



Triad Hunter

PHOENIX
TECHNOLOGY SERVICES



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WV Department of
Environmental Protection

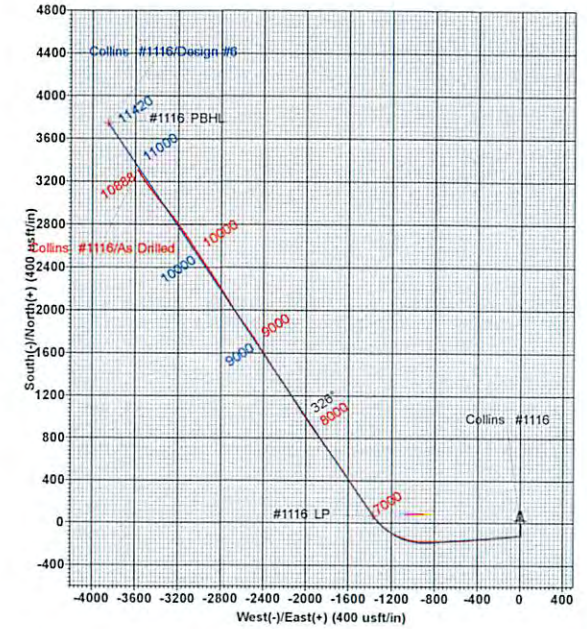
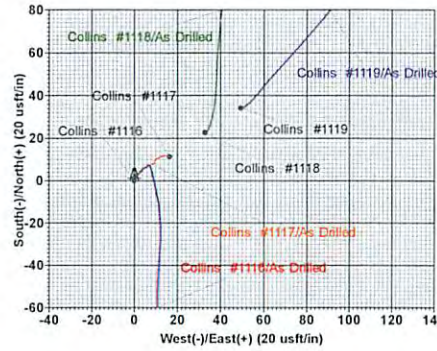
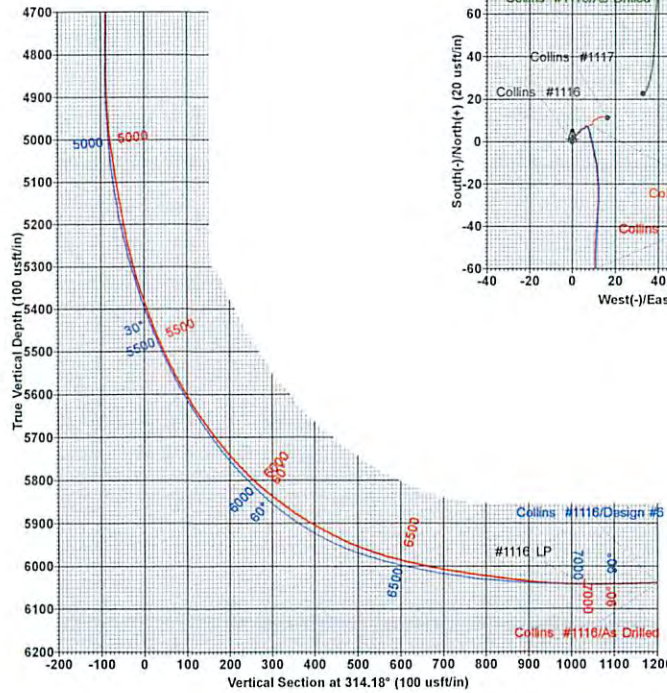
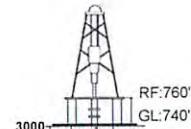


