



C O N C H O

NORTHERN DELAWARE BASIN

LEA COUNTY, NM

BULLDOG

AVION FED #301H

OWB

Design: ACTUAL WELLPATH

Standard Survey Report

19 October, 2018

HOBBS OCD
FEB 18 2019
RECEIVED

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well AVION FED #301H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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	BULLDOG				
Site Position:		Northing:	398,637.10 usft	Latitude:	32° 5' 36.820 N
From:	Map	Easting:	741,887.40 usft	Longitude:	103° 33' 8.116 W
Position Uncertainty:	0.0 usft	Slot Radius:	13-3/16 "	Grid Convergence:	0.42 °

Well	AVION FED #301H					
Well Position	+N/-S	0.0 usft	Northing:	472,054.27 usft	Latitude:	32° 17' 45.488 N
	+E/-W	0.0 usft	Easting:	709,743.28 usft	Longitude:	103° 39' 16.373 W
Position Uncertainty		3.0 usft	Wellhead Elevation:	usft	Ground Level:	3,698.7' usft

Wellbore	OWB				
Magnetics	Model Name	Sample Date	Declination (°)	Dip Angle (°)	Field Strength (nT)
	WMM2015	11/16/2017	6.97	60.09	47,914.75575899

Design		ACTUAL WELLPATH			
Audit Notes:					
Version:	1.0	Phase:	ACTUAL	Tie On Depth:	0.0
Vertical Section:	Depth From (TVD)	+N/-S	+E/-W	Direction	
	(usft)	(usft)	(usft)	(°)	
	9,603.0	0.0	0.0	179.63	

Survey Program		Date	10/19/2018	
From (usft)	To (usft)	Survey (Wellbore)	Tool Name	Description
100.0	8,888.0	GYRO (OWB)	Standard Keeper 104	Standard Wireline Keeper ver 1.0.4
8,911.0	19,671.0	MWD-CURVE/LATERAL (OWB)	MWD+IFR1+MS	OWSG MWD + IFR1 + Multi-Station Correction

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	
100.0	0.36	205.08	100.0	-0.3	-0.1	0.3	0.36	0.36	0.00	
125.0	0.35	178.57	125.0	-0.4	-0.2	0.4	0.65	-0.04	-106.04	
150.0	0.43	178.18	150.0	-0.6	-0.2	0.6	0.32	0.32	-1.56	
175.0	0.41	183.91	175.0	-0.8	-0.2	0.8	0.19	-0.08	22.92	
200.0	0.45	175.85	200.0	-1.0	-0.2	1.0	0.29	0.16	-32.24	
225.0	0.38	173.93	225.0	-1.2	-0.1	1.2	0.29	-0.28	-7.68	
250.0	0.47	179.70	250.0	-1.3	-0.1	1.3	0.40	0.36	23.08	
275.0	0.41	172.16	275.0	-1.5	-0.1	1.5	0.33	-0.24	-30.16	
300.0	0.37	171.78	300.0	-1.7	-0.1	1.7	0.16	-0.16	-1.52	

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Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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)
325.0	0.38	177.84	325.0	-1.9	-0.1	1.9	0.16	0.04	24.24
350.0	0.43	172.86	350.0	-2.0	-0.1	2.0	0.24	0.20	-19.92
375.0	0.39	175.14	375.0	-2.2	-0.1	2.2	0.17	-0.16	9.12
400.0	0.37	182.92	400.0	-2.4	0.0	2.4	0.22	-0.08	31.12
425.0	0.35	176.53	425.0	-2.5	0.0	2.5	0.18	-0.08	-25.56
450.0	0.28	158.78	450.0	-2.7	0.0	2.7	0.48	-0.28	-71.00
475.0	0.37	177.26	475.0	-2.8	0.0	2.8	0.55	0.36	73.92
500.0	0.42	190.44	500.0	-3.0	0.0	3.0	0.41	0.20	52.72
525.0	0.38	187.63	525.0	-3.1	0.0	3.1	0.18	-0.16	-11.24
550.0	0.35	184.03	550.0	-3.3	-0.1	3.3	0.15	-0.12	-14.40
575.0	0.38	190.41	575.0	-3.5	-0.1	3.5	0.20	0.12	25.52
600.0	0.35	194.20	600.0	-3.6	-0.1	3.6	0.15	-0.12	15.16
625.0	0.34	193.37	625.0	-3.8	-0.1	3.8	0.04	-0.04	-3.32
650.0	0.30	198.57	650.0	-3.9	-0.2	3.9	0.20	-0.16	20.80
675.0	0.31	183.51	675.0	-4.0	-0.2	4.0	0.32	0.04	-60.24
700.0	0.29	200.54	700.0	-4.2	-0.2	4.2	0.36	-0.08	68.12
725.0	0.33	212.66	725.0	-4.3	-0.3	4.3	0.31	0.16	48.48
750.0	0.24	210.26	750.0	-4.4	-0.4	4.4	0.36	-0.36	-9.60
775.0	0.18	219.87	775.0	-4.5	-0.4	4.5	0.28	-0.24	38.44
800.0	0.15	218.91	800.0	-4.5	-0.5	4.5	0.12	-0.12	-3.84
825.0	0.07	254.88	825.0	-4.5	-0.5	4.5	0.41	-0.32	143.88
850.0	0.11	260.57	850.0	-4.6	-0.5	4.5	0.16	0.16	22.76
875.0	0.10	252.02	875.0	-4.6	-0.6	4.6	0.07	-0.04	-34.20
900.0	0.08	276.02	900.0	-4.6	-0.6	4.6	0.17	-0.08	96.00
925.0	0.06	233.41	925.0	-4.6	-0.6	4.6	0.22	-0.08	-170.44
950.0	0.05	178.92	950.0	-4.6	-0.6	4.6	0.20	-0.04	-217.96
975.0	0.05	140.79	975.0	-4.6	-0.6	4.6	0.13	0.00	-152.52
1,000.0	0.11	202.60	1,000.0	-4.6	-0.6	4.6	0.39	0.24	247.24
1,025.0	0.05	82.60	1,025.0	-4.7	-0.6	4.7	0.57	-0.24	-480.00
1,050.0	0.08	122.96	1,050.0	-4.7	-0.6	4.7	0.21	0.12	161.44
1,075.0	0.13	85.70	1,075.0	-4.7	-0.6	4.7	0.33	0.20	-149.04
1,100.0	0.08	97.35	1,100.0	-4.7	-0.5	4.7	0.22	-0.20	46.60
1,125.0	0.10	68.72	1,125.0	-4.7	-0.5	4.7	0.19	0.08	-114.52
1,150.0	0.02	182.96	1,150.0	-4.7	-0.5	4.7	0.44	-0.32	456.96
1,175.0	0.07	130.54	1,175.0	-4.7	-0.5	4.7	0.24	0.20	-209.68
1,200.0	0.15	82.81	1,200.0	-4.7	-0.4	4.7	0.46	0.32	-190.92
1,225.0	0.20	86.85	1,225.0	-4.7	-0.3	4.7	0.21	0.20	16.16
1,250.0	0.27	65.96	1,250.0	-4.7	-0.2	4.7	0.44	0.28	-83.56
1,275.0	0.19	68.55	1,275.0	-4.6	-0.2	4.6	0.32	-0.32	10.36
1,300.0	0.25	78.27	1,300.0	-4.6	-0.1	4.6	0.28	0.24	38.88
1,325.0	0.25	80.93	1,325.0	-4.6	0.0	4.6	0.05	0.00	10.64
1,350.0	0.31	80.27	1,350.0	-4.6	0.2	4.6	0.24	0.24	-2.64
1,375.0	0.27	79.76	1,375.0	-4.5	0.3	4.5	0.16	-0.16	-2.04

