

Results of Directional Survey

API number:	30-025-40891		
OGRID:		Operator:	YATES PETROLEUM CORPORATION
		Property:	HEMLOCK BSH STATE # 2H

surface	ULSTR:	D	32	T	23S	R	33E
				220	FNL	580	FWL

BH Loc	ULSTR:	M	32	T	23S	R	33E
15693	MD	11155.8	TVD	330	FSL	702	FWL
				4950	FNL		

Top Perf/OH	ULSTR:	D	32	T	23S	R	33E
11510	MD	11149.2	TVD	772	FNL	547	FWL

Bot Perf/OH	ULSTR:	M	32	T	23S	R	33E
15638	MD	11155.2	TVD	385	FSL	699	FWL
				4895	FNL		

	MD	N/S	E/W	VD
	11500	-541.90	-33.10	11149.1
TOP PERFS/OH	11510	-552.04	-32.62	11149.20
	11521	-563.20	-32.10	11149.30
	15548	-4585.50	113.80	11154.10
BOT PERFS/OH	15638	-4675.40	118.83	11155.16
	15641	-4678.40	119.00	11155.20

NEXT TO LAST	15641	-4678.40	119.00	11155.20
LAST READING	15693	-4730.30	121.70	11155.80
TD	15693	-4730.30	121.70	11155.80

Surface Location	220	FN	580	FW
Projected BHL	4950	FN	702	FW
Location of				
Top Perfs/OH	772	FN	547	FW
Bottom Perfs/OH	4895	FN	699	FW

SUMMARY of Subsurface Locations

Surface Location	D-32-23S-33E	220	FN	580	FW	Vert. Depth
Top Perfs/OH	D-32-23S-33E	772	FN	547	FW	11149.20
Bottom Perfs/OH	M-32-23S-33E	4895	FN	699	FW	11155.16
Projected TD	M-32-23S-33E	4950	FN	702	FW	11155.80

MAY 20 2013



Job Number: SVMO-130072
 Company: Yates Petroleum Corporation
 Lease/Well: Hemlock BSH State 2H
 Location: Lea County, New Mexico
 Rig Name: Cactus #124
 RKB: 22'
 G.L. or M.S.L.: GL

State/Country: New Mexico/USA
 Declination: 7.03°
 Grid: East To Grid North
 File name: F:\SURVEY\2013SU~1\YATES\MO\HEMLOC~1\2H.SVY
 Date/Time: 11-Feb-13 / 09:55
 Curve Name: Surface - 1250' M.D. (Rate Gyro)

WINSERVE SURVEY CALCULATIONS
 Minimum Curvature Method
 Vertical Section Plane .00
 Vertical Section Referenced to Wellhead
 Rectangular Coordinates Referenced to Wellhead

SUR: D-32-23s-33e, 220/N & 580/W
 BHL: M-32-23s-33e, 4950/N & 702/W
 API # 30-025-40891

Measured Depth FT	Incl Angle Deg	Drift Direction Deg	True Vertical Depth	N-S FT	E-W FT	Vertical Section FT	CLOSURE		Dogleg Severity Deg/100
							Distance FT	Direction Deg	
.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
200.00	.34	124.29	200.00	-.33	.49	-.33	.59	124.29	.17
400.00	.40	127.88	399.99	-1.10	1.53	-1.10	1.88	125.62	.03
600.00	.34	165.70	599.99	-2.10	2.23	-2.10	3.06	133.30	.12
800.00	.12	168.31	799.99	-2.88	2.42	-2.88	3.76	139.99	.11
1000.00	.13	198.69	999.99	-3.30	2.39	-3.30	4.07	144.12	.03
1200.00	.26	270.09	1199.99	-3.52	1.86	-3.52	3.98	152.10	.13
Last Survey Depth Recorded									
1250.00	.34	293.84	1249.99	-3.46	1.61	-3.46	3.81	154.98	.29

HOBBS OCD

APR 15 2013

RECEIVED

Yates Petroleum

Lea County, NM (NAD-83)

Hemlock BSH State

#2H

OH

SUR: D-32-23s-33e, 220/N & 580/W

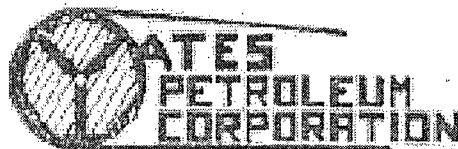
BHL: M-32-23s-33e, 4950/N & 702/W

API # 30-025-40891

Design: OH

Survey Report - Geographic

25 February, 2013



Survey Report - Geographic



Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #2H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3696.0usft (Cactus 124)
Site:	Hemlock BSH State	MD Reference:	RKB @ 3696.0usft (Cactus 124)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Project	Lea County, NM (NAD-83)		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	New Mexico Eastern Zone		

Site	Hemlock BSH State		
Site Position:		Northing:	461,953.77 usft
From:	Map	Easting:	767,687.41 usft
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "
		Latitude:	32° 16' 4.306 N
		Longitude:	103° 36' 3.657 W
		Grid Convergence:	0.39 °

Well	#2H		
Well Position	+N/-S	0.0 usft	Northing:
	+E/-W	0.0 usft	Easting:
Position Uncertainty	0.0 usft	Wellhead Elevation:	usft
		Ground Level:	3,671.0 usft

