



OCD - HOBBS
03/07/2017
RECEIVED

BTA Oil Producers, LLC

Lea County, NM
Sec 11, T26S, R32E
8105 JV-P Mesa #6H

Wellbore #1

Survey: MWD

DDC Survey Report

04 January, 2016



The Directional Drilling Company

11390 FM 830

Willis, TX 77318

Phone: (936) 856-4332

Fax: (936) 856-8678



Survey Certification Sheet

Company	Job Number	Date
BTA Oil Producers, LLC	WT-150733	1/4/2015

Lease	Well Name	County & State
Sec11,T26S,R32E	8105 JV-P Mesa #6H	Lea, NM

API No.	Survey Depth Range	Survey Type
30-025-42844	745 feet to 14445 feet MD	MWD

Sidetrack Information	Directional Supervisor/Surveyor
N/A	Anthony Carrasco

Certification Statement

The data and calculations for this survey have been checked by me and conform to the standards and procedures set forth by The Directional Drilling Company (DDC). This report represents a true and correct directional survey of this well based on the original data obtained at the well site.

Wellbore coordinates are calculated using minimum curvature.

Christopher Hughes

Digitally signed by Christopher Hughes
DN: cn=Christopher Hughes, o=DDC, ou,
email=Chrish@directionaldrillers.com, c=US
Date: 2016.01.04 13:19:43 -06'00'

A large, stylized handwritten signature in black ink, appearing to read "Christopher Hughes".

Christopher Hughes
MWD Compliance Manager
The Directional Drilling Company



DDC Survey Report



Company: BTA Oil Producers, LLC
Project: Lea County, NM
Site: Sec 11, T26S, R32E
Well: 8105 JV-P Mesa #6H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well 8105 JV-P Mesa #6H
TVD Reference: WELL @ 3269.0usft (Nomac #133)
MD Reference: WELL @ 3269.0usft (Nomac #133)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Project	Lea County, NM		
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 Sec 11, T26S, R32E

Site Position:
From: Map
Position Uncertainty: 0.0 usft
Northing: 387,664.40 usft
Easting: 710,948.70 usft
Slot Radius: 13-3/16 "
Latitude: 32° 3' 50.311 N
Longitude: 103° 39' 8.553 W
Grid Convergence: 0.36 °

Well 8105 JV-P Mesa #6H

Well Position +N/-S 0.0 usft **Northing:** 387,682.60 usft **Latitude:** 32° 3' 50.320 N
+/-W 0.0 usft **Easting:** 713,666.10 usft **Longitude:** 103° 38' 36.974 W
Position Uncertainty 0.0 usft **Wellhead Elevation:** 0.0 usft **Ground Level:** 3,249.0 usft

Wellbore Wellbore #1

Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2015	12/8/2015	7.14	59.92	47,993

Design Wellbore #1

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	179.69

Survey Program Date 12/29/2015

From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	745.0	GYRO (Wellbore #1)	Good_gyro	Good Gyro
864.0	14,445.0	MWD (Wellbore #1)	MWD default	MWD - Standard

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
Tie Into GYRO @ 745' MD / 745' TVD									
745.0	0.64	0.40	745.0	8.6	-2.8	-8.6	0.00	0.00	0.00
864.0	0.70	75.00	863.9	9.4	-2.1	-9.4	0.68	0.05	62.69
1,054.0	1.10	80.60	1,053.9	10.0	0.8	-10.0	0.22	0.21	2.95
1,242.0	1.10	54.90	1,241.9	11.3	4.1	-11.3	0.26	0.00	-13.67
1,433.0	0.50	36.70	1,432.9	13.1	6.1	-13.0	0.34	-0.31	-9.53
1,622.0	0.50	76.70	1,621.9	13.9	7.4	-13.9	0.18	0.00	21.16
1,812.0	0.70	85.90	1,811.8	14.2	9.4	-14.1	0.12	0.11	4.84
2,001.0	0.50	41.20	2,000.8	14.9	11.1	-14.8	0.26	-0.11	-23.65
2,190.0	0.50	324.90	2,189.8	16.2	11.1	-16.1	0.33	0.00	-40.37