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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)
1,400.0	0.26	88.55	1,400.0	-4.5	0.4	4.5	0.17	-0.04	35.16
1,425.0	0.29	76.30	1,425.0	-4.5	0.5	4.5	0.26	0.12	-49.00
1,450.0	0.28	102.30	1,450.0	-4.5	0.6	4.5	0.51	-0.04	104.00
1,475.0	0.26	93.37	1,475.0	-4.5	0.8	4.5	0.19	-0.08	-35.72
1,500.0	0.26	114.68	1,500.0	-4.5	0.9	4.5	0.38	0.00	85.24
1,525.0	0.15	113.07	1,525.0	-4.6	1.0	4.6	0.44	-0.44	-6.44
1,550.0	0.22	94.40	1,550.0	-4.6	1.0	4.6	0.37	0.28	-74.68
1,575.0	0.21	83.46	1,575.0	-4.6	1.1	4.6	0.17	-0.04	-43.76
1,600.0	0.23	58.22	1,600.0	-4.6	1.2	4.6	0.39	0.08	-100.96
1,625.0	0.05	123.86	1,625.0	-4.5	1.3	4.6	0.86	-0.72	262.56
1,650.0	0.20	55.76	1,650.0	-4.5	1.3	4.5	0.75	0.60	-272.40
1,675.0	0.19	70.56	1,675.0	-4.5	1.4	4.5	0.20	-0.04	59.20
1,700.0	0.24	48.06	1,700.0	-4.4	1.5	4.4	0.39	0.20	-90.00
1,725.0	0.15	48.15	1,725.0	-4.4	1.5	4.4	0.36	-0.36	0.36
1,750.0	0.13	63.46	1,750.0	-4.3	1.6	4.4	0.17	-0.08	61.24
1,775.0	0.11	49.85	1,775.0	-4.3	1.6	4.3	0.14	-0.08	-54.44
1,800.0	0.19	47.58	1,800.0	-4.3	1.7	4.3	0.32	0.32	-9.08
1,825.0	0.24	54.50	1,825.0	-4.2	1.7	4.2	0.23	0.20	27.68
1,850.0	0.23	44.74	1,850.0	-4.1	1.8	4.2	0.16	-0.04	-39.04
1,875.0	0.18	51.83	1,875.0	-4.1	1.9	4.1	0.22	-0.20	28.36
1,900.0	0.25	62.80	1,900.0	-4.0	2.0	4.1	0.32	0.28	43.88
1,925.0	0.37	57.87	1,925.0	-4.0	2.1	4.0	0.49	0.48	-19.72
1,950.0	0.30	67.49	1,950.0	-3.9	2.2	3.9	0.36	-0.28	38.48
1,975.0	0.23	69.14	1,975.0	-3.9	2.3	3.9	0.28	-0.28	6.60
2,000.0	0.18	75.03	2,000.0	-3.8	2.4	3.8	0.22	-0.20	23.56
2,025.0	0.23	66.27	2,025.0	-3.8	2.5	3.8	0.24	0.20	-35.04
2,050.0	0.28	76.16	2,050.0	-3.8	2.6	3.8	0.27	0.20	39.56
2,075.0	0.27	71.78	2,075.0	-3.7	2.7	3.8	0.09	-0.04	-17.52
2,100.0	0.28	61.71	2,100.0	-3.7	2.8	3.7	0.20	0.04	-40.28
2,125.0	0.31	63.65	2,125.0	-3.6	2.9	3.6	0.13	0.12	7.76
2,150.0	0.19	53.40	2,150.0	-3.6	3.0	3.6	0.51	-0.48	-41.00
2,175.0	0.23	53.57	2,175.0	-3.5	3.1	3.5	0.16	0.16	0.68
2,200.0	0.26	51.73	2,200.0	-3.5	3.2	3.5	0.12	0.12	-7.36
2,225.0	0.39	53.81	2,225.0	-3.4	3.3	3.4	0.52	0.52	8.32
2,250.0	0.34	49.98	2,250.0	-3.3	3.4	3.3	0.22	-0.20	-15.32
2,275.0	0.41	68.98	2,275.0	-3.2	3.6	3.2	0.57	0.28	76.00
2,300.0	0.28	78.20	2,300.0	-3.1	3.7	3.2	0.56	-0.52	36.88
2,325.0	0.19	107.77	2,325.0	-3.1	3.8	3.2	0.59	-0.36	118.28
2,350.0	0.38	52.18	2,350.0	-3.1	3.9	3.1	1.26	0.76	-222.36
2,375.0	0.40	58.13	2,375.0	-3.0	4.1	3.0	0.18	0.08	23.80
2,400.0	0.46	57.09	2,400.0	-2.9	4.2	2.9	0.24	0.24	-4.16
2,425.0	0.44	65.81	2,425.0	-2.8	4.4	2.8	0.29	-0.08	34.88
2,450.0	0.40	70.42	2,450.0	-2.7	4.6	2.8	0.21	-0.16	18.44

