



CNX

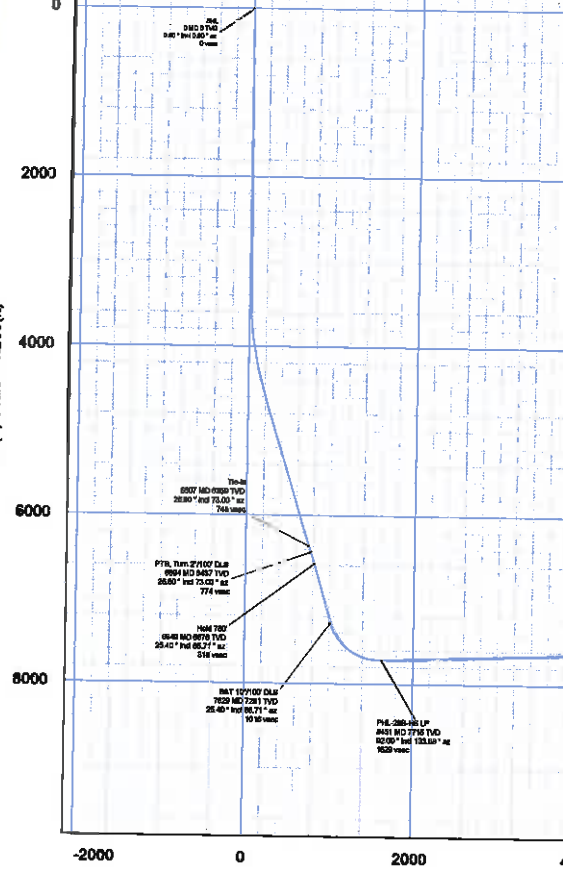
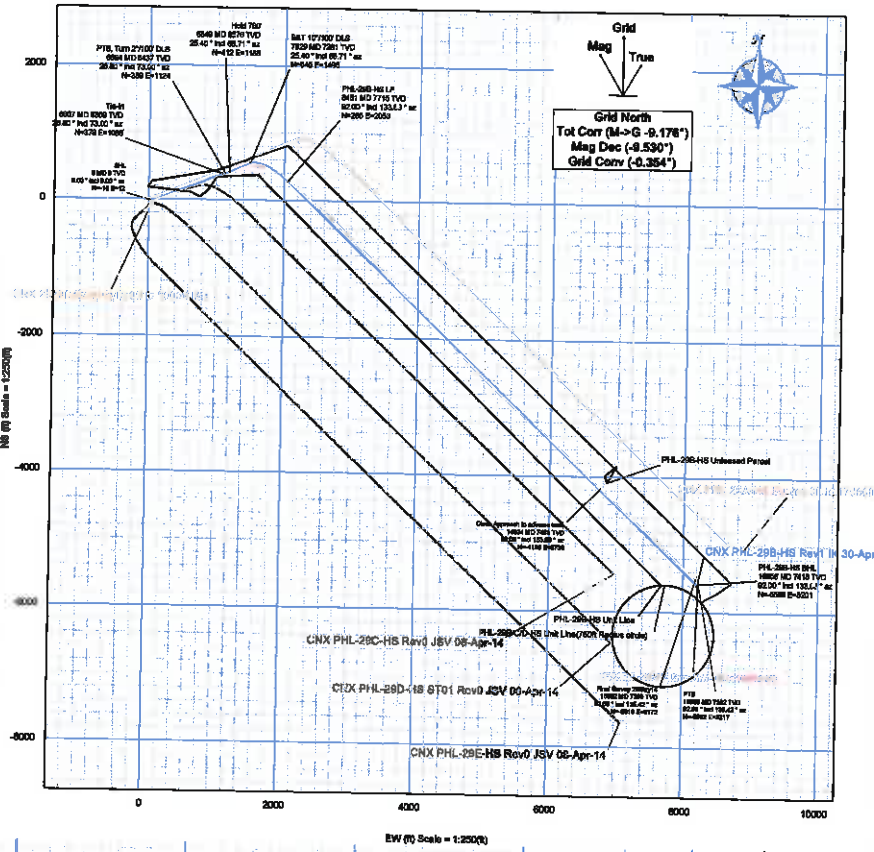