Azimuths to Grid North
True North 0.91°
Magnetic North -7.48°

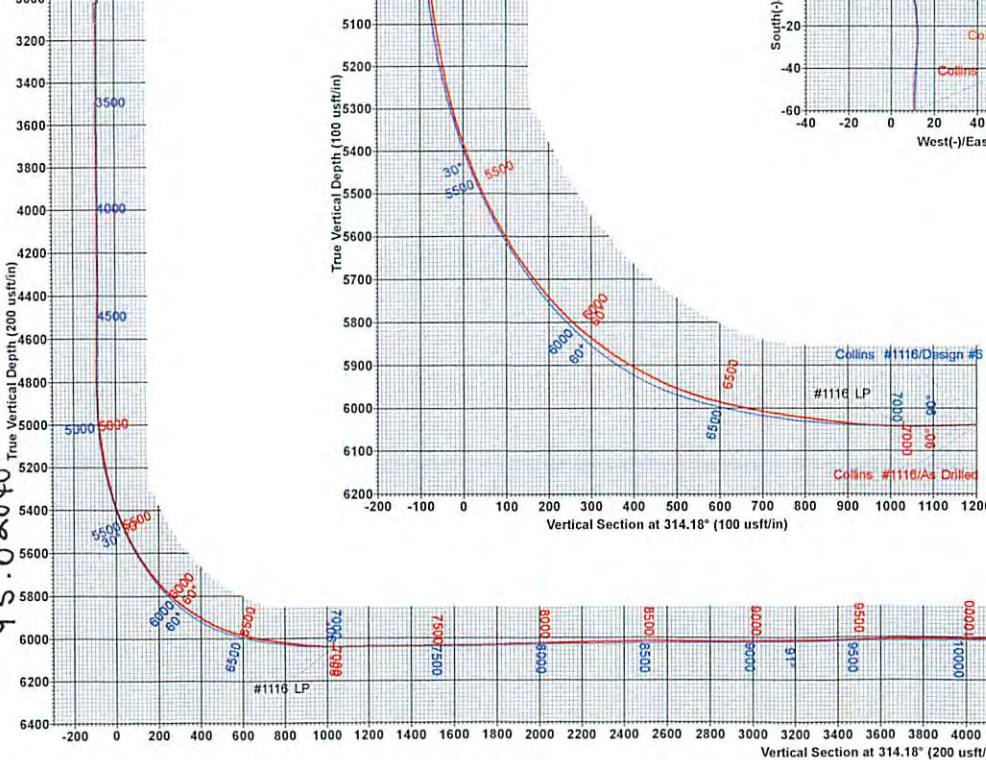
Magnetic Field
Strength: 52550 BsnT
Dip Angle: 67.09°
Date: 5/15/2013
Model: IGRF2010

Collins #1116
Collins Unit - Tyler County, WV
20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Latitude: 39° 29' 42.662 N
Longitude: 80° 55' 5.904 W
Northing: 365633.03
Easting: 1568271.67
Design #6

Map System: US State Plane 1983
Datum: North American Datum 1983
Ellipsoid: GRS 1980
Zone Name: West Virginia Northern Zone
Local Origin: Well Collins #1116 - Slot #1116, Grid North
Grid East: 1568271.67
Grid North: 365633.03
Scale Factor: 1.000
Geomagnetic Model: IGRF2010
Sample Date: 15-May-13
Magnetic Declination: -8.38°
Dip Angle from Horizontal: 67.09°
Magnetic Field Strength: 52551
To convert a Magnetic Direction to a Grid Direction, Subtract 7.48°
To convert a Magnetic Direction to a True Direction, Subtract 8.38°
To convert a True Direction to a Grid Direction, Add 0.90°



95.02040



SECTION DETAILS										
MD	Inc	Azi	TVD	+N-S	+E-W	Dleg	TFace	Vsect	Target	
4791.0	0.39	116.10	4782.9	-118.0	8.0	0.00	0.00	-88.0		
4859.0	0.39	116.10	4850.9	-118.2	8.4	0.00	0.00	-88.4		
6373.8	75.87	265.72	5962.0	-185.5	-849.8	5.03	149.67	480.1		
6987.4	90.50	325.94	6042.0	71.5	-1368.9	10.00	81.50	1031.5		
11419.9	90.50	325.94	6003.3	3743.3	-3851.5	0.00	0.00	5370.8	#1116 LP	#1116 PBHL

DESIGN TARGET DETAILS								
Name	TVD	+N-S	+E-W	Northing	Easting	Latitude	Longitude	Shape
#1116 PBHL	6003.3	3743.3	-3851.5	369376.30	1564420.20	39° 30' 19.051 N	80° 55' 55.792 W	Point
#1116 LP	6042.0	71.5	-1368.9	365704.49	1566902.77	39° 29' 43.154 N	80° 55' 23.379 W	Point

Collins #1116/As Drilled

#1116 PBHL
TD at 11419.9

Collins #1116/Design #6

Triad Hunter
Collins #1116
Drawn By: Chris Testa
9-13, August 13 2013
Phoenix Technology Services
Foster Plaza 5, Suite 300 651 Holiday Dr.
Pittsburgh, PA 15220

