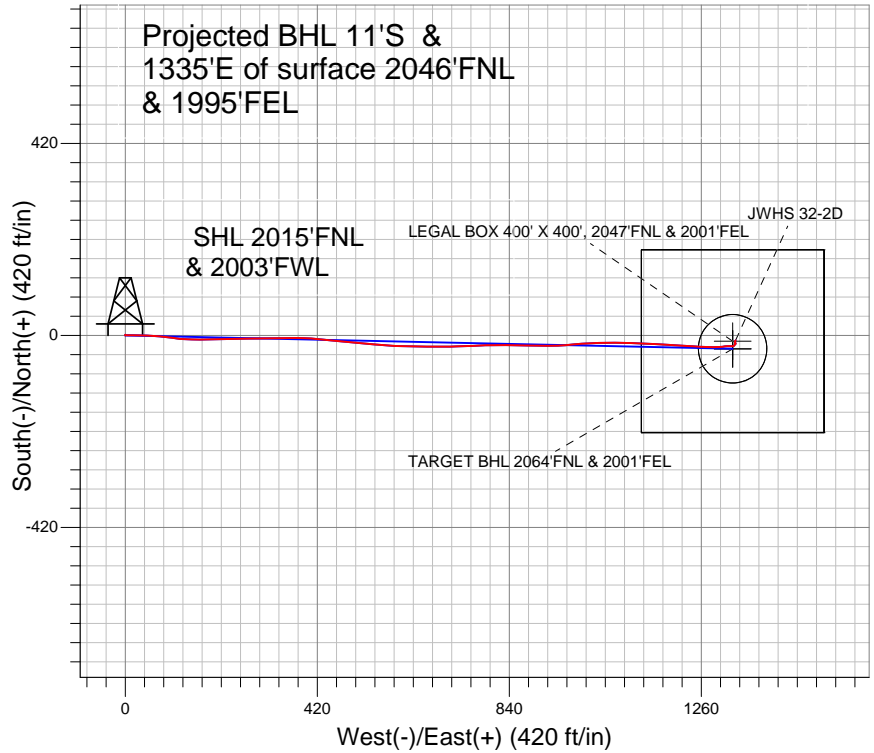


Well Name: **JWHS 32-2D**
 Surface Location: JWHS 31-2D Pad Sec.2-T3N-R68W
 North American Datum 1983 , US State Plane 1983 , Colorado Northern Zone
 Ground Elevation: 4998.0

+N/-S	+E/-W	Northing	Easting	Latitude	Longitude	Slot
0.0	0.0	1336973.49	3147172.59	40.257190	-104.972680	

 Original Well Elev WELL @ 5011.0ft (Original Well Elev)

Apollo Operating, LLC.