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Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
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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)
2,475.0	0.42	65.87	2,475.0	-2.7	4.7	2.7	0.15	0.08	-18.20
2,500.0	0.42	54.20	2,500.0	-2.6	4.9	2.6	0.34	0.00	-46.68
2,525.0	0.49	49.97	2,525.0	-2.5	5.0	2.5	0.31	0.28	-16.92
2,550.0	0.62	52.24	2,550.0	-2.3	5.2	2.4	0.53	0.52	9.08
2,575.0	0.56	58.52	2,575.0	-2.2	5.4	2.2	0.35	-0.24	25.12
2,600.0	0.61	59.46	2,600.0	-2.0	5.6	2.1	0.20	0.20	3.76
2,625.0	0.55	58.50	2,625.0	-1.9	5.9	1.9	0.24	-0.24	-3.84
2,650.0	0.55	61.87	2,650.0	-1.8	6.1	1.8	0.13	0.00	13.48
2,675.0	0.59	53.14	2,675.0	-1.7	6.3	1.7	0.38	0.16	-34.92
2,700.0	0.66	53.28	2,700.0	-1.5	6.5	1.5	0.28	0.28	0.56
2,725.0	0.61	46.32	2,725.0	-1.3	6.7	1.4	0.37	-0.20	-27.84
2,750.0	0.69	45.15	2,750.0	-1.1	6.9	1.2	0.32	0.32	-4.68
2,775.0	0.80	50.86	2,775.0	-0.9	7.2	0.9	0.53	0.44	22.84
2,800.0	0.74	53.58	2,800.0	-0.7	7.4	0.7	0.28	-0.24	10.88
2,825.0	0.78	53.76	2,825.0	-0.5	7.7	0.5	0.16	0.16	0.72
2,850.0	0.69	54.78	2,849.9	-0.3	8.0	0.4	0.36	-0.36	4.08
2,875.0	0.67	49.05	2,874.9	-0.1	8.2	0.2	0.28	-0.08	-22.92
2,900.0	0.71	45.24	2,899.9	0.1	8.4	0.0	0.24	0.16	-15.24
2,925.0	0.71	43.39	2,924.9	0.3	8.6	-0.2	0.09	0.00	-7.40
2,950.0	0.92	48.40	2,949.9	0.5	8.9	-0.5	0.89	0.84	20.04
2,975.0	0.85	51.31	2,974.9	0.8	9.2	-0.7	0.33	-0.28	11.64
3,000.0	0.92	52.39	2,999.9	1.0	9.5	-1.0	0.29	0.28	4.32
3,025.0	0.92	49.08	3,024.9	1.3	9.8	-1.2	0.21	0.00	-13.24
3,050.0	1.03	46.86	3,049.9	1.6	10.1	-1.5	0.47	0.44	-8.88
3,075.0	1.03	46.22	3,074.9	1.9	10.4	-1.8	0.05	0.00	-2.56
3,100.0	1.09	43.43	3,099.9	2.2	10.8	-2.1	0.32	0.24	-11.16
3,125.0	1.10	45.43	3,124.9	2.5	11.1	-2.5	0.16	0.04	8.00
3,150.0	1.12	46.17	3,149.9	2.9	11.4	-2.8	0.10	0.08	2.96
3,175.0	1.11	49.30	3,174.9	3.2	11.8	-3.1	0.25	-0.04	12.52
3,200.0	1.15	47.17	3,199.9	3.5	12.2	-3.5	0.23	0.16	-8.52
3,225.0	1.02	47.69	3,224.9	3.9	12.5	-3.8	0.52	-0.52	2.08
3,250.0	1.07	43.74	3,249.9	4.2	12.8	-4.1	0.35	0.20	-15.80
3,275.0	1.25	47.00	3,274.9	4.5	13.2	-4.5	0.77	0.72	13.04
3,300.0	1.17	50.44	3,299.9	4.9	13.6	-4.8	0.43	-0.32	13.76
3,325.0	1.11	46.92	3,324.9	5.2	14.0	-5.1	0.37	-0.24	-14.08
3,350.0	1.13	47.34	3,349.9	5.5	14.3	-5.5	0.09	0.08	1.68
3,375.0	1.18	46.19	3,374.9	5.9	14.7	-5.8	0.22	0.20	-4.60
3,400.0	1.04	47.95	3,399.9	6.2	15.0	-6.1	0.58	-0.56	7.04
3,425.0	1.12	43.52	3,424.9	6.5	15.4	-6.4	0.46	0.32	-17.72
3,450.0	1.24	44.79	3,449.9	6.9	15.7	-6.8	0.49	0.48	5.08
3,475.0	1.21	48.33	3,474.8	7.3	16.1	-7.2	0.33	-0.12	14.16
3,500.0	1.19	49.99	3,499.8	7.6	16.5	-7.5	0.16	-0.08	6.64
3,525.0	1.16	45.60	3,524.8	8.0	16.9	-7.9	0.38	-0.12	-17.56
3,550.0	1.10	43.41	3,549.8	8.3	17.3	-8.2	0.30	-0.24	-8.76

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well AVION FED #301H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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)
3,575.0	1.13	44.83	3,574.8	8.7	17.6	-8.6	0.16	0.12	5.68
3,600.0	1.25	44.81	3,599.8	9.0	18.0	-8.9	0.48	0.48	-0.08
3,625.0	1.23	46.75	3,624.8	9.4	18.3	-9.3	0.19	-0.08	7.76
3,650.0	1.15	45.49	3,649.8	9.8	18.7	-9.7	0.34	-0.32	-5.04
3,675.0	1.15	45.21	3,674.8	10.1	19.1	-10.0	0.02	0.00	-1.12
3,700.0	1.19	44.18	3,699.8	10.5	19.4	-10.4	0.18	0.16	-4.12
3,725.0	1.21	41.76	3,724.8	10.9	19.8	-10.7	0.22	0.08	-9.68
3,750.0	1.26	45.52	3,749.8	11.3	20.2	-11.1	0.38	0.20	15.04
3,775.0	1.12	46.12	3,774.8	11.6	20.5	-11.5	0.56	-0.56	2.40
3,800.0	1.17	46.91	3,799.8	12.0	20.9	-11.8	0.21	0.20	3.16
3,825.0	1.09	46.12	3,824.8	12.3	21.3	-12.2	0.33	-0.32	-3.16
3,850.0	1.08	43.07	3,849.8	12.6	21.6	-12.5	0.23	-0.04	-12.20
3,875.0	1.00	39.33	3,874.8	13.0	21.9	-12.8	0.42	-0.32	-14.96
3,900.0	0.94	39.66	3,899.8	13.3	22.2	-13.2	0.24	-0.24	1.32
3,925.0	0.85	38.44	3,924.8	13.6	22.4	-13.5	0.37	-0.36	-4.88
3,950.0	0.75	24.01	3,949.8	13.9	22.6	-13.8	0.90	-0.40	-57.72
3,975.0	0.66	18.51	3,974.8	14.2	22.7	-14.1	0.45	-0.36	-22.00
4,000.0	0.71	17.31	3,999.8	14.5	22.8	-14.3	0.21	0.20	-4.80
4,025.0	0.62	18.60	4,024.7	14.8	22.9	-14.6	0.36	-0.36	5.16
4,050.0	0.55	6.59	4,049.7	15.0	22.9	-14.9	0.56	-0.28	-48.04
4,075.0	0.52	3.39	4,074.7	15.2	23.0	-15.1	0.17	-0.12	-12.80
4,100.0	0.61	6.49	4,099.7	15.5	23.0	-15.3	0.38	0.36	12.40
4,125.0	0.48	10.82	4,124.7	15.7	23.0	-15.6	0.55	-0.52	17.32
4,150.0	0.40	3.26	4,149.7	15.9	23.0	-15.8	0.39	-0.32	-30.24
4,175.0	0.19	313.25	4,174.7	16.0	23.0	-15.9	1.25	-0.84	-200.04
4,200.0	0.11	285.15	4,199.7	16.1	23.0	-15.9	0.43	-0.32	-112.40
4,225.0	0.23	211.20	4,224.7	16.0	22.9	-15.9	0.90	0.48	-295.80
4,250.0	0.37	215.51	4,249.7	15.9	22.8	-15.8	0.57	0.56	17.24
4,275.0	0.37	210.32	4,274.7	15.8	22.7	-15.6	0.13	0.00	-20.76
4,300.0	0.33	199.42	4,299.7	15.6	22.7	-15.5	0.31	-0.16	-43.60
4,325.0	0.37	182.56	4,324.7	15.5	22.7	-15.3	0.44	0.16	-67.44
4,350.0	0.51	190.86	4,349.7	15.3	22.6	-15.2	0.61	0.56	33.20
4,375.0	0.41	177.72	4,374.7	15.1	22.6	-15.0	0.58	-0.40	-52.56
4,400.0	0.53	176.82	4,399.7	14.9	22.6	-14.8	0.48	0.48	-3.60
4,425.0	0.67	167.35	4,424.7	14.6	22.7	-14.5	0.68	0.56	-37.88
4,450.0	0.76	165.71	4,449.7	14.3	22.7	-14.2	0.37	0.36	-6.56
4,475.0	0.91	167.22	4,474.7	14.0	22.8	-13.8	0.61	0.60	6.04
4,500.0	1.09	163.10	4,499.7	13.6	22.9	-13.4	0.77	0.72	-16.48
4,525.0	1.30	159.32	4,524.7	13.1	23.1	-12.9	0.90	0.84	-15.12
4,550.0	1.42	156.04	4,549.7	12.5	23.3	-12.4	0.57	0.48	-13.12
4,575.0	1.60	156.05	4,574.7	11.9	23.6	-11.8	0.72	0.72	0.04
4,600.0	1.71	159.28	4,599.7	11.3	23.9	-11.1	0.58	0.44	12.92
4,625.0	1.67	160.64	4,624.7	10.6	24.1	-10.4	0.23	-0.16	5.44