95.02040

PHOENIX
TECHNOLOGY SERVICES



Triad Hunter

Collins Unit
Collins Unit - Tyler County, WV
Collins #1116 - Slot #1116

Original Well

Design: As Drilled

Standard Survey Report

14 August, 2013

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WV Department of
Environmental Protection



Triad Hunter

02/06/2015



Company:	Triad Hunter	Local Co-ordinate Reference:	Well Collins #1116 - Slot #1116
Project:	Collins Unit	TVD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Site:	Collins Unit - Tyler County, WV	MD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Well:	Collins #1116	North Reference:	Grid
Wellbore:	Original Well	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Local database

Project	Collins Unit		
Map System:	US State Plane 1983	System Datum:	Mean Sea Level
Geo Datum:	North American Datum 1983		
Map Zone:	West Virginia Northern Zone		

Site	Collins Unit - Tyler County, WV				
Site Position:		Northing:	365,633.03 usft	Latitude:	39° 29' 42.662 N
From:	Map	Easting:	1,568,271.67 usft	Longitude:	80° 55' 5.904 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	-0.90 °

Well	Collins #1116 - Slot #1116					
Well Position	+N/-S	0.0 usft	Northing:	365,633.03 usft	Latitude:	39° 29' 42.662 N
	+E/-W	0.0 usft	Easting:	1,568,271.67 usft	Longitude:	80° 55' 5.904 W
Position Uncertainty		0.0 usft	Wellhead Elevation:	usft	Ground Level:	740.0 usft

Wellbore	Original Well				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	IGRF2010	5/15/2013	-8.38	67.09	52,551

Design	As Drilled				
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	314.18	

Survey Program	Date	8/14/2013			
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description	
108.0	2,008.0	Vaughn Gyro (Original Well)	GyroFlex		
2,062.0	4,791.0	MWD (Original Well)	MWD		
4,888.0	11,403.0	Phoenix MWD (Original Well)	MWD		

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)		
0.0	0.00	0.00	0.0	0.0	0.0	0.0	0.00	0.00	0.00		
108.0	0.26	349.55	108.0	0.2	0.0	0.2	0.24	0.24	0.00		
208.0	0.08	4.79	208.0	0.5	-0.1	0.4	0.18	-0.18	15.24		
308.0	0.14	349.26	308.0	0.7	-0.1	0.6	0.07	0.06	-15.53		
408.0	0.15	46.67	408.0	0.9	0.0	0.7	0.14	0.01	57.41		
508.0	0.23	37.37	508.0	1.2	0.2	0.7	0.09	0.08	-9.30		
608.0	0.30	43.14	608.0	1.5	0.5	0.7	0.07	0.07	5.77		



Company:	Triad Hunter	Local Co-ordinate Reference:	Well Collins #1116 - Slot #1116
Project:	Collins Unit	TVD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Site:	Collins Unit - Tyler County, WV	MD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Well:	Collins #1116	North Reference:	Grid
Wellbore:	Original Well	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Local database