DDC Survey Report



Company: BTA Oil Producers, LLC
Project: Lea County, NM
Site: Sec 11, T26S, R32E
Well: 8105 JV-P Mesa #6H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well 8105 JV-P Mesa #6H
TVD Reference: WELL @ 3269.0usft (Nomac #133)
MD Reference: WELL @ 3269.0usft (Nomac #133)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Build Rate (°/100usft)	Turn Rate (°/100usft)
2,379.0	1.10	322.10	2,378.8	18.3	9.5	-18.2	0.32	0.32	-1.48
2,569.0	0.90	288.40	2,568.8	20.2	7.0	-20.2	0.32	-0.11	-17.74
2,759.0	1.40	274.00	2,758.7	20.8	3.3	-20.8	0.30	0.26	-7.58
2,949.0	1.80	293.60	2,948.7	22.2	-1.8	-22.2	0.35	0.21	10.32
3,138.0	2.10	291.20	3,137.6	24.6	-7.7	-24.7	0.16	0.16	-1.27
3,326.0	1.80	310.50	3,325.5	27.8	-13.2	-27.9	0.38	-0.16	10.27
3,516.0	1.90	336.90	3,515.4	32.6	-16.7	-32.7	0.45	0.05	13.89
3,706.0	2.10	354.50	3,705.2	39.0	-18.3	-39.1	0.34	0.11	9.26
3,895.0	2.30	7.50	3,894.1	46.2	-18.1	-46.3	0.28	0.11	6.88
4,084.0	2.30	49.00	4,083.0	52.4	-14.7	-52.5	0.86	0.00	21.96
4,273.0	2.80	71.80	4,271.8	56.4	-7.5	-56.4	0.59	0.26	12.06
4,368.0	3.20	85.90	4,366.7	57.3	-2.6	-57.3	0.88	0.42	14.84
4,553.0	3.00	41.60	4,551.4	61.3	5.7	-61.2	1.27	-0.11	-23.95
4,638.0	3.00	42.30	4,636.3	64.6	8.7	-64.5	0.04	0.00	0.82
4,733.0	2.60	27.50	4,731.2	68.3	11.4	-68.3	0.87	-0.42	-15.58
4,828.0	3.20	2.50	4,826.1	72.9	12.5	-72.8	1.46	0.63	-26.32
5,017.0	3.70	359.40	5,014.7	84.3	12.6	-84.2	0.28	0.26	-1.64
5,206.0	3.50	0.10	5,203.3	96.1	12.6	-96.1	0.11	-0.11	0.37
5,396.0	3.90	1.90	5,392.9	108.4	12.8	-108.3	0.22	0.21	0.95
5,585.0	3.70	358.30	5,581.5	120.9	12.8	-120.8	0.16	-0.11	-1.90
5,781.0	3.50	355.90	5,777.1	133.2	12.2	-133.1	0.13	-0.10	-1.22
5,963.0	3.30	352.70	5,958.8	143.9	11.2	-143.9	0.15	-0.11	-1.76
6,153.0	3.50	355.90	6,148.5	155.1	10.1	-155.1	0.15	0.11	1.68
6,342.0	3.70	358.00	6,337.1	167.0	9.4	-166.9	0.13	0.11	1.11
6,531.0	4.10	352.70	6,525.7	179.8	8.4	-179.7	0.28	0.21	-2.80
6,721.0	3.70	351.60	6,715.2	192.6	6.6	-192.6	0.21	-0.21	-0.58
6,910.0	3.50	345.30	6,903.9	204.2	4.2	-204.2	0.23	-0.11	-3.33
7,099.0	3.50	351.00	7,092.5	215.5	1.9	-215.5	0.18	0.00	3.02
7,289.0	3.00	350.30	7,282.2	226.1	0.1	-226.1	0.26	-0.26	-0.37
7,478.0	2.50	355.50	7,471.0	235.1	-1.0	-235.1	0.30	-0.26	2.75
7,668.0	2.30	352.70	7,660.8	243.0	-1.8	-243.0	0.12	-0.11	-1.47
7,857.0	1.90	2.20	7,849.7	249.9	-2.2	-249.9	0.28	-0.21	5.03
8,047.0	1.60	3.60	8,039.6	255.7	-1.9	-255.7	0.16	-0.16	0.74
8,237.0	1.20	350.30	8,229.6	260.3	-2.1	-260.3	0.27	-0.21	-7.00
8,426.0	0.90	334.40	8,418.5	263.6	-3.0	-263.6	0.22	-0.16	-8.41
8,616.0	0.90	303.80	8,608.5	265.8	-4.9	-265.8	0.25	0.00	-16.11
8,806.0	1.10	277.50	8,798.5	266.8	-8.0	-266.9	0.26	0.11	-13.84
8,996.0	1.40	264.10	8,988.4	266.8	-12.1	-266.9	0.22	0.16	-7.05
9,038.0	1.40	269.00	9,030.4	266.8	-13.1	-266.8	0.28	0.00	11.67
9,069.0	2.10	200.80	9,061.4	266.2	-13.7	-266.3	6.60	2.26	-220.00
9,101.0	5.80	178.00	9,093.3	264.1	-13.9	-264.1	12.34	11.56	-71.25
9,132.0	9.50	170.90	9,124.0	260.0	-13.4	-260.1	12.30	11.94	-22.90
9,164.0	12.70	162.50	9,155.4	254.0	-11.9	-254.1	11.18	10.00	-26.25