Wellbore	OH		
Magnetics	Model Name	Sample Date	Declination
	IGRF2010	1/4/2013	7.41
			Dip Angle
			60.18
			Field Strength
			48,482

Design	OH		
Audit Notes:			
Version:	1.0	Phase:	ACTUAL
		Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W
	(usft)	(usft)	(usft)
	0.0	0.0	0.0
			Direction
			(°)
			33.39

Survey Program	Date: 2/25/2013		
From	To	Survey (Wellbore)	Tool Name
(usft)	(usft)		Description
200.0	1,250.0	Survey #1 - MS Gyro (OH)	CB-GYRO-MS
1,302.0	15,641.0	Survey #2 - Crescent1 (OH)	MWD
15,693.0	15,693.0	Survey #3 - PTB (OH)	MWD
			Camera based gyro multishot
			MWD - Standard
			MWD - Standard

Survey										
Measured	Inclination	Azimuth	Vertical	+N/-S	+E/-W	Map	Map			
Depth	(°)	(°)	Depth	(usft)	(usft)	Northing	Easting	Latitude	Longitude	
(usft)			(usft)			(usft)	(usft)			
0.0	0.00	0.00	0.0	0.0	0.0	461,953.76	767,687.41	32° 16' 4.305 N	103° 36' 3.657 W	
200.0	0.34	124.29	200.0	-0.3	0.5	461,953.43	767,687.90	32° 16' 4.302 N	103° 36' 3.651 W	
400.0	0.40	127.88	400.0	-1.1	1.5	461,952.67	767,688.94	32° 16' 4.295 N	103° 36' 3.639 W	
600.0	0.34	165.70	600.0	-2.1	2.2	461,951.66	767,689.64	32° 16' 4.285 N	103° 36' 3.631 W	
800.0	0.12	168.31	800.0	-2.9	2.4	461,950.88	767,689.83	32° 16' 4.277 N	103° 36' 3.629 W	
1,000.0	0.13	198.69	1,000.0	-3.3	2.4	461,950.46	767,689.80	32° 16' 4.273 N	103° 36' 3.629 W	
1,200.0	0.26	270.09	1,200.0	-3.5	1.9	461,950.25	767,689.27	32° 16' 4.271 N	103° 36' 3.636 W	
1,250.0	0.34	293.84	1,250.0	-3.5	1.6	461,950.31	767,689.02	32° 16' 4.271 N	103° 36' 3.638 W	
Tie into Gyro @ 1250' MD										
1,302.0	0.40	288.60	1,302.0	-3.3	1.3	461,950.43	767,688.71	32° 16' 4.272 N	103° 36' 3.642 W	

Survey Report - Geographic



Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #2H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3696.0usft (Cactus 124)
Site:	Hemlock BSH State	MD Reference:	RKB @ 3696.0usft (Cactus 124)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston R5000 Database