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)	
708.0	0.37	44.48	708.0	2.0	0.9	0.7	0.07	0.07	1.34	
808.0	0.48	40.33	808.0	2.5	1.4	0.7	0.11	0.11	-4.15	
908.0	0.63	43.84	908.0	3.2	2.0	0.8	0.15	0.15	3.51	
1,008.0	0.47	39.59	1,008.0	3.9	2.7	0.8	0.17	-0.16	-4.25	
1,108.0	0.41	36.22	1,108.0	4.5	3.2	0.9	0.07	-0.06	-3.37	
1,208.0	0.26	38.41	1,208.0	5.0	3.5	1.0	0.15	-0.15	2.19	
1,308.0	0.19	45.62	1,308.0	5.3	3.8	1.0	0.08	-0.07	7.21	
1,408.0	0.22	52.23	1,408.0	5.5	4.0	1.0	0.04	0.03	6.61	
1,508.0	0.17	58.87	1,508.0	5.7	4.3	0.9	0.05	-0.05	6.64	
1,608.0	0.19	62.58	1,608.0	5.9	4.6	0.8	0.02	0.02	3.71	
1,708.0	0.23	79.76	1,708.0	6.0	4.9	0.6	0.07	0.04	17.18	
1,808.0	0.31	57.93	1,808.0	6.2	5.4	0.4	0.13	0.08	-21.83	
1,908.0	0.28	56.40	1,908.0	6.4	5.8	0.3	0.03	-0.03	-1.53	
2,008.0	0.48	47.15	2,008.0	6.9	6.3	0.3	0.21	0.20	-9.25	
2,062.0	0.47	45.80	2,062.0	7.2	6.6	0.2	0.03	-0.02	-2.50	
2,105.0	0.80	118.78	2,105.0	7.2	7.0	-0.1	1.86	0.77	169.72	
2,148.0	1.97	153.35	2,148.0	6.4	7.6	-1.0	3.23	2.72	80.40	
2,191.0	3.60	164.17	2,190.9	4.4	8.3	-2.9	3.97	3.79	25.16	
2,234.0	5.11	168.03	2,233.8	1.2	9.1	-5.7	3.58	3.51	8.98	
2,277.0	6.51	167.89	2,276.6	-3.0	10.0	-9.3	3.26	3.26	-0.33	
2,320.0	7.90	170.83	2,319.2	-8.3	11.0	-13.7	3.34	3.23	6.84	
2,363.0	8.94	174.74	2,361.8	-14.6	11.8	-18.6	2.76	2.42	9.09	
2,406.0	8.91	176.33	2,404.2	-21.2	12.3	-23.6	0.58	-0.07	3.70	
2,450.0	9.07	183.42	2,447.7	-28.1	12.3	-28.4	2.54	0.36	16.11	
2,493.0	8.70	184.34	2,490.2	-34.7	11.8	-32.7	0.92	-0.86	2.14	
2,536.0	8.49	183.41	2,532.7	-41.1	11.4	-36.8	0.59	-0.49	-2.16	
2,579.0	8.86	181.46	2,575.2	-47.6	11.1	-41.2	1.10	0.86	-4.53	
2,622.0	8.76	179.94	2,617.7	-54.2	11.0	-45.7	0.59	-0.23	-3.53	
2,665.0	9.29	180.19	2,660.2	-60.9	11.0	-50.4	1.24	1.23	0.58	
2,751.0	8.72	180.16	2,745.1	-74.4	11.0	-59.7	0.66	-0.66	-0.03	
2,836.0	8.11	179.77	2,829.2	-86.8	11.0	-68.4	0.72	-0.72	-0.46	
2,922.0	6.25	178.10	2,914.5	-97.6	11.2	-76.0	2.18	-2.16	-1.94	
3,009.0	3.98	172.29	3,001.2	-105.3	11.7	-81.8	2.67	-2.61	-6.68	
3,095.0	1.82	180.59	3,087.0	-109.6	12.1	-85.1	2.55	-2.51	9.65	
3,181.0	0.76	204.85	3,173.0	-111.5	11.9	-86.2	1.36	-1.23	28.21	
3,267.0	0.77	204.07	3,259.0	-112.6	11.4	-86.6	0.02	0.01	-0.91	
3,353.0	0.68	213.16	3,345.0	-113.5	10.9	-86.9	0.17	-0.10	10.57	
3,439.0	0.66	219.22	3,431.0	-114.3	10.3	-87.1	0.09	-0.02	7.05	
3,525.0	0.56	219.30	3,517.0	-115.0	9.7	-87.1	0.12	-0.12	0.09	
3,612.0	0.70	241.61	3,604.0	-115.6	9.0	-87.0	0.32	0.16	25.64	
3,698.0	0.64	253.28	3,690.0	-116.0	8.1	-86.6	0.17	-0.07	13.57	
3,784.0	0.24	278.07	3,776.0	-116.1	7.4	-86.3	0.50	-0.47	28.83	



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Site:	Collins Unit - Tyler County, WV	MD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Well:	Collins #1116	North Reference:	Grid
Wellbore:	Original Well	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Local database

