.8	-693.7	-20.4	181.69	694.0	
11,496.0	86.44	181.52	11,106.6	-724.5	-21.3	181.68	724.8	
11,528.0	87.67	181.17	11,108.2	-756.5	-22.0	181.67	756.8	
11,546.0	87.76	181.00	11,109.0	-774.4	-22.4	181.65	774.8	
11,578.0	88.81	179.94	11,109.9	-806.4	-22.6	181.61	806.7	
11,609.0	91.45	179.85	11,109.8	-837.4	-22.6	181.54	837.7	
11,640.0	92.51	178.89	11,108.8	-868.4	-22.2	181.47	868.7	
11,672.0	91.54	177.39	11,107.6	-900.4	-21.2	181.35	900.6	
11,703.0	89.69	176.16	11,107.3	-931.3	-19.5	181.20	931.5	
11,797.0	90.84	177.13	11,106.9	-1,025.1	-13.9	180.78	1,025.2	

SDI
SDI Survey Report

Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well Copperhead "18" State #3H
Project:	Triple X Bone Spring	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (Grid North)	MD Reference:	Mean Sea Level (System)
Well:	Copperhead "18" State #3H	North Reference:	Grid
Wellbore:	DH - Job #320314-MPH-368	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #320314-MPH-368	Database:	EDM-Regulatory

Survey							
MD (usft)	Inc (°)	Azi (azimuth) (°)	TVD (usft)	N/S (usft)	E/W (usft)	Closure Azimuth (°)	Closure Distance (usft)
11,891.0	90.66	177.13	11,105.6	-1,119.0	-9.2	180.47	1,119.1
11,985.0	90.66	175.90	11,104.6	-1,212.8	-3.5	180.17	1,212.8
12,079.0	89.16	176.95	11,104.7	-1,306.7	2.3	179.90	1,306.7
12,173.0	88.90	177.92	11,106.3	-1,400.5	6.5	179.73	1,400.6
12,267.0	91.28	179.41	11,106.2	-1,494.5	8.7	179.67	1,494.5
12,362.0	91.28	178.97	11,104.0	-1,589.5	10.1	179.64	1,589.5
12,456.0	92.42	181.17	11,101.0	-1,683.4	10.0	179.66	1,683.5
12,550.0	91.63	179.85	11,097.7	-1,777.4	9.1	179.71	1,777.4
12,644.0	87.93	178.10	11,098.0	-1,871.3	10.8	179.67	1,871.4
12,738.0	88.81	179.24	11,100.7	-1,965.3	13.0	179.62	1,965.3
12,832.0	89.34	179.50	11,102.2	-2,059.2	14.0	179.61	2,059.3
12,927.0	91.84	179.03	11,101.3	-2,154.2	15.2	179.59	2,154.3
13,020.0	92.77	178.97	11,097.5	-2,247.1	16.9	179.57	2,247.2
13,114.0	92.86	178.36	11,092.9	-2,341.0	19.0	179.53	2,341.1
13,208.0	92.95	178.45	11,088.1	-2,434.8	21.7	179.49	2,434.9
13,302.0	91.63	177.92	11,084.4	-2,528.7	24.6	179.44	2,528.8
13,396.0	89.52	178.27	11,083.4	-2,622.6	27.8	179.39	2,622.8
13,490.0	89.78	178.53	11,084.0	-2,716.6	30.4	179.36	2,716.8
13,584.0	90.31	178.01	11,083.9	-2,810.6	33.2	179.32	2,810.8
13,677.0	90.40	177.83	11,083.4	-2,903.5	36.6	179.28	2,903.7
13,771.0	89.69	179.06	11,083.3	-2,997.5	39.1	179.25	2,997.7
13,866.0	91.10	180.64	11,082.6	-3,092.5	39.4	179.27	3,092.7
13,960.0	90.92	180.29	11,081.0	-3,186.4	38.6	179.31	3,186.7
14,053.0	91.36	181.79	11,079.1	-3,279.4	36.9	179.35	3,279.6
14,147.0	90.04	180.73	11,078.0	-3,373.4	34.9	179.41	3,373.5
14,241.0	89.69	181.96	11,078.2	-3,467.3	32.7	179.46	3,467.5
14,335.0	87.58	181.00	11,080.4	-3,561.3	30.2	179.51	3,561.4
14,429.0	87.32	181.70	11,084.6	-3,655.2	28.0	179.56	3,655.3
14,523.0	88.55	181.79	11,088.0	-3,749.0	25.2	179.62	3,749.1
14,618.0	90.31	181.52	11,088.9	-3,844.0	22.4	179.67	3,844.1
14,712.0	91.10	180.73	11,087.8	-3,938.0	20.6	179.70	3,938.0
14,806.0	90.31	180.82	11,086.6	-4,032.0	19.3	179.73	4,032.0
14,900.0	91.28	180.29	11,085.3	-4,125.9	18.4	179.74	4,126.0
14,995.0	92.51	180.20	11,082.2	-4,220.9	18.0	179.76	4,220.9
15,089.0	92.68	179.59	11,077.9	-4,314.8	18.2	179.76	4,314.8
15,183.0	90.84	179.76	11,075.0	-4,408.7	18.7	179.76	4,408.8
15,277.0	90.13	179.85	11,074.2	-4,502.7	19.0	179.76	4,502.8
15,371.0	89.76	180.44	11,074.3	-4,596.7	18.8	179.77	4,596.8
15,385.6	89.71	180.18	11,074.4	-4,611.4	18.7	179.77	4,611.4
15,464.0	89.43	178.80	11,075.0	-4,689.7	19.4	179.76	4,689.8
Last MWD Survey							
15,515.0	89.43	178.80	11,075.5	-4,740.7	20.5	179.75	4,740.8
Projection to Bit							