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
1,491.0	0.50	286.50	1,491.0	-2.9	-0.1	461,950.87	767,687.29	32° 16' 4.277 N	103° 36' 3.659 W
1,680.0	0.50	297.20	1,680.0	-2.3	-1.6	461,951.48	767,685.77	32° 16' 4.283 N	103° 36' 3.676 W
1,870.0	0.40	319.50	1,870.0	-1.4	-2.8	461,952.37	767,684.60	32° 16' 4.292 N	103° 36' 3.690 W
2,059.0	0.40	326.00	2,059.0	-0.3	-3.6	461,953.42	767,683.80	32° 16' 4.302 N	103° 36' 3.699 W
2,248.0	0.30	336.60	2,248.0	0.7	-4.2	461,954.42	767,683.24	32° 16' 4.312 N	103° 36' 3.706 W
2,438.0	0.20	318.80	2,438.0	1.4	-4.6	461,955.12	767,682.82	32° 16' 4.319 N	103° 36' 3.710 W
2,627.0	0.00	248.00	2,627.0	1.6	-4.8	461,955.37	767,682.60	32° 16' 4.322 N	103° 36' 3.713 W
2,816.0	0.10	51.70	2,816.0	1.7	-4.7	461,955.47	767,682.73	32° 16' 4.323 N	103° 36' 3.711 W
3,006.0	0.10	2.50	3,006.0	2.0	-4.5	461,955.74	767,682.87	32° 16' 4.325 N	103° 36' 3.710 W
3,196.0	0.40	24.70	3,196.0	2.7	-4.3	461,956.51	767,683.15	32° 16' 4.333 N	103° 36' 3.706 W
3,386.0	0.40	18.00	3,385.9	4.0	-3.8	461,957.74	767,683.64	32° 16' 4.345 N	103° 36' 3.701 W
3,576.0	0.50	14.20	3,575.9	5.4	-3.4	461,959.18	767,684.04	32° 16' 4.359 N	103° 36' 3.696 W
3,766.0	0.50	34.00	3,765.9	6.9	-2.7	461,960.67	767,684.71	32° 16' 4.374 N	103° 36' 3.688 W
3,955.0	0.40	55.40	3,954.9	8.0	-1.7	461,961.73	767,685.71	32° 16' 4.384 N	103° 36' 3.676 W
4,146.0	0.20	358.70	4,145.9	8.7	-1.2	461,962.44	767,686.26	32° 16' 4.391 N	103° 36' 3.670 W
4,336.0	0.20	139.50	4,335.9	8.8	-0.9	461,962.52	767,686.46	32° 16' 4.392 N	103° 36' 3.667 W
4,430.0	0.80	131.70	4,429.9	8.2	-0.3	461,961.96	767,687.06	32° 16' 4.387 N	103° 36' 3.660 W
4,523.0	0.20	194.00	4,522.9	7.6	0.1	461,961.37	767,687.51	32° 16' 4.381 N	103° 36' 3.655 W
4,618.0	0.40	214.50	4,617.9	7.2	-0.1	461,960.93	767,687.28	32° 16' 4.376 N	103° 36' 3.658 W
4,713.0	0.90	151.60	4,712.9	6.2	0.0	461,960.00	767,687.44	32° 16' 4.367 N	103° 36' 3.656 W
4,808.0	1.10	119.60	4,807.9	5.1	1.2	461,958.90	767,688.59	32° 16' 4.356 N	103° 36' 3.643 W
4,901.0	0.80	84.80	4,900.9	4.8	2.6	461,958.51	767,690.02	32° 16' 4.352 N	103° 36' 3.626 W
4,996.0	0.30	37.80	4,995.9	5.0	3.4	461,958.77	767,690.83	32° 16' 4.355 N	103° 36' 3.617 W
5,090.0	0.20	20.00	5,089.9	5.4	3.6	461,959.12	767,691.04	32° 16' 4.358 N	103° 36' 3.614 W
5,140.0	0.20	349.50	5,139.9	5.5	3.6	461,959.29	767,691.05	32° 16' 4.360 N	103° 36' 3.614 W
5,288.0	0.40	76.90	5,287.9	5.9	4.1	461,959.66	767,691.51	32° 16' 4.364 N	103° 36' 3.609 W
5,477.0	0.50	56.60	5,476.9	6.5	5.4	461,960.26	767,692.84	32° 16' 4.369 N	103° 36' 3.593 W
5,667.0	0.70	45.70	5,666.9	7.8	7.0	461,961.53	767,694.36	32° 16' 4.382 N	103° 36' 3.575 W
5,856.0	0.80	44.00	5,855.8	9.5	8.7	461,963.28	767,696.10	32° 16' 4.399 N	103° 36' 3.555 W
6,045.0	0.60	47.40	6,044.8	11.1	10.3	461,964.90	767,697.75	32° 16' 4.415 N	103° 36' 3.536 W
6,235.0	0.70	29.10	6,234.8	12.8	11.6	461,966.59	767,699.04	32° 16' 4.432 N	103° 36' 3.520 W
6,425.0	0.70	16.60	6,424.8	15.0	12.5	461,968.72	767,699.94	32° 16' 4.453 N	103° 36' 3.510 W
6,614.0	0.50	49.70	6,613.8	16.6	13.5	461,970.36	767,700.90	32° 16' 4.469 N	103° 36' 3.499 W
6,805.0	0.50	5.70	6,804.8	18.0	14.2	461,971.73	767,701.62	32° 16' 4.482 N	103° 36' 3.490 W
6,994.0	0.70	26.10	6,993.8	19.8	14.8	461,973.58	767,702.21	32° 16' 4.501 N	103° 36' 3.483 W
7,182.0	0.40	233.30	7,181.8	20.5	14.8	461,974.22	767,702.19	32° 16' 4.507 N	103° 36' 3.483 W
7,371.0	0.00	261.80	7,370.8	20.1	14.2	461,973.83	767,701.66	32° 16' 4.503 N	103° 36' 3.489 W
7,560.0	0.60	171.70	7,559.8	19.1	14.4	461,972.85	767,701.80	32° 16' 4.493 N	103° 36' 3.488 W
7,750.0	1.00	166.70	7,749.8	16.5	14.9	461,970.25	767,702.32	32° 16' 4.468 N	103° 36' 3.482 W
7,939.0	0.70	151.60	7,938.7	13.9	15.8	461,967.63	767,703.25	32° 16' 4.442 N	103° 36' 3.471 W
8,129.0	1.00	176.60	8,128.7	11.2	16.5	461,964.95	767,703.90	32° 16' 4.415 N	103° 36' 3.464 W
8,224.0	1.10	235.00	8,223.7	9.8	15.8	461,963.60	767,703.21	32° 16' 4.402 N	103° 36' 3.472 W
8,319.0	1.10	231.30	8,318.7	8.7	14.3	461,962.51	767,701.75	32° 16' 4.391 N	103° 36' 3.489 W
8,414.0	1.10	225.40	8,413.7	7.5	13.0	461,961.30	767,700.39	32° 16' 4.379 N	103° 36' 3.505 W
8,509.0	1.10	224.50	8,508.6	6.2	11.7	461,960.01	767,699.10	32° 16' 4.366 N	103° 36' 3.520 W
8,603.0	1.10	227.04	8,602.6	5.0	10.4	461,958.75	767,697.80	32° 16' 4.354 N	103° 36' 3.535 W
8,698.0	0.60	238.70	8,697.6	4.1	9.3	461,957.87	767,696.71	32° 16' 4.346 N	103° 36' 3.548 W
8,792.0	0.50	248.50	8,791.6	3.7	8.5	461,957.46	767,695.91	32° 16' 4.342 N	103° 36' 3.558 W
8,887.0	0.50	234.30	8,886.6	3.3	7.8	461,957.07	767,695.19	32° 16' 4.338 N	103° 36' 3.566 W
8,981.0	0.50	236.20	8,980.6	2.8	7.1	461,956.60	767,694.51	32° 16' 4.333 N	103° 36' 3.574 W
9,076.0	0.50	274.60	9,075.6	2.6	6.3	461,956.41	767,693.76	32° 16' 4.331 N	103° 36' 3.583 W
9,170.0	0.90	301.90	9,169.6	3.1	5.3	461,956.83	767,692.72	32° 16' 4.335 N	103° 36' 3.595 W
9,264.0	1.00	313.40	9,263.6	4.0	4.1	461,957.78	767,691.50	32° 16' 4.345 N	103° 36' 3.609 W
9,359.0	0.40	319.70	9,358.6	4.8	3.3	461,958.61	767,690.68	32° 16' 4.353 N	103° 36' 3.618 W
9,453.0	1.10	260.10	9,452.6	4.9	2.2	461,959.70	767,689.58	32° 16' 4.354 N	103° 36' 3.631 W