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)	
3,870.0	0.11	289.35	3,862.0	-116.1	7.2	-86.0	0.16	-0.15	13.12	
3,956.0	0.28	281.44	3,948.0	-116.0	6.9	-85.8	0.20	0.20	-9.20	
4,043.0	0.43	318.41	4,035.0	-115.7	6.5	-85.3	0.31	0.17	42.49	
4,129.0	0.66	326.68	4,121.0	-115.1	6.0	-84.5	0.28	0.27	9.62	
4,215.0	0.60	346.92	4,207.0	-114.2	5.6	-83.6	0.27	-0.07	23.53	
4,301.0	0.32	48.82	4,293.0	-113.6	5.7	-83.2	0.62	-0.33	71.98	
4,387.0	0.79	165.02	4,379.0	-114.0	6.0	-83.8	1.13	0.55	135.12	
4,473.0	0.86	166.28	4,465.0	-115.2	6.3	-84.8	0.08	0.08	1.47	
4,559.0	0.59	153.93	4,550.9	-116.3	6.7	-85.8	0.36	-0.31	-14.36	
4,645.0	0.65	144.48	4,636.9	-117.0	7.1	-86.7	0.14	0.07	-10.99	
4,733.0	0.49	137.97	4,724.9	-117.7	7.7	-87.6	0.20	-0.18	-7.40	
4,791.0	0.39	116.10	4,782.9	-118.0	8.0	-88.0	0.33	-0.17	-37.71	
4,888.0	3.00	265.20	4,879.9	-118.4	5.8	-86.6	3.44	2.69	153.71	
4,920.0	4.60	265.20	4,911.8	-118.5	3.7	-85.2	5.00	5.00	0.00	
4,951.0	6.20	270.20	4,942.7	-118.6	0.8	-83.2	5.38	5.16	16.13	
4,983.0	8.20	271.80	4,974.4	-118.6	-3.2	-80.3	6.28	6.25	5.00	
5,015.0	9.80	270.30	5,006.0	-118.5	-8.2	-76.6	5.05	5.00	-4.69	
5,047.0	11.00	269.70	5,037.5	-118.5	-14.0	-72.5	3.77	3.75	-1.88	
5,079.0	12.50	268.30	5,068.8	-118.6	-20.5	-67.9	4.77	4.69	-4.38	
5,111.0	13.90	266.20	5,100.0	-118.9	-27.8	-62.9	4.62	4.38	-6.56	
5,143.0	14.70	262.80	5,131.0	-119.7	-35.7	-57.8	3.62	2.50	-10.63	
5,175.0	14.80	262.80	5,161.9	-120.7	-43.8	-52.7	0.31	0.31	0.00	
5,206.0	15.90	262.90	5,191.8	-121.8	-51.9	-47.6	3.55	3.55	0.32	
5,238.0	17.80	264.20	5,222.5	-122.8	-61.1	-41.7	6.05	5.94	4.06	
5,270.0	19.70	265.10	5,252.8	-123.7	-71.4	-35.0	6.01	5.94	2.81	
5,302.0	21.50	264.10	5,282.7	-124.8	-82.6	-27.8	5.73	5.63	-3.13	
5,334.0	23.30	262.90	5,312.3	-126.2	-94.7	-20.0	5.80	5.63	-3.75	
5,366.0	24.60	264.20	5,341.5	-127.7	-107.6	-11.8	4.38	4.06	4.06	
5,397.0	26.10	264.40	5,369.6	-129.0	-120.8	-3.2	4.85	4.84	0.65	
5,429.0	27.60	264.50	5,398.1	-130.4	-135.2	6.1	4.69	4.69	0.31	
5,461.0	30.40	264.40	5,426.1	-131.9	-150.6	16.1	8.75	8.75	-0.31	
5,493.0	32.30	264.90	5,453.4	-133.4	-167.2	26.9	5.99	5.94	1.56	
5,525.0	33.60	265.00	5,480.3	-134.9	-184.6	38.3	4.07	4.06	0.31	
5,557.0	34.50	266.10	5,506.8	-136.3	-202.4	50.1	3.41	2.81	3.44	
5,588.0	36.00	266.10	5,532.1	-137.6	-220.3	62.1	4.84	4.84	0.00	
5,620.0	37.60	266.70	5,557.7	-138.8	-239.4	75.0	5.12	5.00	1.88	
5,652.0	39.10	267.10	5,582.8	-139.8	-259.2	88.5	4.75	4.69	1.25	
5,684.0	42.00	265.70	5,607.1	-141.1	-280.0	102.4	9.50	9.06	-4.38	
5,716.0	44.40	263.30	5,630.5	-143.3	-301.8	116.6	9.09	7.50	-7.50	
5,748.0	47.00	263.80	5,652.8	-145.8	-324.5	131.1	8.20	8.13	1.56	
5,779.0	48.60	263.80	5,673.6	-148.3	-347.4	145.8	5.16	5.16	0.00	
5,811.0	50.50	263.40	5,694.4	-151.0	-371.6	161.2	6.01	5.94	-1.25	