SDI

SDI Survey Report

Company:	OCCIDENTAL PERMIAN LTD.	Local Co-ordinate Reference:	Well Copperhead "18" State #3H
Project:	Triple X Bone Spring	TVD Reference:	Mean Sea Level (System)
Site:	Lea County, NM (Grid North)	MD Reference:	Mean Sea Level (System)
Well:	Copperhead "18" State #3H	North Reference:	Grid
Wellbore:	DH - Job #320314-MPH-368	Survey Calculation Method:	Minimum Curvature
Design:	DH - Job #320314-MPH-368	Database:	EDM-Regulatory

Survey Annotations				
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
15,464.0	11,075.0	-4,689.7	19.4	Last MWD Survey
15,515.0	11,075.5	-4,740.7	20.5	Projection to Bit



C18S 3H
Lea County, New Mexico
Northing: 445915.70
Easting: 722783.20
Design #5



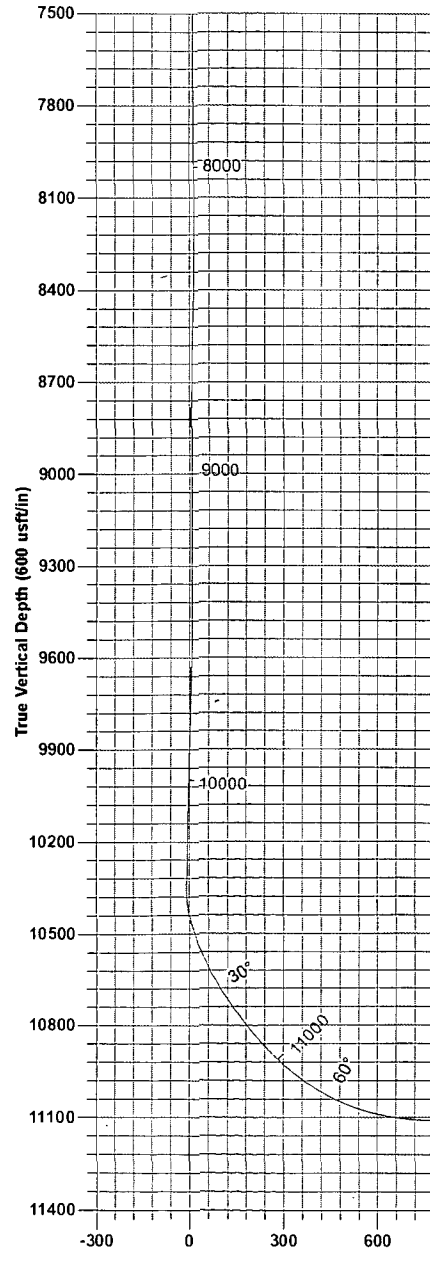
To convert a Magnetic Direction to a Grid Direction, Add 6.88°
 To convert a True Direction to a Grid Direction, Subtract 0.38°