Survey Report - Geographic



Company:	Yates Petroleum	Local Co-ordinate Reference:	Well #2H
Project:	Lea County, NM (NAD-83)	TVD Reference:	RKB @ 3696.0usft (Cactus 124)
Site:	Hemlock BSH State	MD Reference:	RKB @ 3696.0usft (Cactus 124)
Well:	#2H	North Reference:	Grid
Wellbore:	OH	Survey Calculation Method:	Minimum Curvature
Design:	OH	Database:	Houston-R5000 Database

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
9,547.0	1.40	232.10	9,546.5	4.1	0.4	461,957.84	767,687.79	32° 16' 4.346 N	103° 36' 3.652 W
9,642.0	1.10	208.40	9,641.5	2.6	-1.0	461,956.33	767,686.44	32° 16' 4.331 N	103° 36' 3.668 W
9,735.0	0.40	356.30	9,734.5	2.1	-1.4	461,955.86	767,685.99	32° 16' 4.326 N	103° 36' 3.673 W
9,829.0	0.50	319.50	9,828.5	2.7	-1.7	461,956.50	767,685.70	32° 16' 4.333 N	103° 36' 3.677 W
9,923.0	1.30	286.50	9,922.5	3.4	-3.0	461,957.12	767,684.41	32° 16' 4.339 N	103° 36' 3.692 W
10,017.0	2.40	321.20	10,016.5	5.2	-5.2	461,958.95	767,682.16	32° 16' 4.357 N	103° 36' 3.718 W
10,111.0	1.10	42.70	10,110.4	7.4	-5.9	461,961.15	767,681.54	32° 16' 4.379 N	103° 36' 3.725 W
10,206.0	0.40	66.60	10,205.4	8.2	-4.9	461,961.95	767,682.46	32° 16' 4.387 N	103° 36' 3.714 W
10,301.0	0.40	71.40	10,300.4	8.4	-4.3	461,962.19	767,683.08	32° 16' 4.389 N	103° 36' 3.707 W
10,395.0	0.40	123.20	10,394.4	8.4	-3.7	461,962.12	767,683.66	32° 16' 4.388 N	103° 36' 3.700 W
10,491.0	0.10	144.70	10,490.4	8.1	-3.4	461,961.86	767,683.99	32° 16' 4.386 N	103° 36' 3.696 W
10,585.0	0.50	295.30	10,584.4	8.2	-3.7	461,961.97	767,683.67	32° 16' 4.387 N	103° 36' 3.700 W
10,619.0	0.60	298.60	10,618.4	8.4	-4.0	461,962.12	767,683.38	32° 16' 4.388 N	103° 36' 3.703 W
KOP - 10619.0' MD, 10618.4' TVD, 0.60° INC, 4.8' VS									
10,681.0	1.30	258.90	10,680.4	8.4	-5.0	461,962.14	767,682.40	32° 16' 4.389 N	103° 36' 3.715 W
10,713.0	3.60	203.40	10,712.4	7.4	-5.8	461,961.15	767,681.65	32° 16' 4.379 N	103° 36' 3.723 W
10,744.0	7.50	188.60	10,743.2	4.5	-6.4	461,958.25	767,680.96	32° 16' 4.350 N	103° 36' 3.732 W
10,776.0	12.00	182.00	10,774.8	-0.9	-6.9	461,952.86	767,680.53	32° 16' 4.297 N	103° 36' 3.737 W
10,807.0	16.40	177.80	10,804.8	-8.5	-6.8	461,945.26	767,680.59	32° 16' 4.222 N	103° 36' 3.737 W
10,839.0	20.30	176.10	10,835.2	-18.6	-6.3	461,935.21	767,681.14	32° 16' 4.122 N	103° 36' 3.731 W
10,870.0	23.70	175.10	10,863.9	-30.1	-5.4	461,923.63	767,682.04	32° 16' 4.008 N	103° 36' 3.722 W
10,901.0	27.10	174.60	10,891.9	-43.4	-4.2	461,910.39	767,683.23	32° 16' 3.877 N	103° 36' 3.709 W
10,932.0	30.90	174.50	10,919.0	-58.3	-2.7	461,895.43	767,684.66	32° 16' 3.728 N	103° 36' 3.694 W
10,963.0	34.90	175.80	10,945.0	-75.1	-1.3	461,878.66	767,686.07	32° 16' 3.562 N	103° 36' 3.678 W
10,995.0	38.40	178.20	10,970.7	-94.2	-0.4	461,859.59	767,687.06	32° 16' 3.374 N	103° 36' 3.669 W
11,027.0	42.00	180.80	10,995.1	-114.8	-0.2	461,838.94	767,687.22	32° 16' 3.169 N	103° 36' 3.668 W