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well AVION FED #301H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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)
4,650.0	1.64	159.63	4,649.7	9.9	24.4	-9.7	0.17	-0.12	-4.04
4,675.0	1.45	160.81	4,674.7	9.2	24.6	-9.1	0.77	-0.76	4.72
4,700.0	1.09	161.48	4,699.7	8.7	24.8	-8.6	1.44	-1.44	2.68
4,725.0	0.90	174.66	4,724.7	8.3	24.9	-8.1	1.19	-0.76	52.72
4,750.0	0.69	202.58	4,749.7	8.0	24.8	-7.8	1.74	-0.84	111.68
4,775.0	0.66	228.48	4,774.7	7.7	24.7	-7.6	1.22	-0.12	103.60
4,800.0	0.71	245.87	4,799.7	7.6	24.4	-7.4	0.85	0.20	69.56
4,825.0	0.81	243.57	4,824.6	7.4	24.1	-7.3	0.42	0.40	-9.20
4,850.0	0.73	245.39	4,849.6	7.3	23.8	-7.1	0.33	-0.32	7.28
4,875.0	0.80	238.80	4,874.6	7.1	23.5	-7.0	0.45	0.28	-26.36
4,900.0	0.84	236.01	4,899.6	6.9	23.2	-6.8	0.23	0.16	-11.16
4,925.0	0.91	239.99	4,924.6	6.7	22.9	-6.6	0.37	0.28	15.92
4,950.0	0.96	243.63	4,949.6	6.5	22.5	-6.4	0.31	0.20	14.56
4,975.0	0.83	242.24	4,974.6	6.4	22.2	-6.2	0.53	-0.52	-5.56
5,000.0	0.88	243.36	4,999.6	6.2	21.9	-6.1	0.21	0.20	4.48
5,025.0	0.92	236.57	5,024.6	6.0	21.5	-5.9	0.46	0.16	-27.16
5,050.0	0.89	237.41	5,049.6	5.8	21.2	-5.6	0.13	-0.12	3.36
5,075.0	0.87	241.88	5,074.6	5.6	20.9	-5.5	0.29	-0.08	17.88
5,100.0	0.86	243.30	5,099.6	5.4	20.5	-5.3	0.09	-0.04	5.68
5,125.0	0.89	242.82	5,124.6	5.2	20.2	-5.1	0.12	0.12	-1.92
5,150.0	0.76	245.06	5,149.6	5.1	19.9	-5.0	0.54	-0.52	8.96
5,175.0	0.89	238.77	5,174.6	4.9	19.5	-4.8	0.63	0.52	-25.16
5,200.0	0.98	244.66	5,199.6	4.7	19.2	-4.6	0.53	0.36	23.56
5,225.0	0.87	248.99	5,224.6	4.6	18.8	-4.4	0.52	-0.44	17.32
5,250.0	0.78	250.99	5,249.6	4.4	18.5	-4.3	0.38	-0.36	8.00
5,275.0	0.94	249.61	5,274.6	4.3	18.1	-4.2	0.65	0.64	-5.52
5,300.0	0.77	253.58	5,299.6	4.2	17.8	-4.1	0.72	-0.68	15.88
5,325.0	0.80	245.10	5,324.6	4.1	17.4	-4.0	0.48	0.12	-33.92
5,350.0	0.84	242.19	5,349.6	3.9	17.1	-3.8	0.23	0.16	-11.64
5,375.0	0.84	236.69	5,374.6	3.7	16.8	-3.6	0.32	0.00	-22.00
5,400.0	0.91	239.27	5,399.6	3.5	16.5	-3.4	0.32	0.28	10.32
5,425.0	0.87	243.42	5,424.6	3.3	16.1	-3.2	0.30	-0.16	16.60
5,450.0	0.78	243.83	5,449.6	3.2	15.8	-3.1	0.36	-0.36	1.64
5,475.0	0.71	241.89	5,474.6	3.0	15.5	-2.9	0.30	-0.28	-7.76
5,500.0	0.82	232.13	5,499.6	2.8	15.3	-2.7	0.68	0.44	-39.04
5,525.0	0.86	242.23	5,524.6	2.7	14.9	-2.6	0.61	0.16	40.40
5,550.0	0.86	242.10	5,549.6	2.5	14.6	-2.4	0.01	0.00	-0.52
5,575.0	0.82	238.88	5,574.6	2.3	14.3	-2.2	0.25	-0.16	-12.88
5,600.0	0.90	235.66	5,599.6	2.1	14.0	-2.0	0.37	0.32	-12.88
5,625.0	0.84	240.84	5,624.6	1.9	13.7	-1.8	0.40	-0.24	20.72
5,650.0	0.76	237.12	5,649.6	1.7	13.4	-1.6	0.38	-0.32	-14.88
5,675.0	0.82	236.66	5,674.6	1.5	13.1	-1.4	0.24	0.24	-1.84
5,700.0	0.84	242.14	5,699.6	1.3	12.8	-1.3	0.33	0.08	21.92