<b>Borehole:</b> <b>Original Borehole</b>	<b>Well:</b> <b>PHL-29B-HS</b>	<b>Field:</b> <b>WV Barbour County (NAD27)</b>	<b>Structure:</b> <b>Patterson 278</b>
<b>Drivity &amp; Magnetic Parameters</b> Model: HDGM 2018 MagDec: -9.57 Dip: 88.588° Date: 05-May-2014 FB: 02180.999T Gravity FB: 980.288mgal (BL00000 Based)	<b>Surface Location</b> Lat: N 98 12 8.38 Lon: W 08 8 17.93	<b>NAD27 West Virginia State Plane, Northern Zone, US Feet</b> Northing: 298079.7691026 Easting: 1942721.47116 Grid Cont: -0.26F Scale Fact: 0.9996032	<b>Structural Data</b> Str: PHL-29B-HS TVD Ref: KD1401.SRT (above MSL) Plan: CNX PHL-29B-HS Gyro-MWD Off to 15.800T MD

CNX PHL-29B-HS Gyro-MWD Off to 15.800T MD
CNX PHL-29B-HS Rev'd to 25.400T MD
CNX PHL-29B-HS Rev'd to 28.810T MD
CNX PHL-29B-HS Rev'd to 30.200T MD
CNX PHL-29B-HS Rev'd to 30.800T MD
CNX PHL-29B-HS Rev'd to 31.400T MD
CNX PHL-29B-HS Rev'd to 32.000T MD
CNX PHL-29B-HS Rev'd to 32.600T MD
CNX PHL-29B-HS Rev'd to 33.200T MD
CNX PHL-29B-HS Rev'd to 33.800T MD
CNX PHL-29B-HS Rev'd to 34.400T MD
CNX PHL-29B-HS Rev'd to 35.000T MD
CNX PHL-29B-HS Rev'd to 35.600T MD
CNX PHL-29B-HS Rev'd to 36.200T MD
CNX PHL-29B-HS Rev'd to 36.800T MD
CNX PHL-29B-HS Rev'd to 37.400T MD
CNX PHL-29B-HS Rev'd to 38.000T MD
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CNX PHL-29B-HS Rev'd to 39.800T MD
CNX PHL-29B-HS Rev'd to 40.400T MD
CNX PHL-29B-HS Rev'd to 41.000T MD
CNX PHL-29B-HS Rev'd to 41.600T MD
CNX PHL-29B-HS Rev'd to 42.200T MD
CNX PHL-29B-HS Rev'd to 42.800T MD
CNX PHL-29B-HS Rev'd to 43.400T MD
CNX PHL-29B-HS Rev'd to 44.000T MD
CNX PHL-29B-HS Rev'd to 44.600T MD
CNX PHL-29B-HS Rev'd to 45.200T MD
CNX PHL-29B-HS Rev'd to 45.800T MD
CNX PHL-29B-HS Rev'd to 46.400T MD
CNX PHL-29B-HS Rev'd to 47.000T MD
CNX PHL-29B-HS Rev'd to 47.600T MD
CNX PHL-29B-HS Rev'd to 48.200T MD
CNX PHL-29B-HS Rev'd to 48.800T MD
CNX PHL-29B-HS Rev'd to 49.400T MD
CNX PHL-29B-HS Rev'd to 50.000T MD

Station	Station	Station	Station	Station	Station	Station	Station
201	202	203	204	205	206	207	208

DEPTH	DEPTH	DEPTH	DEPTH	DEPTH	DEPTH	DEPTH	DEPTH	DEPTH	DEPTH	DEPTH
1	2	3	4	5	6	7	8	9	10	11



Well	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth	Depth
PHL-29B-HS Unleased Parcel	PHL-29B-HS Borehole 15.800T MD 30-Apr-14	PHL-29B-HS Borehole 25.400T MD 30-Apr-14	PHL-29B-HS Borehole 28.810T MD 30-Apr-14	PHL-29B-HS Borehole 30.200T MD 30-Apr-14	PHL-29B-HS Borehole 30.800T MD 30-Apr-14	PHL-29B-HS Borehole 31.400T MD 30-Apr-14	PHL-29B-HS Borehole 32.000T MD 30-Apr-14	PHL-29B-HS Borehole 32.600T MD 30-Apr-14	PHL-29B-HS Borehole 33.200T MD 30-Apr-14	PHL-29B-HS Borehole 33.800T MD 30-Apr-14