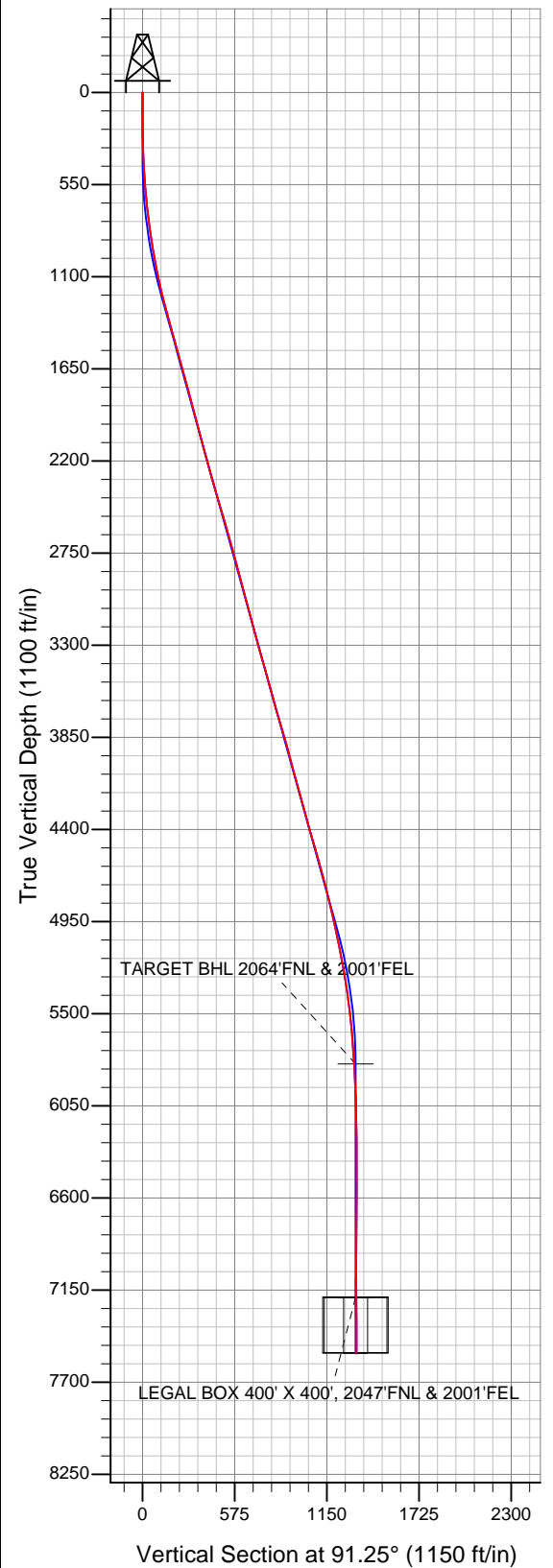
LEGEND

- △ JWHS 32-2D, Wellbore #1, Plan #2 (4-15-13) V0
- Survey #1
- Wellbore #1

Final Survey Plot

Projected Final Survey -
 7700'MD & 7528'TVD @
 1334.89' VS 0.50 deg Inc
 25.80 deg AZ

Project: SEC.2-T3N-R68W
 Site: JWHS 31-2D Pad Sec.2-T3N-R68W
 Well: JWHS 32-2D
 Plan: Wellbore #1





Directional

Apollo Operating, LLC.

SEC.2-T3N-R68W

JWHS 31-2D Pad Sec.2-T3N-R68W

JWHS 32-2D

Wellbore #1

Design: Wellbore #1

Standard Survey Report

08 May, 2013

Company:	Apollo Operating, LLC.	Local Co-ordinate Reference:	Well JWHS 32-2D
Project:	SEC.2-T3N-R68W	TVD Reference:	WELL @ 5011.0ft (Original Well Elev)
Site:	JWHS 31-2D Pad Sec.2-T3N-R68W	MD Reference:	WELL @ 5011.0ft (Original Well Elev)
Well:	JWHS 32-2D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
1,498.0	16.20	88.50	1,477.4	-8.5	198.8	199.0	0.31	0.08	-1.09	
1,626.0	15.40	87.80	1,600.6	-7.4	233.7	233.8	0.64	-0.63	-0.55	
1,754.0	16.00	90.10	1,723.8	-6.8	268.3	268.4	0.68	0.47	1.80	
1,883.0	16.00	89.20	1,847.8	-6.5	303.8	303.9	0.19	0.00	-0.70	
2,011.0	15.90	88.90	1,970.9	-6.0	339.0	339.1	0.10	-0.08	-0.23	
2,139.0	15.10	89.60	2,094.2	-5.5	373.2	373.2	0.64	-0.63	0.55	
2,267.0	15.40	94.70	2,217.7	-6.8	406.8	406.9	1.07	0.23	3.98	
2,395.0	17.40	95.60	2,340.5	-10.0	442.8	442.9	1.58	1.56	0.70	
2,523.0	17.80	95.20	2,462.5	-13.7	481.3	481.5	0.33	0.31	-0.31	
2,652.0	16.40	94.50	2,585.8	-16.9	519.1	519.4	1.10	-1.09	-0.54	
2,780.0	16.10	96.30	2,708.7	-20.3	554.8	555.1	0.46	-0.23	1.41	
2,908.0	16.10	91.90	2,831.7	-22.8	590.2	590.5	0.95	0.00	-3.44	
3,037.0	15.30	91.50	2,955.9	-23.8	625.1	625.4	0.63	-0.62	-0.31	
3,164.0	15.90	89.40	3,078.2	-24.1	659.2	659.6	0.65	0.47	-1.65	
3,293.0	15.10	90.50	3,202.5	-24.1	693.7	694.0	0.66	-0.62	0.85	
3,421.0	16.40	88.90	3,325.7	-23.9	728.4	728.8	1.07	1.02	-1.25	
3,550.0	16.30	86.40	3,449.5	-22.4	764.7	765.0	0.55	-0.08	-1.94	
3,678.0	16.10	90.30	3,572.4	-21.3	800.4	800.6	0.86	-0.16	3.05	
3,806.0	17.00	89.90	3,695.1	-21.4	836.8	837.1	0.71	0.70	-0.31	
3,935.0	17.30	91.20	3,818.3	-21.8	874.9	875.1	0.38	0.23	1.01	
4,063.0	15.90	91.30	3,941.0	-22.6	911.4	911.7	1.09	-1.09	0.08	
4,191.0	15.70	88.00	4,064.2	-22.4	946.3	946.5	0.72	-0.16	-2.58	
4,319.0	15.20	83.30	4,187.5	-19.8	980.2	980.4	1.05	-0.39	-3.67	
4,448.0	16.70	87.80	4,311.6	-17.1	1,015.6	1,015.7	1.51	1.16	3.49	
4,576.0	17.00	88.70	4,434.1	-16.0	1,052.6	1,052.7	0.31	0.23	0.70	
4,705.0	16.40	91.50	4,557.6	-16.0	1,089.7	1,089.8	0.78	-0.47	2.17	
4,833.0	15.80	92.70	4,680.6	-17.3	1,125.2	1,125.3	0.54	-0.47	0.94	
4,962.0	14.40	92.60	4,805.2	-18.9	1,158.7	1,158.9	1.09	-1.09	-0.08	
5,090.0	13.00	93.10	4,929.5	-20.4	1,189.0	1,189.2	1.10	-1.09	0.39	
5,218.0	12.20	93.60	5,054.4	-22.0	1,216.9	1,217.1	0.63	-0.63	0.39	
5,346.0	11.40	93.80	5,179.7	-23.7	1,243.0	1,243.2	0.63	-0.63	0.16	
5,474.0	9.30	92.00	5,305.6	-24.9	1,266.0	1,266.2	1.66	-1.64	-1.41	
5,603.0	7.70	91.90	5,433.2	-25.5	1,285.0	1,285.3	1.24	-1.24	-0.08	
5,731.0	6.00	84.30	5,560.3	-25.2	1,300.3	1,300.5	1.50	-1.33	-5.94	
5,860.0	4.50	81.80	5,688.8	-23.8	1,312.0	1,312.2	1.18	-1.16	-1.94	
5,972.1	3.88	90.71	5,800.6	-23.2	1,320.1	1,320.3	0.80	-0.55	7.95	
TARGET BHL 2064'FNL & 2001'FEL										
5,988.0	3.80	92.20	5,816.4	-23.2	1,321.2	1,321.4	0.80	-0.50	9.37	
6,117.0	2.70	88.30	5,945.2	-23.3	1,328.5	1,328.7	0.87	-0.85	-3.02	
6,245.0	1.00	18.40	6,073.2	-22.1	1,331.9	1,332.0	1.98	-1.33	-54.61	
6,373.0	1.10	47.00	6,201.1	-20.2	1,333.1	1,333.2	0.41	0.08	22.34	
6,501.0	1.30	31.00	6,329.1	-18.2	1,334.8	1,334.8	0.30	0.16	-12.50	
6,629.0	0.20	251.60	6,457.1	-17.0	1,335.3	1,335.3	1.14	-0.86	-108.91	
6,757.0	0.20	318.40	6,585.1	-16.9	1,334.9	1,335.0	0.17	0.00	52.19	
6,886.0	0.20	284.50	6,714.1	-16.7	1,334.6	1,334.6	0.09	0.00	-26.28	
7,014.0	0.40	334.80	6,842.1	-16.2	1,334.2	1,334.2	0.24	0.16	39.30	
7,143.0	0.40	350.30	6,971.1	-15.4	1,333.9	1,333.9	0.08	0.00	12.02	
7,271.0	0.30	338.50	7,099.1	-14.6	1,333.7	1,333.7	0.10	-0.08	-9.22	
7,364.8	0.43	7.09	7,192.9	-14.0	1,333.7	1,333.6	0.24	0.14	30.48	
TARGET CIRCLE 2064'FNL & 2001'FEL										
7,364.9	0.43	7.11	7,193.0	-14.0	1,333.7	1,333.6	0.24	0.18	20.16	
LEGAL BOX 400' X 400', 2047'FNL & 2001'FEL										
7,399.0	0.50	13.10	7,227.1	-13.7	1,333.7	1,333.7	0.24	0.19	17.56	
7,528.0	0.70	27.90	7,356.1	-12.5	1,334.2	1,334.2	0.19	0.16	11.47	