Azimuths to Grid North
 True North: -0.38°
 Magnetic North: 6.88°

Magnetic Field
 Strength: 48336.8nT
 Dip Angle: 60.11°
 Date: 03/11/2014
 Model: IGRF2010



KB @ 3592.30usft
 Gr @ 3568.30



WELL DETAILS C18S 3H						
		Ground Level:	3568.30			
+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	
0.00	0.00	445915.70	722783.20	32.224	-103.613	

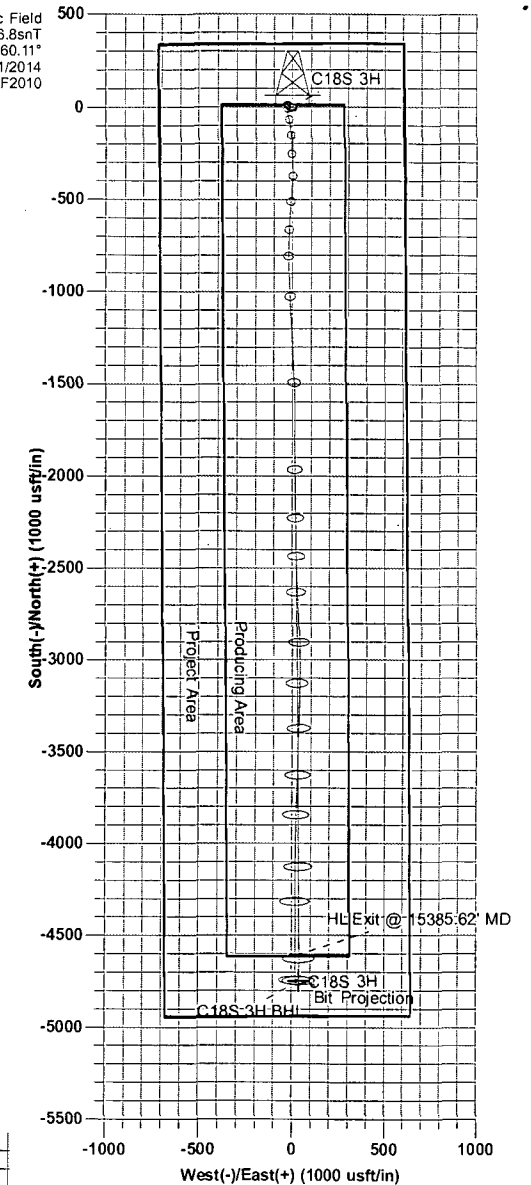
SECTION DETAILS									
MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSeet	Target
12738.00	88.81	179.24	11100.71	-1965.25	12.98	0.00	0.00	1965.29	
12789.00	89.00	179.24	11101.69	-2016.24	13.66	0.37	0.00	2016.28	
12914.00	91.50	179.24	11101.14	-2141.22	15.32	2.00	0.00	2141.27	
13339.62	91.50	179.24	11090.00	-2566.65	20.96	0.00	0.00	2566.73	
13403.65	90.24	179.49	11089.03	-2630.67	21.67	2.00	168.63	2630.76	
15518.63	90.24	179.49	11080.00	-4745.55	40.41	0.00	0.00	4745.72	C18S 3H BHL