11,057.3	45.81	183.54	11,017.0	-135.8	-1.0	461,817.95	767,686.41	32° 16' 2.962 N	103° 36' 3.679 W
Cross into 330' Lease - 11057.3' MD, 11017.0' TVD, 45.81° INC, -113.9' VS									
11,058.0	45.90	183.60	11,017.5	-136.3	-1.0	461,817.45	767,686.37	32° 16' 2.957 N	103° 36' 3.680 W
11,089.0	49.30	186.20	11,038.4	-159.1	-3.0	461,794.65	767,684.41	32° 16' 2.731 N	103° 36' 3.705 W
11,121.0	53.60	188.10	11,058.3	-183.9	-6.1	461,769.83	767,681.28	32° 16' 2.486 N	103° 36' 3.743 W
11,152.0	57.20	189.00	11,075.9	-209.2	-9.9	461,744.60	767,677.48	32° 16' 2.236 N	103° 36' 3.789 W
11,184.0	60.90	189.00	11,092.4	-236.3	-14.2	461,717.50	767,673.19	32° 16' 1.969 N	103° 36' 3.841 W
11,215.0	65.80	189.10	11,106.3	-263.6	-18.6	461,690.15	767,668.83	32° 16' 1.698 N	103° 36' 3.894 W
11,247.0	70.10	188.90	11,118.3	-292.9	-23.2	461,660.86	767,664.19	32° 16' 1.409 N	103° 36' 3.951 W
11,279.0	73.70	187.20	11,128.2	-323.0	-27.5	461,630.75	767,659.94	32° 16' 1.111 N	103° 36' 4.003 W
11,310.0	77.80	185.40	11,135.8	-352.9	-30.8	461,600.89	767,656.65	32° 16' 0.816 N	103° 36' 4.043 W
11,342.0	81.70	183.50	11,141.5	-384.3	-33.2	461,569.50	767,654.21	32° 16' 0.505 N	103° 36' 4.074 W
11,373.0	85.60	182.20	11,145.0	-415.0	-34.7	461,538.74	767,652.68	32° 16' 0.201 N	103° 36' 4.094 W
11,405.0	88.00	179.80	11,146.7	-447.0	-35.3	461,506.80	767,652.12	32° 15' 59.885 N	103° 36' 4.103 W
11,436.0	88.50	178.90	11,147.7	-477.9	-34.9	461,475.81	767,652.47	32° 15' 59.578 N	103° 36' 4.102 W
11,468.0	88.60	178.40	11,148.5	-509.9	-34.2	461,443.83	767,653.23	32° 15' 59.262 N	103° 36' 4.096 W
11,500.0	89.30	177.70	11,149.1	-541.9	-33.1	461,411.86	767,654.32	32° 15' 58.945 N	103° 36' 4.085 W
11,521.3	89.74	177.19	11,149.3	-563.2	-32.1	461,390.58	767,655.27	32° 15' 58.735 N	103° 36' 4.076 W
EOC - 11521.3' MD, 11149.3' TVD, 89.74° INC, -487.9' VS									
11,563.0	90.60	176.20	11,149.1	-604.8	-29.7	461,348.95	767,657.67	32° 15' 58.323 N	103° 36' 4.051 W
11,626.0	90.70	176.00	11,148.4	-667.7	-25.5	461,286.10	767,661.95	32° 15' 57.701 N	103° 36' 4.006 W
11,658.0	90.50	175.80	11,148.1	-699.6	-23.2	461,254.18	767,664.24	32° 15' 57.385 N	103° 36' 3.982 W
11,721.0	90.00	176.20	11,147.8	-762.4	-18.8	461,191.34	767,668.64	32° 15' 56.762 N	103° 36' 3.936 W
11,752.0	90.00	176.20	11,147.8	-793.4	-16.7	461,160.41	767,670.69	32° 15' 56.456 N	103° 36' 3.915 W
11,847.0	89.70	175.70	11,148.1	-888.1	-10.0	461,065.64	767,677.40	32° 15' 55.518 N	103° 36' 3.844 W
11,942.0	90.70	175.80	11,147.7	-982.9	-3.0	460,970.91	767,684.44	32° 15' 54.580 N	103° 36' 3.770 W
12,037.0	90.40	176.20	11,146.8	-1,077.6	3.7	460,876.14	767,691.07	32° 15' 53.642 N	103° 36' 3.700 W
12,132.0	91.50	175.90	11,145.2	-1,172.4	10.2	460,781.38	767,697.61	32° 15' 52.704 N	103° 36' 3.631 W
12,227.0	90.70	176.20	11,143.4	-1,267.1	16.7	460,686.63	767,704.15	32° 15' 51.766 N	103° 36' 3.563 W