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well AVION FED #301H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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)
5,725.0	0.83	235.85	5,724.6	1.2	12.4	-1.1	0.37	-0.04	-25.16
5,750.0	0.85	236.50	5,749.5	0.9	12.1	-0.9	0.09	0.08	2.60
5,775.0	0.76	233.68	5,774.5	0.7	11.9	-0.7	0.39	-0.36	-11.28
5,800.0	0.83	242.17	5,799.5	0.6	11.6	-0.5	0.55	0.28	33.96
5,825.0	0.90	237.75	5,824.5	0.4	11.2	-0.3	0.39	0.28	-17.68
5,850.0	0.54	257.77	5,849.5	0.2	11.0	-0.2	1.74	-1.44	80.08
5,875.0	0.84	357.84	5,874.5	0.4	10.8	-0.3	4.30	1.20	400.28
5,900.0	1.18	3.44	5,899.5	0.8	10.8	-0.8	1.41	1.36	22.40
5,925.0	1.49	5.62	5,924.5	1.4	10.9	-1.4	1.26	1.24	8.72
5,950.0	1.75	9.97	5,949.5	2.1	11.0	-2.1	1.15	1.04	17.40
5,975.0	2.36	9.59	5,974.5	3.0	11.1	-2.9	2.44	2.44	-1.52
6,000.0	3.50	9.05	5,999.5	4.3	11.3	-4.2	4.56	4.56	-2.16
6,025.0	4.08	5.84	6,024.4	5.9	11.6	-5.8	2.47	2.32	-12.84
6,050.0	4.18	4.07	6,049.3	7.7	11.7	-7.6	0.65	0.40	-7.08
6,075.0	4.25	5.65	6,074.3	9.5	11.9	-9.5	0.54	0.28	6.32
6,100.0	4.19	4.54	6,099.2	11.4	12.0	-11.3	0.41	-0.24	-4.44
6,125.0	4.41	3.98	6,124.1	13.2	12.2	-13.2	0.90	0.88	-2.24
6,150.0	5.10	1.37	6,149.1	15.3	12.3	-15.2	2.89	2.76	-10.44
6,175.0	5.60	1.40	6,173.9	17.6	12.3	-17.6	2.00	2.00	0.12
6,200.0	5.97	1.40	6,198.8	20.2	12.4	-20.1	1.48	1.48	0.00
6,225.0	6.49	1.40	6,223.7	22.9	12.4	-22.8	2.08	2.08	0.00
6,250.0	7.48	1.95	6,248.5	25.9	12.5	-25.8	3.97	3.96	2.20
6,275.0	8.48	1.86	6,273.2	29.4	12.7	-29.3	4.00	4.00	-0.36
6,300.0	9.13	1.63	6,297.9	33.2	12.8	-33.1	2.60	2.60	-0.92
6,325.0	9.29	0.99	6,322.6	37.2	12.9	-37.1	0.76	0.64	-2.56
6,350.0	9.20	1.97	6,347.3	41.2	13.0	-41.1	0.73	-0.36	3.92
6,375.0	9.38	1.54	6,372.0	45.2	13.1	-45.2	0.77	0.72	-1.72
6,400.0	9.36	1.88	6,396.6	49.3	13.2	-49.2	0.24	-0.08	1.36
6,425.0	9.28	2.17	6,421.3	53.4	13.4	-53.3	0.37	-0.32	1.16
6,450.0	9.42	1.10	6,446.0	57.4	13.5	-57.3	0.89	0.56	-4.28
6,475.0	9.33	2.23	6,470.6	61.5	13.6	-61.4	0.82	-0.36	4.52
6,500.0	9.32	2.37	6,495.3	65.5	13.7	-65.4	0.10	-0.04	0.56
6,525.0	9.27	2.47	6,520.0	69.6	13.9	-69.5	0.21	-0.20	0.40
6,550.0	9.10	2.49	6,544.7	73.6	14.1	-73.5	0.68	-0.68	0.08
6,575.0	9.24	2.75	6,569.3	77.5	14.3	-77.4	0.58	0.56	1.04
6,600.0	9.29	2.24	6,594.0	81.6	14.4	-81.5	0.38	0.20	-2.04
6,625.0	9.34	358.37	6,618.7	85.6	14.5	-85.5	2.51	0.20	-15.48
6,650.0	9.44	356.10	6,643.4	89.7	14.3	-89.6	1.53	0.40	-9.08
6,675.0	9.49	355.20	6,668.0	93.8	14.0	-93.7	0.62	0.20	-3.60
6,700.0	9.50	355.72	6,692.7	97.9	13.6	-97.8	0.35	0.04	2.08
6,725.0	9.59	355.03	6,717.3	102.0	13.3	-101.9	0.58	0.36	-2.76
6,750.0	9.39	353.94	6,742.0	106.1	12.9	-106.0	1.08	-0.80	-4.36
6,775.0	9.53	355.39	6,766.6	110.2	12.5	-110.1	1.11	0.56	5.80
6,800.0	9.43	355.11	6,791.3	114.3	12.2	-114.2	0.44	-0.40	-1.12

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well AVION FED #301H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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)
6,825.0	9.49	355.51	6,816.0	118.4	11.8	-118.3	0.36	0.24	1.60
6,850.0	9.37	356.38	6,840.6	122.5	11.6	-122.4	0.75	-0.48	3.48
6,875.0	9.23	356.25	6,865.3	126.5	11.3	-126.5	0.57	-0.56	-0.52
6,900.0	9.33	356.27	6,890.0	130.6	11.0	-130.5	0.40	0.40	0.08
6,925.0	9.32	356.45	6,914.6	134.6	10.8	-134.5	0.12	-0.04	0.72
6,950.0	9.25	356.98	6,939.3	138.6	10.5	-138.6	0.44	-0.28	2.12
6,975.0	9.20	357.22	6,964.0	142.6	10.3	-142.6	0.25	-0.20	0.96
7,000.0	9.24	357.09	6,988.7	146.6	10.1	-146.6	0.18	0.16	-0.52
7,025.0	9.21	356.85	7,013.3	150.6	9.9	-150.6	0.20	-0.12	-0.96
7,050.0	9.25	356.96	7,038.0	154.6	9.7	-154.6	0.17	0.16	0.44
7,075.0	9.02	357.17	7,062.7	158.6	9.5	-158.5	0.93	-0.92	0.84
7,100.0	8.92	357.28	7,087.4	162.5	9.3	-162.4	0.41	-0.40	0.44
7,125.0	8.73	356.92	7,112.1	166.3	9.1	-166.3	0.79	-0.76	-1.44
7,150.0	8.68	357.56	7,136.8	170.1	8.9	-170.0	0.44	-0.20	2.56
7,175.0	8.37	357.97	7,161.5	173.8	8.8	-173.7	1.26	-1.24	1.64
7,200.0	8.20	358.31	7,186.3	177.4	8.7	-177.3	0.71	-0.68	1.36
7,225.0	8.20	358.20	7,211.0	181.0	8.6	-180.9	0.06	0.00	-0.44
7,250.0	7.97	358.73	7,235.8	184.5	8.5	-184.4	0.97	-0.92	2.12
7,275.0	7.68	358.35	7,260.5	187.9	8.4	-187.8	1.18	-1.16	-1.52
7,300.0	7.48	358.73	7,285.3	191.2	8.3	-191.1	0.82	-0.80	1.52
7,325.0	7.12	358.56	7,310.1	194.4	8.2	-194.3	1.44	-1.44	-0.68
7,350.0	6.96	358.71	7,334.9	197.4	8.2	-197.4	0.64	-0.64	0.60
7,375.0	6.70	359.59	7,359.8	200.4	8.1	-200.3	1.12	-1.04	3.52
7,400.0	6.62	0.86	7,384.6	203.3	8.1	-203.2	0.67	-0.32	5.08
7,425.0	6.47	1.47	7,409.4	206.1	8.2	-206.1	0.66	-0.60	2.44
7,450.0	6.37	1.69	7,434.3	208.9	8.3	-208.9	0.41	-0.40	0.88
7,475.0	6.20	2.21	7,459.1	211.7	8.4	-211.6	0.72	-0.68	2.08
7,500.0	6.10	2.53	7,484.0	214.3	8.5	-214.3	0.42	-0.40	1.28
7,525.0	6.00	2.39	7,508.8	217.0	8.6	-216.9	0.40	-0.40	-0.56
7,550.0	5.91	2.58	7,533.7	219.6	8.7	-219.5	0.37	-0.36	0.76
7,575.0	6.16	2.48	7,558.6	222.2	8.8	-222.1	1.00	1.00	-0.40
7,600.0	7.09	1.19	7,583.4	225.1	8.9	-225.0	3.77	3.72	-5.16
7,625.0	7.90	359.27	7,608.2	228.3	8.9	-228.3	3.39	3.24	-7.68
7,650.0	8.08	359.62	7,632.9	231.8	8.9	-231.8	0.75	0.72	1.40
7,675.0	8.14	0.01	7,657.7	235.3	8.9	-235.3	0.33	0.24	1.56
7,700.0	8.00	0.59	7,682.4	238.9	8.9	-238.8	0.65	-0.56	2.32
7,725.0	7.88	1.06	7,707.2	242.3	8.9	-242.2	0.55	-0.48	1.88
7,750.0	7.72	2.83	7,732.0	245.7	9.0	-245.6	1.15	-0.64	7.08
7,775.0	7.62	3.68	7,756.7	249.0	9.2	-249.0	0.60	-0.40	3.40
7,800.0	7.45	4.34	7,781.5	252.3	9.5	-252.2	0.76	-0.68	2.64
7,825.0	7.45	5.24	7,806.3	255.5	9.7	-255.5	0.47	0.00	3.60
7,850.0	7.31	4.95	7,831.1	258.7	10.0	-258.7	0.58	-0.56	-1.16
7,875.0	7.33	5.26	7,855.9	261.9	10.3	-261.8	0.18	0.08	1.24