DDC Survey Report



Company: BTA Oil Producers, LLC
Project: Lea County, NM
Site: Sec 11, T26S, R32E
Well: 8105 JV-P Mesa #6H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well 8105 JV-P Mesa #6H
TVD Reference: WELL @ 3269.0usft (Nomac #133)
MD Reference: WELL @ 3269.0usft (Nomac #133)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
9,195.0	15.80	164.60	9,185.5	246.7	-9.8	-246.7	10.14	10.00	6.77
9,227.0	19.20	168.80	9,216.0	237.3	-7.6	-237.4	11.33	10.63	13.13
9,258.0	22.20	172.40	9,245.0	226.5	-5.8	-226.6	10.51	9.68	11.61
9,290.0	25.00	174.50	9,274.3	213.8	-4.4	-213.8	9.13	8.75	6.56
9,322.0	28.10	176.90	9,302.9	199.5	-3.3	-199.6	10.25	9.69	7.50
9,353.0	31.00	176.60	9,329.9	184.3	-2.5	-184.3	9.37	9.35	-0.97
9,416.0	38.00	177.30	9,381.8	148.7	-0.6	-148.7	11.13	11.11	1.11
9,448.0	41.90	178.70	9,406.3	128.1	0.1	-128.1	12.51	12.19	4.38
9,479.0	46.30	180.10	9,428.6	106.6	0.3	-106.6	14.54	14.19	4.52
9,511.0	49.80	179.00	9,450.0	82.8	0.5	-82.8	11.23	10.94	-3.44
9,543.0	53.10	178.00	9,469.9	57.8	1.2	-57.8	10.60	10.31	-3.13
9,575.0	55.60	178.00	9,488.6	31.8	2.1	-31.8	7.81	7.81	0.00
9,606.0	57.20	180.10	9,505.7	6.0	2.5	-6.0	7.65	5.16	6.77
9,638.0	57.20	181.50	9,523.0	-20.9	2.2	20.9	3.68	0.00	4.38
9,669.0	58.90	182.60	9,539.4	-47.2	1.2	47.2	6.26	5.48	3.55
9,701.0	61.20	182.90	9,555.4	-74.9	-0.1	74.9	7.23	7.19	0.94
9,732.0	64.10	181.50	9,569.7	-102.4	-1.2	102.4	10.18	9.35	-4.52
9,764.0	67.40	179.40	9,582.8	-131.6	-1.4	131.6	11.92	10.31	-6.56
9,795.0	68.10	178.30	9,594.5	-160.3	-0.8	160.3	3.99	2.26	-3.55
9,827.0	69.80	179.00	9,606.0	-190.1	-0.1	190.1	5.69	5.31	2.19
9,859.0	71.60	179.70	9,616.6	-220.3	0.2	220.3	5.99	5.63	2.19
9,891.0	74.30	180.10	9,626.0	-250.9	0.3	250.9	8.52	8.44	1.25
9,922.0	78.10	180.40	9,633.4	-281.0	0.1	281.0	12.29	12.26	0.97
9,953.0	81.80	179.70	9,638.8	-311.5	0.1	311.5	12.14	11.94	-2.26
9,985.0	84.30	179.00	9,642.7	-343.3	0.5	343.3	8.11	7.81	-2.19
10,049.0	89.90	178.30	9,645.9	-407.2	2.0	407.2	8.82	8.75	-1.09
10,174.0	88.00	179.70	9,648.2	-532.1	4.2	532.1	1.89	-1.52	1.12
10,270.0	88.70	180.80	9,651.0	-628.1	3.8	628.1	1.36	0.73	1.15
10,365.0	89.20	181.50	9,652.7	-723.0	1.8	723.0	0.91	0.53	0.74
10,459.0	89.20	181.90	9,654.0	-817.0	-0.9	817.0	0.43	0.00	0.43
10,554.0	90.10	182.60	9,654.6	-911.9	-4.7	911.9	1.20	0.95	0.74
10,648.0	90.30	182.20	9,654.3	-1,005.8	-8.6	1,005.8	0.48	0.21	-0.43
10,743.0	91.30	183.30	9,652.9	-1,100.7	-13.2	1,100.6	1.56	1.05	1.16
10,838.0	90.10	180.10	9,651.8	-1,195.6	-16.0	1,195.5	3.60	-1.26	-3.37
10,932.0	90.60	179.70	9,651.2	-1,289.6	-15.8	1,289.5	0.68	0.53	-0.43
11,027.0	89.20	178.30	9,651.4	-1,384.6	-14.2	1,384.5	2.08	-1.47	-1.47
11,122.0	89.20	179.00	9,652.7	-1,479.6	-11.9	1,479.5	0.74	0.00	0.74
11,217.0	91.50	179.70	9,652.1	-1,574.6	-10.8	1,574.5	2.53	2.42	0.74
11,311.0	88.50	178.00	9,652.1	-1,668.5	-9.0	1,668.5	3.67	-3.19	-1.81
11,406.0	88.00	177.60	9,655.0	-1,763.4	-5.3	1,763.4	0.67	-0.53	-0.42
11,501.0	88.50	177.60	9,657.9	-1,858.3	-1.3	1,858.3	0.53	0.53	0.00
11,595.0	89.40	178.70	9,659.6	-1,952.2	1.7	1,952.2	1.51	0.96	1.17
11,690.0	89.20	178.00	9,660.8	-2,047.2	4.4	2,047.2	0.77	-0.21	-0.74