Survey Report - Geographic



Company: Yates Petroleum
 Project: Lea County, NM (NAD-83)
 Site: Hemlock BSH State
 Well: #2H
 Wellbore: OH
 Design: OH

Local Co-ordinate Reference: Well #2H
 TVD Reference: RKB @ 3696.0usft (Cactus 124)
 MD Reference: RKB @ 3696.0usft (Cactus 124)
 North Reference: Grid
 Survey Calculation Method: Minimum Curvature
 Database: Houston R5000 Database

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Map Northing (usft)	Map Easting (usft)	Latitude	Longitude
12,322.0	90.40	176.60	11,142.5	-1,361.9	22.7	460,591.82	767,710.12	32° 15' 50.827 N	103° 36' 3.501 W
12,416.0	90.00	177.00	11,142.2	-1,455.8	28.0	460,497.97	767,715.36	32° 15' 49.898 N	103° 36' 3.447 W
12,512.0	90.20	176.30	11,142.0	-1,551.6	33.6	460,402.13	767,720.97	32° 15' 48.950 N	103° 36' 3.389 W
12,606.0	90.40	177.00	11,141.5	-1,645.5	39.1	460,308.29	767,726.47	32° 15' 48.021 N	103° 36' 3.333 W
12,701.0	89.90	176.80	11,141.3	-1,740.3	44.2	460,213.43	767,731.60	32° 15' 47.082 N	103° 36' 3.281 W
12,796.0	90.20	176.90	11,141.2	-1,835.2	49.4	460,118.58	767,736.82	32° 15' 46.143 N	103° 36' 3.227 W
12,891.0	90.60	177.60	11,140.5	-1,930.1	54.0	460,023.69	767,741.38	32° 15' 45.203 N	103° 36' 3.182 W
12,986.0	90.30	178.50	11,139.8	-2,025.0	57.2	459,928.75	767,744.61	32° 15' 44.264 N	103° 36' 3.152 W
13,081.0	90.40	178.50	11,139.2	-2,120.0	59.7	459,833.78	767,747.10	32° 15' 43.324 N	103° 36' 3.130 W
13,175.0	90.80	178.50	11,138.2	-2,213.9	62.2	459,739.82	767,749.56	32° 15' 42.394 N	103° 36' 3.109 W
13,270.0	90.60	178.50	11,137.1	-2,308.9	64.6	459,644.86	767,752.05	32° 15' 41.454 N	103° 36' 3.088 W
13,365.0	89.90	178.50	11,136.6	-2,403.9	67.1	459,549.90	767,754.53	32° 15' 40.514 N	103° 36' 3.066 W
13,460.0	90.50	178.50	11,136.3	-2,498.8	69.6	459,454.93	767,757.02	32° 15' 39.574 N	103° 36' 3.045 W
13,555.0	90.00	178.60	11,135.9	-2,593.8	72.0	459,359.96	767,759.43	32° 15' 38.634 N	103° 36' 3.024 W
13,650.0	90.50	177.70	11,135.5	-2,688.8	75.1	459,265.01	767,762.49	32° 15' 37.695 N	103° 36' 2.996 W
13,744.0	90.30	176.80	11,134.8	-2,782.6	79.6	459,171.12	767,767.00	32° 15' 36.765 N	103° 36' 2.951 W
13,839.0	91.40	177.70	11,133.4	-2,877.5	84.2	459,076.25	767,771.56	32° 15' 35.826 N	103° 36' 2.906 W
13,934.0	91.40	178.40	11,131.1	-2,972.4	87.4	458,981.33	767,774.79	32° 15' 34.887 N	103° 36' 2.876 W
14,029.0	91.10	178.70	11,129.0	-3,067.4	89.8	458,886.38	767,777.19	32° 15' 33.947 N	103° 36' 2.855 W
14,124.0	90.00	180.20	11,128.1	-3,162.4	90.7	458,791.40	767,778.11	32° 15' 33.007 N	103° 36' 2.852 W
14,219.0	89.30	180.60	11,128.7	-3,257.4	90.0	458,696.40	767,777.44	32° 15' 32.067 N	103° 36' 2.867 W
14,313.0	88.90	180.90	11,130.2	-3,351.3	88.8	458,602.42	767,776.21	32° 15' 31.137 N	103° 36' 2.889 W
14,408.0	88.90	180.50	11,132.0	-3,446.3	87.6	458,507.45	767,775.05	32° 15' 30.198 N	103° 36' 2.910 W
14,503.0	88.80	179.20	11,133.9	-3,541.3	87.9	458,412.47	767,775.30	32° 15' 29.258 N	103° 36' 2.915 W
14,598.0	88.90	178.90	11,135.8	-3,636.3	89.5	458,317.50	767,776.88	32° 15' 28.318 N	103° 36' 2.904 W
14,694.0	89.80	178.50	11,136.9	-3,732.2	91.6	458,221.53	767,779.05	32° 15' 27.368 N	103° 36' 2.886 W
14,789.0	90.00	178.90	11,137.1	-3,827.2	93.8	458,126.56	767,781.21	32° 15' 26.428 N	103° 36' 2.869 W
14,884.0	90.00	179.80	11,137.1	-3,922.2	94.9	458,031.56	767,782.29	32° 15' 25.488 N	103° 36' 2.864 W
14,978.0	88.30	180.10	11,138.5	-4,016.2	95.0	457,937.58	767,782.37	32° 15' 24.558 N	103° 36' 2.870 W
15,074.0	88.90	179.10	11,140.8	-4,112.2	95.6	457,841.61	767,783.04	32° 15' 23.608 N	103° 36' 2.870 W
15,168.0	88.90	178.90	11,142.6	-4,206.1	97.3	457,747.64	767,784.68	32° 15' 22.679 N	103° 36' 2.858 W
15,263.0	88.70	178.70	11,144.6	-4,301.1	99.3	457,652.68	767,786.67	32° 15' 21.739 N	103° 36' 2.843 W
15,358.0	87.10	177.30	11,148.1	-4,396.0	102.6	457,557.81	767,789.98	32° 15' 20.800 N	103° 36' 2.812 W
15,453.0	88.10	176.30	11,152.1	-4,490.7	107.9	457,463.04	767,795.28	32° 15' 19.862 N	103° 36' 2.758 W
15,548.0	89.40	176.50	11,154.1	-4,585.5	113.8	457,368.26	767,801.24	32° 15' 18.923 N	103° 36' 2.696 W
15,641.0	89.30	177.10	11,155.2	-4,678.4	119.0	457,275.41	767,806.43	32° 15' 18.004 N	103° 36' 2.643 W
15,693.0	89.30	177.10	11,155.8	-4,730.3	121.7	457,223.48	767,809.06	32° 15' 17.490 N	103° 36' 2.616 W