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<b>CONTROLLED</b>	

Vertical Section (R) Azim = 120.288° Scale = 1:200(R) Origin = 0N/5, 0E/W



CNX PHL-29B-HS Gyro-MWD Off to 16956ft MD Survey Report



(Def Survey)

Report Date: May 27, 2014 - 08:32 AM
Client: CNX
Structure / Slot: CNX PHL-29B-HS
Survey Name: CNX PHL-29B-HS Gyro-MWD Off to 16956ft MD
Survey Dates: May 05, 2014
Total AMS / DCI / ERD Ratio: 288.792 / 1.10738.DMD R / 6.849 / 1.391
Coordinates Reference System: NAD27 West Virginia State Plane, Northern Zone, US Feet
Location Lat / Long: N 30° 12' 0.33388" W 80° 3' 17.82555" W
CRS Grid Convergence Angle: -0.3540 °
Grid Scale Factor: 0.98989902
Version / Patch: 2.7.1043.0
Survey / DLS Computation: 124.289° (Grid North)
Vertical Section Azimuth: 0.000 ft, 0.000 ft
TVD Reference Datum: KB
TVD Reference Elevation: 1433.980 ft above MSL
Sealed / Ground Elevation: 1405.480 ft above MSL
Magnetic Declination: -8.530 °
Total Gravity Field Strength: 980.288mgal (G.80885 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 52183.388 nT
Magnetic Dip Angle: 65.386 °
Declination Date: May 05, 2014
Magnetic Declination Model: HDGM 2013
North Reference: Grid North
Grid Convergence Used: -0.3540 °
Total Corr Mag North-Grid North: -8.1783 °
Local Coord Referenced To: Well Head

Table with columns: Comments, MD (ft), Incl (°), Azim Grid (°), TVD (ft), TVD98 (ft), VSEC (ft), NS (ft), EW (ft), DLS (ft/100ft), BR (ft/100ft), TR (ft/100ft), Northing (ftUS), Easting (ftUS), Latitude (N/S ° ' ''), Longitude (E/W ° ' ''), Directional Difficulty Index

Table with columns: Comments, MD (ft), Incl (°), Azim Gnd (°), TVD (ft), TVDSS (ft), VSEC (ft), NS (ft), EW (ft), DLS (ft/100ft), BR (ft/100ft), TR (ft/100ft), Monthly (ft), Easting (ft), Latitude (NS), Longitude (EW), Directional Drift Index. The table contains multiple rows of data representing well log measurements.