95.02040

Phoenix Technology Services

Survey Report



Company:	Triad Hunter	Local Co-ordinate Reference:	Well Collins #1116 - Slot #1116
Project:	Collins Unit	TVD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Site:	Collins Unit - Tyler County, WV	MD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Well:	Collins #1116	North Reference:	Grid
Wellbore:	Original Well	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Local database

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)	
5,843.0	51.70	263.40	5,714.5	-153.9	-396.3	177.0	3.75	3.75	0.00	
5,875.0	52.70	263.90	5,734.1	-156.7	-421.4	193.0	3.36	3.13	1.56	
5,907.0	53.50	265.10	5,753.3	-159.1	-446.9	209.6	3.90	2.50	3.75	
5,938.0	55.50	265.40	5,771.3	-161.2	-472.1	226.2	6.50	6.45	0.97	
5,970.0	57.30	265.70	5,789.0	-163.3	-498.6	243.8	5.68	5.63	0.94	
6,002.0	58.40	266.70	5,806.0	-165.1	-525.7	261.9	4.34	3.44	3.13	
6,034.0	60.20	267.50	5,822.4	-166.5	-553.1	280.7	6.02	5.63	2.50	
6,066.0	62.20	267.70	5,837.8	-167.6	-581.2	299.9	6.27	6.25	0.63	
6,097.0	62.70	267.40	5,852.1	-168.8	-608.6	318.8	1.83	1.61	-0.97	
6,129.0	64.50	267.80	5,866.4	-170.0	-637.2	338.5	5.74	5.63	1.25	
6,161.0	66.00	267.90	5,879.8	-171.1	-666.3	358.6	4.70	4.69	0.31	
6,193.0	67.50	268.10	5,892.4	-172.1	-695.7	378.9	4.72	4.69	0.63	
6,225.0	68.40	268.80	5,904.4	-172.9	-725.3	399.6	3.47	2.81	2.19	
6,257.0	68.60	268.80	5,916.1	-173.6	-755.1	420.6	0.63	0.63	0.00	
6,288.0	69.80	268.50	5,927.1	-174.2	-784.1	440.9	3.98	3.87	-0.97	
6,320.0	71.10	268.80	5,937.9	-174.9	-814.2	462.0	4.16	4.06	0.94	
6,352.0	73.30	268.20	5,947.6	-175.7	-844.7	483.3	7.10	6.88	-1.88	
6,382.0	75.10	268.60	5,955.8	-176.6	-873.5	503.4	6.14	6.00	1.33	
6,413.0	75.70	271.20	5,963.6	-176.6	-903.5	524.9	8.34	1.94	8.39	
6,443.0	76.10	274.00	5,970.9	-175.3	-932.6	546.6	9.15	1.33	9.33	
6,474.0	77.20	276.90	5,978.1	-172.4	-962.6	570.2	9.77	3.55	9.35	
6,504.0	77.90	279.20	5,984.6	-168.3	-991.6	593.8	7.84	2.33	7.67	
6,534.0	78.60	283.00	5,990.7	-162.7	-1,020.4	618.4	12.62	2.33	12.67	
6,565.0	79.30	285.80	5,996.6	-155.1	-1,049.9	644.8	9.15	2.26	9.03	
6,595.0	79.70	288.70	6,002.1	-146.3	-1,078.0	671.1	9.60	1.33	9.67	
6,624.0	80.70	291.20	6,007.0	-136.6	-1,104.9	697.2	9.17	3.45	8.62	
6,655.0	81.70	294.30	6,011.8	-124.8	-1,133.2	725.7	10.40	3.23	10.00	
6,685.0	82.10	297.40	6,016.0	-111.8	-1,159.9	753.9	10.32	1.33	10.33	
6,715.0	82.00	299.90	6,020.1	-97.6	-1,185.9	782.5	8.26	-0.33	8.33	
6,745.0	82.40	303.20	6,024.2	-82.0	-1,211.3	811.5	10.98	1.33	11.00	
6,776.0	82.40	306.40	6,028.3	-64.5	-1,236.5	841.8	10.23	0.00	10.32	
6,806.0	83.20	309.50	6,032.1	-46.2	-1,260.0	871.4	10.59	2.67	10.33	
6,836.0	83.90	312.60	6,035.4	-26.6	-1,282.4	901.2	10.53	2.33	10.33	
6,866.0	85.30	315.60	6,038.3	-5.8	-1,303.9	931.0	10.99	4.67	10.00	
6,896.0	87.60	318.60	6,040.1	16.1	-1,324.3	960.9	12.58	7.67	10.00	
6,928.0	88.20	321.20	6,041.3	40.6	-1,344.9	992.8	8.33	1.88	8.13	
6,959.0	89.00	324.20	6,042.1	65.2	-1,363.6	1,023.4	10.01	2.58	9.68	
6,967.1	89.56	324.59	6,042.2	71.8	-1,368.4	1,031.4	8.42	6.90	4.83	
#1116 LP										
6,988.0	91.00	325.60	6,042.1	88.9	-1,380.3	1,051.9	8.42	6.90	4.83	
7,079.0	90.90	326.70	6,040.5	164.5	-1,431.0	1,140.9	1.21	-0.11	1.21	
7,170.0	91.20	325.70	6,038.9	240.1	-1,481.6	1,229.9	1.15	0.33	-1.10	