DDC Survey Report



Company: BTA Oil Producers, LLC
Project: Lea County, NM
Site: Sec 11, T26S, R32E
Well: 8105 JV-P Mesa #6H
Wellbore: Wellbore #1
Design: Wellbore #1

Local Co-ordinate Reference: Well 8105 JV-P Mesa #6H
TVD Reference: WELL @ 3269.0usft (Nomac #133)
MD Reference: WELL @ 3269.0usft (Nomac #133)
North Reference: Grid
Survey Calculation Method: Minimum Curvature
Database: EDM 5000.1 Single User Db

Survey

Measured Depth (usft)	Inclination (°)	Azimuth (°)	Vertical Depth (usft)	+N/-S (usft)	+E/-W (usft)	Vertical Section (usft)	Dogleg Rate (°/100usft)	Bulld Rate (°/100usft)	Turn Rate (°/100usft)
11,784.0	90.10	178.30	9,661.4	-2,141.1	7.5	2,141.1	1.01	0.96	0.32
11,879.0	90.40	178.30	9,661.0	-2,236.1	10.3	2,236.1	0.32	0.32	0.00
11,973.0	91.10	177.30	9,659.7	-2,330.0	13.9	2,330.1	1.30	0.74	-1.06
12,068.0	92.00	176.90	9,657.2	-2,424.9	18.7	2,424.9	1.04	0.95	-0.42
12,162.0	90.80	178.30	9,654.9	-2,518.7	22.6	2,518.8	1.96	-1.28	1.49
12,257.0	91.30	179.00	9,653.1	-2,613.7	24.9	2,613.8	0.91	0.53	0.74
12,352.0	92.40	179.40	9,650.1	-2,708.6	26.2	2,708.7	1.23	1.16	0.42
12,447.0	88.70	178.70	9,649.1	-2,803.6	27.8	2,803.7	3.96	-3.89	-0.74
12,541.0	88.00	178.30	9,651.9	-2,897.5	30.2	2,897.7	0.86	-0.74	-0.43
12,636.0	88.00	178.70	9,655.2	-2,992.4	32.7	2,992.6	0.42	0.00	0.42
12,731.0	88.00	178.70	9,658.5	-3,087.4	34.9	3,087.5	0.00	0.00	0.00
12,825.0	88.70	179.40	9,661.2	-3,181.3	36.4	3,181.5	1.05	0.74	0.74
12,920.0	89.90	179.40	9,662.4	-3,276.3	37.4	3,276.4	1.26	1.26	0.00
13,014.0	90.10	181.50	9,662.4	-3,370.3	36.7	3,370.4	2.24	0.21	2.23
13,109.0	90.60	180.10	9,661.8	-3,465.3	35.4	3,465.4	1.56	0.53	-1.47