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well AVION FED #301H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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)	
7,900.0	7.31	4.94	7,880.7	265.1	10.6	-265.0	0.18	-0.08	-1.28	
7,925.0	7.37	4.71	7,905.5	268.3	10.9	-268.2	0.27	0.24	-0.92	
7,950.0	7.10	4.60	7,930.3	271.4	11.1	-271.3	1.08	-1.08	-0.44	
7,975.0	6.91	4.96	7,955.1	274.4	11.4	-274.3	0.78	-0.76	1.44	
8,000.0	6.69	5.05	7,979.9	277.4	11.6	-277.3	0.88	-0.88	0.36	
8,025.0	6.56	4.89	8,004.8	280.3	11.9	-280.2	0.53	-0.52	-0.64	
8,050.0	6.34	5.45	8,029.6	283.0	12.1	-283.0	0.92	-0.88	2.24	
8,075.0	6.16	5.48	8,054.5	285.8	12.4	-285.7	0.72	-0.72	0.12	
8,100.0	5.99	4.61	8,079.3	288.4	12.6	-288.3	0.77	-0.68	-3.48	
8,125.0	6.00	3.85	8,104.2	291.0	12.8	-290.9	0.32	0.04	-3.04	
8,150.0	6.19	0.31	8,129.0	293.6	12.9	-293.6	1.68	0.76	-14.16	
8,175.0	6.61	356.46	8,153.9	296.4	12.8	-296.3	2.40	1.68	-15.40	
8,200.0	6.77	355.38	8,178.7	299.3	12.6	-299.2	0.81	0.64	-4.32	
8,225.0	6.55	354.32	8,203.5	302.2	12.4	-302.1	1.01	-0.88	-4.24	
8,250.0	6.41	355.12	8,228.4	305.0	12.1	-304.9	0.67	-0.56	3.20	
8,275.0	6.22	355.41	8,253.2	307.8	11.9	-307.7	0.77	-0.76	1.16	
8,300.0	6.16	356.94	8,278.1	310.5	11.7	-310.4	0.70	-0.24	6.12	
8,325.0	5.96	357.04	8,302.9	313.1	11.6	-313.0	0.80	-0.80	0.40	
8,350.0	5.80	356.64	8,327.8	315.7	11.4	-315.6	0.66	-0.64	-1.60	
8,375.0	5.50	356.47	8,352.7	318.1	11.3	-318.0	1.20	-1.20	-0.68	
8,400.0	5.40	358.25	8,377.6	320.5	11.2	-320.4	0.79	-0.40	7.12	
8,425.0	5.21	358.22	8,402.5	322.8	11.1	-322.7	0.76	-0.76	-0.12	
8,450.0	5.21	358.77	8,427.4	325.1	11.0	-325.0	0.20	0.00	2.20	
8,475.0	5.00	359.32	8,452.3	327.3	11.0	-327.2	0.86	-0.84	2.20	
8,500.0	4.95	358.40	8,477.2	329.5	10.9	-329.4	0.38	-0.20	-3.68	
8,525.0	5.06	0.72	8,502.1	331.6	10.9	-331.6	0.92	0.44	9.28	
8,550.0	5.14	0.60	8,527.0	333.9	11.0	-333.8	0.32	0.32	-0.48	
8,575.0	5.18	0.07	8,551.9	336.1	11.0	-336.0	0.25	0.16	-2.12	
8,600.0	5.10	0.88	8,576.8	338.3	11.0	-338.3	0.43	-0.32	3.24	
8,625.0	4.95	1.35	8,601.7	340.5	11.0	-340.5	0.62	-0.60	1.88	
8,650.0	4.71	1.75	8,626.6	342.6	11.1	-342.6	0.97	-0.96	1.60	
8,675.0	4.51	1.76	8,651.5	344.6	11.1	-344.6	0.80	-0.80	0.04	
8,700.0	4.36	1.68	8,676.4	346.6	11.2	-346.5	0.60	-0.60	-0.32	
8,725.0	4.26	1.47	8,701.4	348.5	11.3	-348.4	0.40	-0.40	-0.84	
8,750.0	4.11	0.81	8,726.3	350.3	11.3	-350.2	0.63	-0.60	-2.64	
8,775.0	3.88	359.63	8,751.2	352.0	11.3	-351.9	0.98	-0.92	-4.72	
8,800.0	3.74	359.83	8,776.2	353.7	11.3	-353.6	0.56	-0.56	0.80	
8,825.0	3.55	1.02	8,801.1	355.3	11.3	-355.2	0.82	-0.76	4.76	
8,850.0	3.37	1.58	8,826.1	356.8	11.3	-356.7	0.73	-0.72	2.24	
8,875.0	3.23	0.64	8,851.0	358.2	11.4	-358.1	0.60	-0.56	-3.76	
8,888.0	3.26	1.93	8,864.0	359.0	11.4	-358.9	0.61	0.23	9.92	
8,911.0	2.81	6.65	8,887.0	360.2	11.5	-360.1	2.24	-1.96	20.54	
8,947.0	2.64	7.79	8,922.9	361.9	11.7	-361.8	0.50	-0.47	3.17	