BHL - 15693.0' MD, 11155.8' TVD, 89.30° INC, 177.10° AZI, -4730.3' N, 121.7' E, -3882.4' VS

Design Annotations

Measured Depth (usft)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Comment
1,250.0	1,250.0	-3.5	1.6	Tie into Gyro @ 1250' MD
10,619.0	10,618.4	8.4	-4.0	KOP - 10619.0' MD, 10618.4' TVD, 0.60° INC, 4.8° VS
11,057.3	11,017.0	-135.8	-1.0	Cross into 330' Lease - 11057.3' MD, 11017.0' TVD, 45.81° INC, -113.9° VS
11,521.3	11,149.3	-563.2	-32.1	EOC - 11521.3' MD, 11149.3' TVD, 89.74° INC, -487.9° VS
15,693.0	11,155.8	-4,730.3	121.7	BHL - 15693.0' MD, 11155.8' TVD, 89.30° INC, 177.10° AZI, -4730.3' N, 121.7' E

Checked By: _____ Approved By: _____ Date: _____



WELL DETAILS: #2H

Ground Elevation:: 3671.0
RKB Elevation: RKB @ 3696.0usft (Cactus 124)
Rig Name: Cactus 124

Yates Petroleum
Project: Lea County, NM (NAD-83)
Site: Hamlock BSH State
Well: #2H
Wellbore: OH
Plan: Plan #2 (#2H/OH)

Surface Hole Location
Northing 461953.76 Easting 32° 16' 4.305 N Longitude 103° 36' 3.657 W

DESIGN TARGET DETAILS

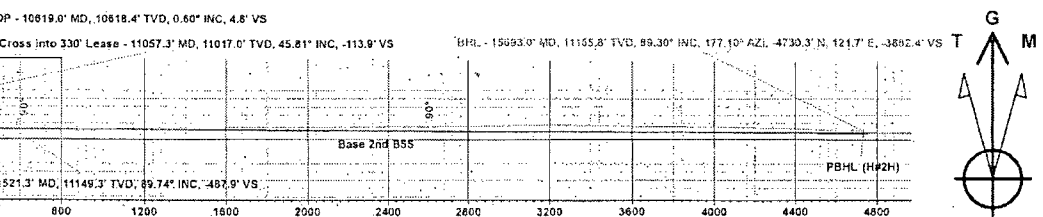
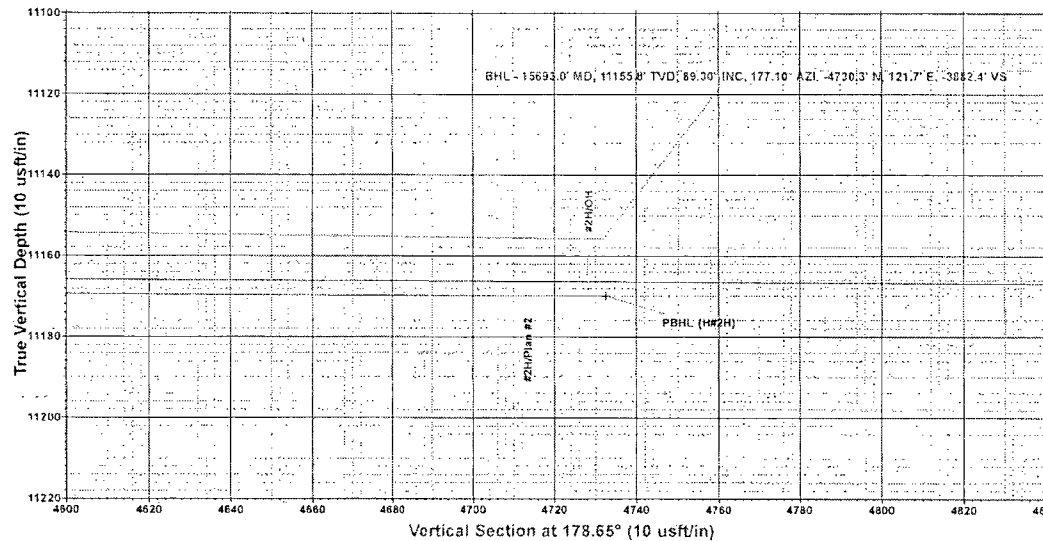
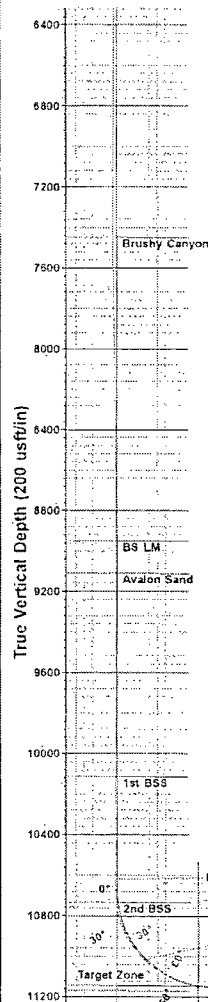
Name	TVD	+N/-S	+E/-W	Northing	Easting
PBHL (H#2H)	11170.0	-4731.3	111.8	457222.51	767799.19