13,204.0	92.70	179.00	9,659.0	-3,560.2	36.1	3,560.4	2.50	2.21	-1.16
13,298.0	91.70	179.40	9,655.4	-3,654.1	37.4	3,654.3	1.15	-1.06	0.43
13,393.0	90.80	178.30	9,653.4	-3,749.1	39.3	3,749.3	1.50	-0.95	-1.16
13,488.0	91.30	180.40	9,651.6	-3,844.1	40.4	3,844.2	2.27	0.53	2.21
13,583.0	92.90	180.80	9,648.1	-3,939.0	39.4	3,939.1	1.74	1.68	0.42
13,646.0	91.30	181.10	9,645.8	-4,001.9	38.4	4,002.1	2.58	-2.54	0.48
13,771.0	90.60	180.80	9,643.8	-4,126.9	36.3	4,127.0	0.61	-0.56	-0.24
13,866.0	88.30	179.70	9,644.7	-4,221.9	35.9	4,222.0	2.68	-2.42	-1.16
13,960.0	89.00	179.70	9,646.9	-4,315.9	36.4	4,316.0	0.74	0.74	0.00
14,055.0	88.90	178.70	9,648.6	-4,410.8	37.7	4,411.0	1.06	-0.11	-1.05
14,150.0	89.40	178.30	9,650.0	-4,505.8	40.2	4,505.9	0.67	0.53	-0.42
14,245.0	89.60	177.60	9,650.9	-4,600.7	43.6	4,600.9	0.77	0.21	-0.74
14,340.0	90.10	177.60	9,651.1	-4,695.6	47.6	4,695.8	0.53	0.53	0.00
14,393.0	90.40	177.60	9,650.9	-4,748.6	49.8	4,748.8	0.57	0.57	0.00
TD @ 14445' MD / 9651' TVD									
14,445.0	90.40	177.60	9,650.5	-4,800.6	51.9	4,800.8	0.00	0.00	0.00

Survey Annotations

Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment
		+N/-S (usft)	+E/-W (usft)	
745.0	745.0	8.6	-2.8	Tie into GYRO @ 745' MD / 745' TVD
14,445.0	9,650.5	-4,800.6	51.9	TD @ 14445' MD / 9651' TVD

Checked By: _____ Approved By: _____ Date: _____

Company Name: BTA Oil Producers, LLC
 8105 JV-P Mesa #6H
 Lea County, NM
 Rig: Nomac #133
 Created By: Shane Robbins
 Date: 12/29/2015

8105 JV-P Mesa #6H
 Lea County, NM
 Quote 150854 & WT-150733
 Design #1



Azimuths to Grid North

Correction: 6.77°

Magnetic Field
 Strength: 47992.9snT
 Dip Angle: 59.92°
 Date: 12/8/2015
 Model: IGRF2015