95.02040

Phoenix Technology Services

Survey Report



Company:	Triad Hunter	Local Co-ordinate Reference:	Well Collins #1116 - Slot #1116
Project:	Collins Unit	TVD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Site:	Collins Unit - Tyler County, WV	MD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Well:	Collins #1116	North Reference:	Grid
Wellbore:	Original Well	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Local database

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)	
7,261.0	89.60	326.50	6,038.2	315.6	-1,532.4	1,318.9	1.97	-1.76	0.88	
7,357.0	90.40	326.50	6,038.2	395.7	-1,585.3	1,412.7	0.83	0.83	0.00	
7,452.0	90.90	326.40	6,037.2	474.9	-1,637.8	1,505.5	0.54	0.53	-0.11	
7,548.0	90.50	325.00	6,036.0	554.2	-1,691.9	1,599.6	1.52	-0.42	-1.46	
7,643.0	89.90	323.60	6,035.7	631.3	-1,747.4	1,693.1	1.60	-0.63	-1.47	
7,738.0	91.80	325.60	6,034.3	708.7	-1,802.4	1,786.5	2.90	2.00	2.11	
7,833.0	90.70	325.20	6,032.2	786.9	-1,856.3	1,879.7	1.23	-1.16	-0.42	
7,929.0	90.40	325.70	6,031.3	866.0	-1,910.8	1,973.8	0.61	-0.31	0.52	
8,025.0	92.20	325.50	6,029.1	945.2	-1,965.0	2,067.9	1.89	1.88	-0.21	
8,120.0	92.30	325.40	6,025.3	1,023.3	-2,018.8	2,161.0	0.15	0.11	-0.11	
8,215.0	91.60	327.30	6,022.1	1,102.4	-2,071.4	2,253.8	2.13	-0.74	2.00	
8,311.0	90.50	326.90	6,020.4	1,183.0	-2,123.6	2,347.3	1.22	-1.15	-0.42	
8,406.0	90.60	326.30	6,019.4	1,262.3	-2,175.9	2,440.1	0.64	0.11	-0.63	
8,502.0	90.50	326.10	6,018.5	1,342.0	-2,229.3	2,534.0	0.23	-0.10	-0.21	
8,598.0	89.50	327.10	6,018.5	1,422.2	-2,282.1	2,627.8	1.47	-1.04	1.04	
8,693.0	89.40	327.20	6,019.4	1,502.0	-2,333.6	2,720.3	0.15	-0.11	0.11	
8,789.0	89.20	326.40	6,020.6	1,582.3	-2,386.2	2,814.0	0.86	-0.21	-0.83	
8,884.0	90.60	326.40	6,020.8	1,661.4	-2,438.8	2,906.9	1.47	1.47	0.00	
8,980.0	91.20	326.60	6,019.3	1,741.5	-2,491.7	3,000.6	0.66	0.63	0.21	
9,075.0	90.00	324.60	6,018.3	1,819.9	-2,545.4	3,093.7	2.46	-1.26	-2.11	
9,171.0	90.20	324.30	6,018.1	1,898.0	-2,601.2	3,188.2	0.38	0.21	-0.31	
9,267.0	90.50	326.00	6,017.5	1,976.7	-2,656.1	3,282.4	1.80	0.31	1.77	
9,362.0	90.90	328.40	6,016.4	2,056.6	-2,707.5	3,375.0	2.56	0.42	2.53	
9,457.0	90.20	327.70	6,015.4	2,137.2	-2,757.8	3,467.2	1.04	-0.74	-0.74	
9,553.0	92.10	327.60	6,013.5	2,218.3	-2,809.2	3,560.5	1.98	1.98	-0.10	
9,648.0	91.00	327.80	6,010.9	2,298.5	-2,859.9	3,652.9	1.18	-1.16	0.21	