DESIGN TARGET DETAILS						
Name	TVD	+N/-S	+E/-W	Northing	Easting	
C18S 3H BHL	11080.00	-4745.55	40.41	441170.15	722823.61	

SITE DETAILS:
 Copperhead 18 State 3H
 Site Centre Northing: 445915.70
 Easting: 722783.20
 Positional Uncertainty: 0.00
 Convergence: 0.38
 Local North: Grid

PROJECT DETAILS:
 Lea County, New Mexico
 Geodetic System: US State Plane 1927 (Exact solution)
 Datum: NAD 1927 (NADCON CONUS)
 Ellipsoid: Clarke 1866
 Zone: New Mexico East 3001
 System Datum: Mean Sea Level

Lateral TGT Line
 20'up/20'down

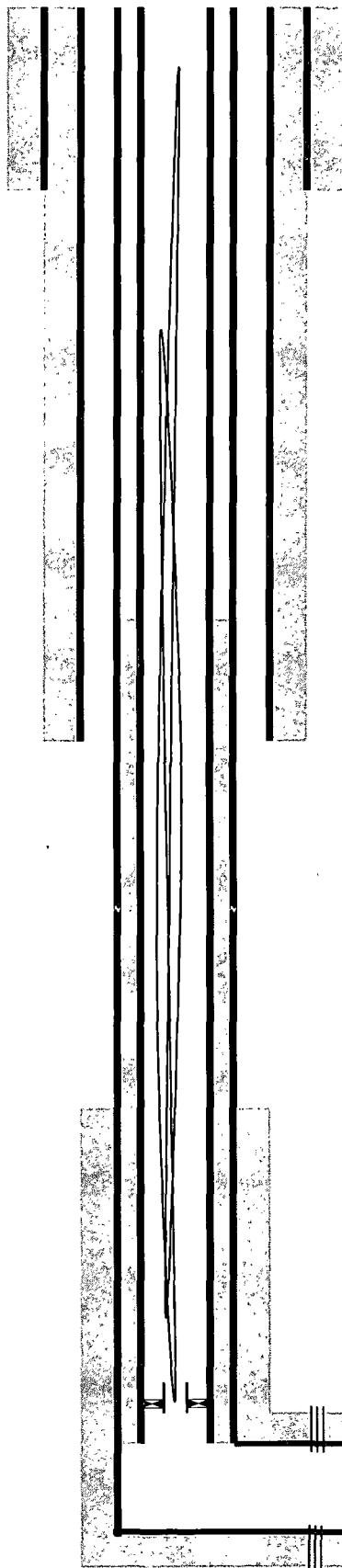


HL Exit @ 15385.62' MD
 15515.5
 46.11
 47.41
 Bit Projection

Jody Barclay
 15:43, April 10 2014

Scientific Drilling
 2740 N. Highway 287
 Decatur, TX 76234

OXY USA INC. - Current
Copperhead 18 State 3H
API No. 30-025-41461



14-3/4" hole @ 1210'
11-3/4" csg @ 1210'
w/ 760sx-TOC-Surf-Circ

10-5/8" hole @ 5070'
8-5/8" csg @ 5060'
w/ 2110sx-TOC-Surf-Circ

Parted Csg @ 6280'

7-7/8" hole @ 15515'
5-1/2" csg @ 15503'
w/ 1480sx-TOC-7867'-CBL

4-1/2" liner @ 10300'
w/ 140sx-TOC-4467'-Calc

AS X-1 pkr @ 10230' w/ WL Cable to 362'

Perfs @ 11384-15356'
PBSD-15370'M 11075'V TD-15515'M 11075'V