PROJECT DETAILS: Lea County, NM

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

ANNOTATIONS

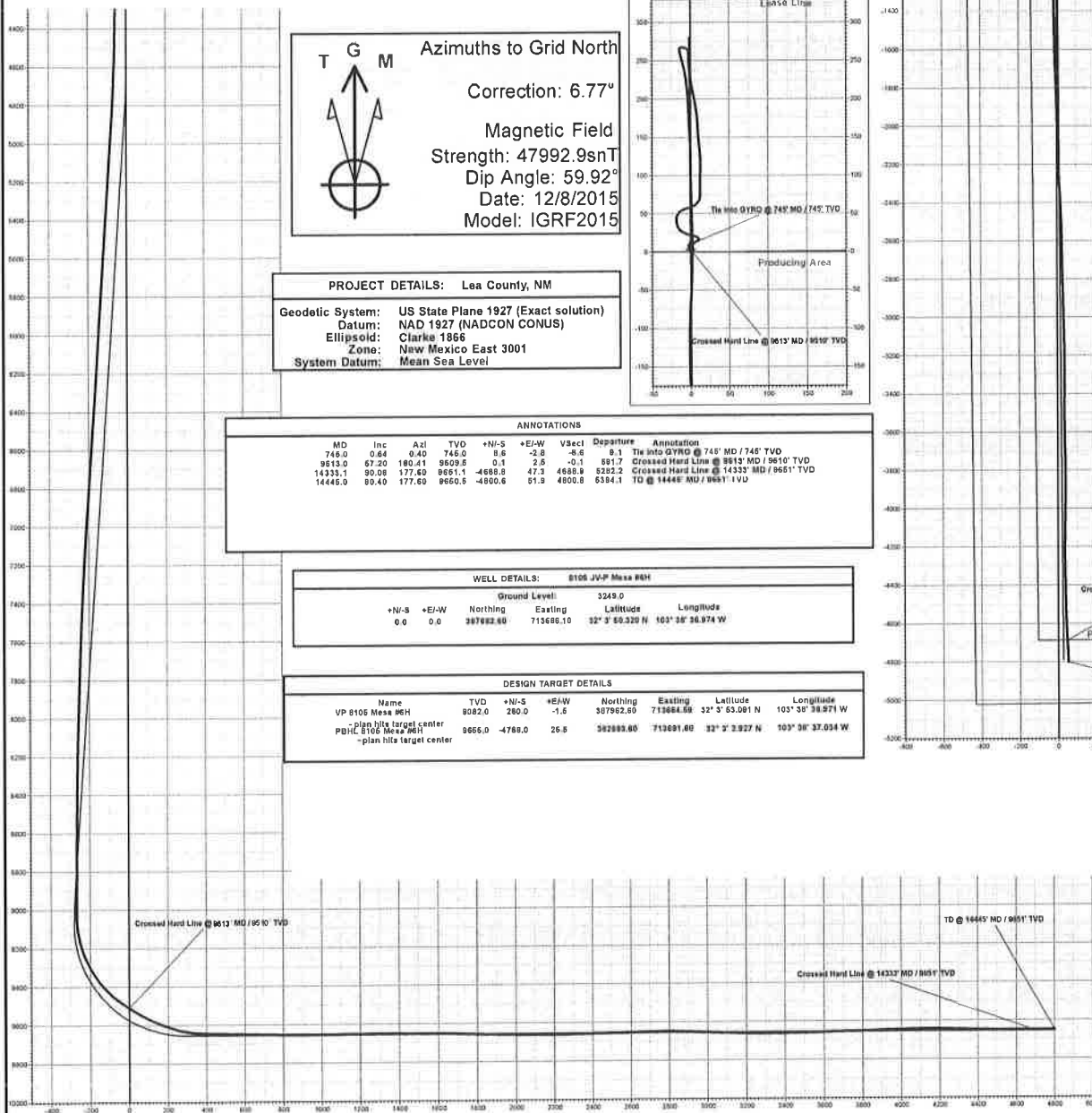
MD	Inc	Azi	TVD	+N-S	+E-W	Vsect	Departure	Annotation
746.0	0.84	0.40	746.0	8.6	-2.8	-8.6	0.1	The Into GYRO @ 746' MD / 745' TVD
9613.0	57.20	180.41	9609.6	0.1	2.8	-0.1	591.7	Crossed Hard Line @ 9613' MD / 9610' TVD
14333.1	90.08	177.60	9661.1	-4688.0	47.3	4688.8	8282.2	Crossed Hard Line @ 14333' MD / 9651' TVD
14446.0	90.40	177.60	9660.5	-4800.6	51.9	4800.5	5394.1	TD @ 14446' MD / 9651' TVD

WELL DETAILS: 8105 JV-P Mesa #6H

Ground Level		3249.0	
+N-S	+E-W	Northing	Easting
0.0	0.0	387883.80	713688.10
		32° 3' 59.329 N 103° 38' 36.874 W	

DESIGN TARGET DETAILS

Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude
VP 8105 Mesa #6H	9082.0	280.0	-1.5	387962.60	713684.59	32° 3' 53.061 N	103° 38' 38.971 W
- plan hits target center							
PDH 8105 Mesa #6H	9665.0	-4788.0	25.5	382889.80	713691.00	32° 3' 3.927 N	103° 38' 37.034 W
- plan hits target center							



Vertical Section at 179.69° (200 usf/m)