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well AVION FED #301H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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)
9,026.0	1.66	187.73	9,001.9	362.5	11.8	-362.5	5.44	-1.24	227.77
9,073.0	3.59	193.60	9,048.9	360.4	11.3	-360.4	4.14	4.11	12.49
9,120.0	7.02	186.47	9,095.7	356.1	10.7	-356.1	7.42	7.30	-15.17
9,168.0	10.93	186.67	9,143.1	348.7	9.8	-348.6	8.15	8.15	0.42
9,215.0	13.87	187.08	9,189.0	338.7	8.6	-338.6	6.26	6.26	0.87
9,263.0	18.94	186.93	9,235.0	325.2	6.9	-325.2	10.56	10.56	-0.31
9,309.0	22.16	180.45	9,278.1	309.1	6.0	-309.1	8.56	7.00	-14.09
9,358.0	25.64	175.83	9,322.9	289.3	6.7	-289.3	8.06	7.10	-9.43
9,403.0	28.61	175.80	9,362.9	268.9	8.2	-268.8	6.60	6.60	-0.07
9,452.0	32.29	178.34	9,405.1	244.1	9.4	-244.0	7.95	7.51	5.18
9,499.0	34.81	181.43	9,444.3	218.1	9.4	-218.0	6.48	5.36	6.57
9,531.0	37.22	183.25	9,470.2	199.3	8.7	-199.3	8.24	7.53	5.69
9,594.0	44.56	183.14	9,517.8	158.2	6.4	-158.1	11.65	11.65	-0.17
9,641.0	51.70	180.53	9,549.1	123.2	5.3	-123.2	15.74	15.19	-5.55
9,689.0	58.73	178.07	9,576.5	83.8	5.8	-83.8	15.24	14.65	-5.13
9,736.0	66.02	178.25	9,598.3	42.2	7.1	-42.2	15.51	15.51	0.38
9,784.0	71.70	180.52	9,615.6	-2.5	7.6	2.6	12.63	11.83	4.73
9,834.0	79.22	184.06	9,628.1	-50.8	5.6	50.9	16.53	15.04	7.08
9,879.0	87.87	185.33	9,633.2	-95.4	2.0	95.4	19.43	19.22	2.82
9,908.0	92.75	184.57	9,633.0	-124.2	-0.5	124.2	17.03	16.83	-2.62
10,002.0	96.57	181.84	9,625.4	-217.8	-5.8	217.7	4.99	4.06	-2.90
10,097.0	94.88	180.33	9,615.9	-312.3	-7.5	312.2	2.38	-1.78	-1.59
10,192.0	93.59	180.36	9,608.9	-407.0	-8.1	406.9	1.36	-1.36	0.03
10,287.0	90.70	178.73	9,605.4	-501.9	-7.4	501.9	3.49	-3.04	-1.72
10,382.0	88.60	179.31	9,605.9	-596.9	-5.7	596.8	2.29	-2.21	0.61
10,477.0	88.66	179.52	9,608.2	-691.9	-4.8	691.8	0.23	0.06	0.22
10,571.0	89.47	178.98	9,609.7	-785.8	-3.5	785.8	1.04	0.86	-0.57
10,666.0	87.84	177.16	9,612.0	-880.7	-0.3	880.7	2.57	-1.72	-1.92
10,761.0	90.00	176.54	9,613.8	-975.6	4.9	975.6	2.37	2.27	-0.65
10,855.0	92.89	176.50	9,611.4	-1,069.4	10.6	1,069.4	3.07	3.07	-0.04
10,950.0	92.61	178.63	9,606.8	-1,164.2	14.6	1,164.2	2.26	-0.29	2.24
11,045.0	93.45	178.83	9,601.8	-1,259.0	16.7	1,259.1	0.91	0.88	0.21
11,140.0	91.32	180.01	9,597.9	-1,353.9	17.7	1,354.0	2.56	-2.24	1.24
11,234.0	89.08	180.83	9,597.5	-1,447.9	17.0	1,448.0	2.54	-2.38	0.87
11,329.0	84.08	180.81	9,603.2	-1,542.7	15.6	1,542.8	5.26	-5.26	-0.02
11,424.0	83.26	180.75	9,613.7	-1,637.1	14.3	1,637.2	0.87	-0.86	-0.06
11,518.0	86.97	179.80	9,621.7	-1,730.7	13.9	1,730.8	4.07	3.95	-1.01
11,613.0	89.64	179.35	9,624.5	-1,825.7	14.6	1,825.7	2.85	2.81	-0.47
11,708.0	92.47	179.15	9,622.7	-1,920.7	15.8	1,920.7	2.99	2.98	-0.21
11,803.0	94.82	178.92	9,616.7	-2,015.4	17.4	2,015.5	2.49	2.47	-0.24
11,898.0	93.39	178.31	9,609.9	-2,110.2	19.7	2,110.3	1.84	-1.51	-0.64
11,993.0	92.58	178.11	9,604.9	-2,205.0	22.7	2,205.1	0.88	-0.85	-0.21
12,088.0	88.94	178.57	9,603.7	-2,299.9	25.5	2,300.0	3.86	-3.83	0.48
12,183.0	88.52	178.80	9,605.8	-2,394.9	27.6	2,395.0	0.50	-0.44	0.24