Company:	Apollo Operating, LLC.	Local Co-ordinate Reference:	Well JWHS 32-2D
Project:	SEC.2-T3N-R68W	TVD Reference:	WELL @ 5011.0ft (Original Well Elev)
Site:	JWHS 31-2D Pad Sec.2-T3N-R68W	MD Reference:	WELL @ 5011.0ft (Original Well Elev)
Well:	JWHS 32-2D	North Reference:	True
Wellbore:	Wellbore #1	Survey Calculation Method:	Minimum Curvature
Design:	Wellbore #1	Database:	Landmark

Survey										
Measured Depth (ft)	Inclination (°)	Azimuth (°)	Vertical Depth (ft)	+N/-S (ft)	+E/-W (ft)	Vertical Section (ft)	Dogleg Rate (°/100ft)	Build Rate (°/100ft)	Turn Rate (°/100ft)	
7,656.0	0.50	25.80	7,484.1	-11.3	1,334.8	1,334.7	0.16	-0.16	-1.64	
7,700.0	0.50	25.80	7,528.1	-11.0	1,335.0	1,334.9	0.00	0.00	0.00	

Design Targets									
Target Name									
- hit/miss target	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting		
- Shape	(°)	(°)	(ft)	(ft)	(ft)	(ft)	(ft)	Latitude	Longitude
LEGAL BOX 400' X 400'	0.00	0.00	7,193.0	-12.7	1,328.6	1,336,968.70	3,148,501.18	40.257155	-104.967920
- actual wellpath misses target center by 5.2ft at 7364.9ft MD (7193.0 TVD, -14.0 N, 1333.7 E)									
- Rectangle (sides W400.0 H400.0 D332.0)									

Checked By: _____	Approved By: _____	Date: _____
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