Comments	MD (ft)	Incl (°)	Az/In Grid (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	BR (ft/100ft)	TR (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ° ' '')	Longitude (E/W ° ° ' '')	Directional Difficulty Index
	15313.00	82.24	132.20	7424.15	5960.16	8301.26	-4440.44	7019.45	1.80	0.76	-1.63	251636.46	1846740.61	N 39 11 21.96 W 80 1 48.43		6.70
	15405.00	91.96	131.82	7420.83	5986.84	8300.41	-4500.48	7088.43	0.81	-0.29	-0.78	251478.45	1846807.59	N 39 11 21.28 W 80 1 47.57		6.71
	15498.00	99.69	130.27	7419.45	5985.46	8484.75	-4502.84	7198.23	2.75	-2.41	-1.32	251417.27	1846679.38	N 39 11 20.87 W 80 1 46.88		6.72
	15594.00	90.04	130.50	7419.88	5985.89	8580.20	-4624.84	7231.35	0.44	0.38	0.24	251385.97	1846652.50	N 39 11 20.05 W 80 1 45.72		6.73
	15687.00	90.67	130.90	7419.18	5965.19	8672.62	-4885.48	7301.88	0.71	0.67	0.43	251294.43	1846623.01	N 39 11 18.49 W 80 1 44.82		6.74
	15781.00	92.99	131.54	7418.59	5962.00	8765.88	-4747.40	7372.53	2.25	2.16	0.68	251232.51	1850083.98	N 39 11 16.85 W 80 1 43.82		6.75
	15873.00	93.03	130.82	7412.09	5978.09	8957.13	-4807.72	7441.85	1.21	0.48	-1.11	251172.20	1850102.99	N 39 11 18.26 W 80 1 43.04		6.76
	15969.00	84.15	132.74	7408.04	5972.05	8662.14	-4971.39	7513.46	2.50	1.20	2.31	251106.56	1850234.80	N 39 11 17.83 W 80 1 42.12		6.77
	16064.00	93.30	134.08	7399.84	5985.85	8045.73	-4836.51	7622.31	1.89	-0.93	1.42	251043.41	1850303.46	N 39 11 16.88 W 80 1 41.24		6.78
	16155.00	91.99	134.07	7385.72	5981.73	8135.30	-4888.75	7647.82	1.85	-1.55	-0.02	250980.17	1850389.76	N 39 11 18.37 W 80 1 40.41		6.79
	16247.00	92.88	133.73	7382.08	5989.07	8223.83	-5063.48	7713.85	0.93	0.86	-0.37	250916.43	1850434.98	N 39 11 18.79 W 80 1 39.56		6.80
	16342.00	92.15	133.37	7388.05	5954.08	8319.80	-5128.88	7782.85	0.87	-0.58	-0.38	250851.04	1850503.76	N 39 11 15.10 W 80 1 38.86		6.81
	16438.00	91.19	133.44	7385.31	5951.32	8412.38	-5193.45	7850.81	1.02	-1.02	0.07	250796.45	1850572.04	N 39 11 14.47 W 80 1 37.81		6.82
	16529.00	91.54	133.90	7383.10	5949.11	8504.12	-5287.47	7918.33	0.41	0.38	0.17	250722.46	1850639.46	N 39 11 13.84 W 80 1 36.85		6.83
	16625.00	93.56	135.87	7373.83	5944.84	8596.45	-5324.85	7966.57	3.01	2.10	2.16	250655.09	1850707.86	N 39 11 13.18 W 80 1 35.08		6.84
	16720.00	92.85	136.09	7373.43	5939.44	8691.35	-5392.94	8032.59	0.78	-0.84	0.44	250587.00	1850773.72	N 39 11 12.51 W 80 1 34.24		6.85
Final Survey 25May14 PTB	16815.00	92.66	135.87	7368.77	5934.78	8784.26	-5461.17	8118.83	0.37	-0.28	-0.23	250518.77	1850838.86	N 39 11 11.84 W 80 1 34.39		6.86
	16902.00	92.68	135.42	7365.17	5931.18	8859.88	-5518.16	8172.30	0.58	0.00	-0.56	250463.78	1850883.43	N 39 11 11.30 W 80 1 33.71		6.87
	16988.00	92.88	135.42	7362.17	5928.16	8922.38	-5581.70	8217.18	0.00	0.00	0.00	250418.24	1850938.30	N 39 11 10.85 W 80 1 33.13		6.88

Survey Type: Def Survey

Survey Error Model: ISCWSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7855 sigma

Description	Part	MD From (ft)	MD To (ft)	EDU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Survey Tool Type	Borehole / Survey
		0.000	28.510	Act Strs	30.000	30.000	SLB_NSG+MSHOT-Depth Only	Original Borehole / CNX PHL-29B-HS Gyro-MWD Off to 16898ft MD
		28.510	3520.000	Act Strs	30.000	30.000	SLB_NSG+MSHOT	Original Borehole / CNX PHL-29B-HS Gyro-MWD Off to 16898ft MD
		3520.000	16882.000	Act Strs	30.000	30.000	SLB_MWD-STD	Original Borehole / CNX PHL-29B-HS Gyro-MWD Off to 16898ft MD
	1	16882.000	16958.000	Act Strs	30.000	30.000	SLB_BLIND+TREND	Original Borehole / CNX PHL-29B-HS Gyro-MWD Off to 16958ft MD

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