Section Details

	MD	Inc	Azi	TVD	+N/-S	+E/-W	Dleg	TFace	VSect	Target
1	0.0	0.00	0.00	0.0	0.0	0.0	0.00	0.00	0.0	
2	10673.2	0.00	0.00	10673.2	0.0	0.0	0.00	0.00	0.0	
3	11421.1	89.74	178.65	11150.7	-475.2	11.2	12.00	178.65	475.3	
4	15678.4	89.74	178.65	11170.0	-4731.3	111.8	0.00	0.00	4732.6	PBHL (H#2H)

FORMATION TOP DETAILS

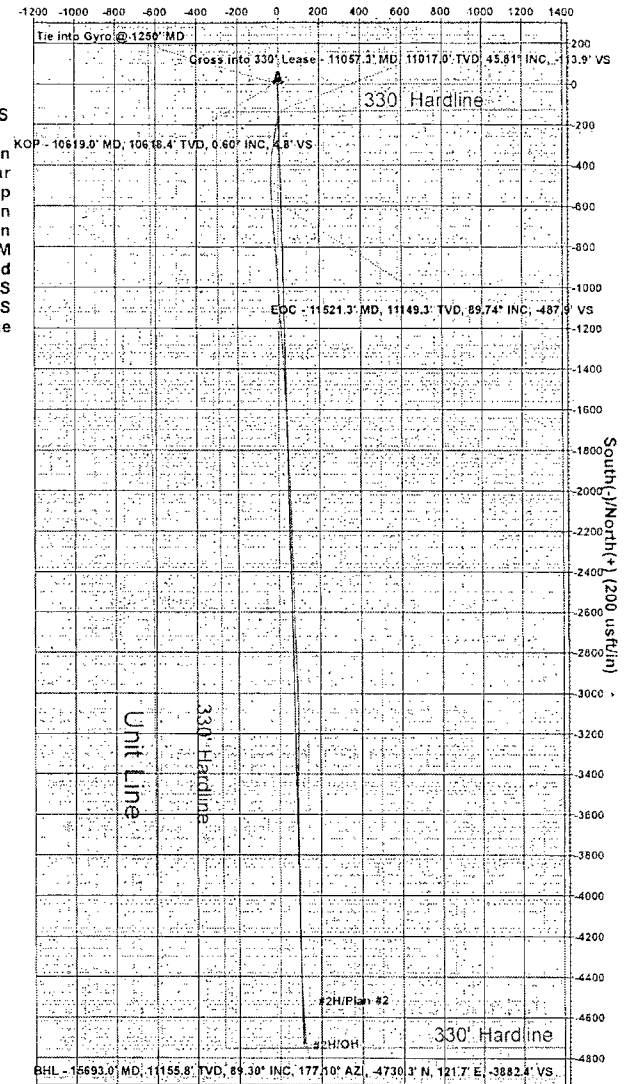
TVDPath	MDPath	Formation
5110.0	5110.0	Lamar
5160.0	5160.0	BC Top
6015.0	6015.0	Cherry Canyon
7450.0	7450.0	Brushy Canyon
8950.0	8950.0	BS LM
9110.0	9110.0	Avalon Sand
10115.0	10115.0	1st BSS
10735.0	10735.2	2nd BSS
11146.9	11363.0	Target Zone



Azimuths to Grid North
True North: -0.39°
Magnetic North: 7.02°

Magnetic Field
Strength: 48482.0snT
Dip Angle: 60.18°
Date: 1/4/2013
Model: IGRF2010

West(-)/East(+) (200 usft/in)



Crescent Directional Drilling
7715 West Industrial Ave. Midland, Tx 79706
Phone: 432-618-1135

PROJECT DETAILS: Lea County, NM (NAD-83)
Geodetic System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone: New Mexico Eastern Zone
System Datum: Mean Sea Level
Local North: Grid

Plan: Plan #2 (#2H/OH)
Created By: Malt Higgins Date: 8:53, February 25 2013