9,743.0	90.70	325.80	6,009.5	2,378.0	-2,911.9	3,745.6	2.13	-0.32	-2.11	
9,839.0	90.80	325.50	6,008.3	2,457.3	-2,966.1	3,839.6	0.33	0.10	-0.31	
9,934.0	89.20	326.60	6,008.3	2,536.1	-3,019.1	3,932.6	2.04	-1.68	1.16	
10,029.0	88.90	326.50	6,009.9	2,615.3	-3,071.5	4,025.4	0.33	-0.32	-0.11	
10,125.0	92.00	326.50	6,009.1	2,695.4	-3,124.5	4,119.2	3.23	3.23	0.00	
10,221.0	90.50	324.10	6,007.0	2,774.3	-3,179.1	4,213.3	2.95	-1.56	-2.50	
10,316.0	90.40	322.70	6,006.3	2,850.5	-3,235.7	4,307.1	1.48	-0.11	-1.47	
10,412.0	90.60	321.60	6,005.4	2,926.3	-3,294.6	4,402.2	1.16	0.21	-1.15	
10,507.0	90.70	321.30	6,004.3	3,000.6	-3,353.8	4,496.4	0.33	0.11	-0.32	
10,603.0	91.30	322.60	6,002.7	3,076.2	-3,413.0	4,591.5	1.49	0.63	1.35	
10,698.0	90.50	324.00	6,001.2	3,152.4	-3,469.8	4,685.3	1.70	-0.84	1.47	
10,794.0	89.90	325.40	6,000.8	3,230.7	-3,525.2	4,779.7	1.59	-0.63	1.46	
10,888.0	91.30	327.60	5,999.9	3,309.1	-3,577.1	4,871.5	2.77	1.49	2.34	
10,983.0	91.40	327.20	5,997.6	3,389.1	-3,628.3	4,963.9	0.43	0.11	-0.42	
11,079.0	90.20	328.80	5,996.3	3,470.5	-3,679.1	5,057.1	2.08	-1.25	1.67	
11,174.0	90.70	328.80	5,995.5	3,551.7	-3,728.4	5,149.1	0.53	0.53	0.00	



Company:	Triad Hunter	Local Co-ordinate Reference:	Well Collins #1116 - Slot #1116
Project:	Collins Unit	TVD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Site:	Collins Unit - Tyler County, WV	MD Reference:	20' RKB - 740' GL @ 760.0usft (Warren Drilling #12)
Well:	Collins #1116	North Reference:	Grid
Wellbore:	Original Well	Survey Calculation Method:	Minimum Curvature
Design:	As Drilled	Database:	Local database

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)	
11,270.0	91.10	328.80	5,994.0	3,633.8	-3,778.1	5,241.9	0.42	0.42	0.00	
11,352.0	91.30	328.50	5,992.3	3,703.9	-3,820.7	5,321.3	0.44	0.24	-0.37	
Final Survey										
11,401.4	91.30	328.50	5,991.2	3,746.0	-3,846.5	5,369.2	0.00	0.00	0.00	
#1116 PBHL										
11,403.0	91.30	328.50	5,991.2	3,747.3	-3,847.4	5,370.7	0.00	0.00	0.00	
PROJ to Bit										

Design Annotations					
Measured Depth (usft)	Vertical Depth (usft)	Local Coordinates		Comment	
		+N/-S (usft)	+E/-W (usft)		
11,352.0	5,992.3	3,703.9	-3,820.7	Final Survey	
11,403.0	5,991.2	3,747.3	-3,847.4	PROJ to Bit	

Checked By: _____ Approved By: _____ Date: _____

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