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well AVION FED #301H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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)	
12,277.0	92.83	179.24	9,604.7	-2,488.8	29.2	2,489.0	4.61	4.59	0.47	
12,372.0	91.12	179.78	9,601.4	-2,583.8	30.0	2,583.9	1.89	-1.80	0.57	
12,467.0	91.57	179.47	9,599.2	-2,678.7	30.7	2,678.9	0.58	0.47	-0.33	
12,561.0	89.22	180.06	9,598.5	-2,772.7	31.1	2,772.9	2.58	-2.50	0.63	
12,656.0	92.35	180.70	9,597.2	-2,867.7	30.4	2,867.8	3.36	3.29	0.67	
12,752.0	90.22	181.86	9,595.1	-2,963.7	28.3	2,963.8	2.53	-2.22	1.21	
12,846.0	90.48	182.22	9,594.5	-3,057.6	24.9	3,057.7	0.47	0.28	0.38	
12,941.0	90.84	181.92	9,593.4	-3,152.5	21.5	3,152.6	0.49	0.38	-0.32	
13,036.0	91.96	182.21	9,591.1	-3,247.4	18.1	3,247.5	1.22	1.18	0.31	
13,131.0	91.99	181.73	9,587.8	-3,342.3	14.8	3,342.3	0.51	0.03	-0.51	
13,226.0	88.88	181.31	9,587.1	-3,437.3	12.3	3,437.3	3.30	-3.27	-0.44	
13,321.0	92.91	181.65	9,585.6	-3,532.2	9.8	3,532.2	4.26	4.24	0.36	
13,416.0	89.02	180.12	9,584.0	-3,627.2	8.4	3,627.1	4.40	-4.09	-1.61	
13,511.0	89.72	180.80	9,585.1	-3,722.2	7.6	3,722.1	1.03	0.74	0.72	
13,605.0	88.96	179.46	9,586.1	-3,816.1	7.4	3,816.1	1.64	-0.81	-1.43	
13,700.0	89.97	179.51	9,587.0	-3,911.1	8.3	3,911.1	1.06	1.06	0.05	
13,795.0	89.47	179.34	9,587.5	-4,006.1	9.2	4,006.1	0.56	-0.53	-0.18	
13,890.0	92.47	180.14	9,585.9	-4,101.1	9.6	4,101.1	3.27	3.16	0.84	
13,985.0	90.98	180.30	9,583.0	-4,196.1	9.3	4,196.0	1.58	-1.57	0.17	
14,079.0	91.12	180.00	9,581.3	-4,290.0	9.0	4,290.0	0.35	0.15	-0.32	
14,174.0	90.17	180.23	9,580.2	-4,385.0	8.8	4,385.0	1.03	-1.00	0.24	
14,269.0	85.09	178.30	9,584.2	-4,479.9	10.1	4,479.9	5.72	-5.35	-2.03	
14,364.0	90.06	178.09	9,588.2	-4,574.7	13.0	4,574.7	5.24	5.23	-0.22	
14,459.0	85.04	176.61	9,592.2	-4,669.5	17.4	4,669.5	5.51	-5.28	-1.56	
14,554.0	87.59	177.32	9,598.3	-4,764.2	22.4	4,764.2	2.79	2.68	0.75	
14,648.0	88.29	176.92	9,601.7	-4,858.0	27.2	4,858.1	0.86	0.74	-0.43	
14,837.0	92.66	177.95	9,600.2	-5,046.8	35.6	5,046.9	2.38	2.31	0.54	
14,932.0	94.68	178.31	9,594.1	-5,141.5	38.7	5,141.7	2.16	2.13	0.38	
15,027.0	93.05	177.53	9,587.7	-5,236.2	42.2	5,236.4	1.90	-1.72	-0.82	
15,122.0	90.50	179.53	9,584.7	-5,331.1	44.6	5,331.3	3.41	-2.68	2.11	
15,217.0	87.62	181.79	9,586.3	-5,426.1	43.5	5,426.3	3.85	-3.03	2.38	
15,312.0	87.20	181.35	9,590.6	-5,521.0	40.9	5,521.1	0.64	-0.44	-0.46	
15,408.0	86.75	180.39	9,595.6	-5,616.8	39.4	5,617.0	1.10	-0.47	-1.00	
15,503.0	88.91	180.29	9,599.2	-5,711.7	38.9	5,711.9	2.28	2.27	-0.11	
15,598.0	91.63	179.82	9,598.8	-5,806.7	38.8	5,806.9	2.91	2.86	-0.49	
15,693.0	93.03	179.28	9,594.9	-5,901.7	39.5	5,901.8	1.58	1.47	-0.57	
15,788.0	94.49	178.80	9,588.7	-5,996.4	41.1	5,996.6	1.62	1.54	-0.51	
15,882.0	94.74	179.01	9,581.1	-6,090.1	42.9	6,090.3	0.35	0.27	0.22	
15,977.0	96.40	179.12	9,571.9	-6,184.6	44.5	6,184.8	1.75	1.75	0.12	
16,072.0	89.02	179.42	9,567.4	-6,279.5	45.7	6,279.6	7.77	-7.77	0.32	
16,167.0	85.37	180.37	9,572.1	-6,374.3	45.8	6,374.5	3.97	-3.84	1.00	
16,262.0	85.54	180.72	9,579.6	-6,469.0	44.9	6,469.2	0.41	0.18	0.37	
16,358.0	87.48	180.98	9,585.4	-6,564.8	43.5	6,565.0	2.04	2.02	0.27	

Company:	NORTHERN DELAWARE BASIN	Local Co-ordinate Reference:	Well AVION FED #301H
Project:	LEA COUNTY, NM	TVD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

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)
16,453.0	88.88	180.80	9,588.5	-6,659.8	42.0	6,659.9	1.49	1.47	-0.19
16,547.0	90.25	180.74	9,589.2	-6,753.8	40.8	6,753.9	1.46	1.46	-0.06
16,642.0	90.98	180.63	9,588.2	-6,848.7	39.6	6,848.9	0.78	0.77	-0.12
16,737.0	93.25	180.53	9,584.7	-6,943.7	38.7	6,943.8	2.39	2.39	-0.11
16,832.0	92.60	180.43	9,579.8	-7,038.5	37.9	7,038.6	0.69	-0.68	-0.11
16,927.0	93.39	180.18	9,574.8	-7,133.4	37.4	7,133.5	0.87	0.83	-0.26
17,021.0	91.48	181.21	9,570.8	-7,227.3	36.2	7,227.4	2.31	-2.03	1.10
17,117.0	88.96	181.00	9,570.5	-7,323.3	34.4	7,323.4	2.63	-2.63	-0.22
17,211.0	88.94	179.73	9,572.2	-7,417.3	33.8	7,417.3	1.35	-0.02	-1.35
17,305.0	88.46	178.60	9,574.3	-7,511.2	35.2	7,511.3	1.31	-0.51	-1.20
17,400.0	87.20	179.25	9,577.9	-7,606.1	36.9	7,606.2	1.49	-1.33	0.68
17,495.0	88.32	179.40	9,581.6	-7,701.1	38.1	7,701.1	1.19	1.18	0.16
17,590.0	89.66	179.19	9,583.3	-7,796.0	39.2	7,796.1	1.43	1.41	-0.22
17,685.0	90.53	177.30	9,583.2	-7,891.0	42.1	7,891.1	2.19	0.92	-1.99
17,780.0	91.06	177.01	9,581.8	-7,985.9	46.9	7,986.0	0.64	0.56	-0.31
17,875.0	90.62	177.53	9,580.4	-8,080.7	51.4	8,080.9	0.72	-0.46	0.55
17,969.0	89.58	177.95	9,580.3	-8,174.7	55.1	8,174.9	1.19	-1.11	0.45
18,074.0	89.41	177.69	9,581.2	-8,279.6	59.1	8,279.8	0.30	-0.16	-0.25
18,169.0	90.87	179.44	9,581.0	-8,374.5	61.5	8,374.8	2.40	1.54	1.84
18,264.0	91.34	180.83	9,579.1	-8,469.5	61.2	8,469.7	1.54	0.49	1.46
18,358.0	87.28	179.65	9,580.3	-8,563.5	60.8	8,563.7	4.50	-4.32	-1.26
18,453.0	86.38	179.70	9,585.5	-8,658.4	61.4	8,658.6	0.95	-0.95	0.05
18,548.0	88.32	179.26	9,589.9	-8,753.2	62.2	8,753.5	2.09	2.04	-0.46
18,642.0	89.47	179.01	9,591.7	-8,847.2	63.7	8,847.4	1.25	1.22	-0.27
18,736.0	88.38	179.59	9,593.5	-8,941.2	64.8	8,941.4	1.31	-1.16	0.62
18,831.0	88.32	180.14	9,596.2	-9,036.1	65.0	9,036.4	0.58	-0.06	0.58
18,926.0	88.94	180.12	9,598.5	-9,131.1	64.8	9,131.3	0.65	0.65	-0.02
19,019.0	90.36	179.98	9,599.1	-9,224.1	64.7	9,224.3	1.53	1.53	-0.15
19,114.0	93.36	179.68	9,596.0	-9,319.1	65.0	9,319.3	3.17	3.16	-0.32
19,209.0	92.47	179.69	9,591.2	-9,413.9	65.5	9,414.2	0.94	-0.94	0.01
19,304.0	89.86	179.62	9,589.2	-9,508.9	66.1	9,509.1	2.75	-2.75	-0.07
19,399.0	87.48	180.38	9,591.4	-9,603.9	66.1	9,604.1	2.63	-2.51	0.80
19,494.0	89.27	180.14	9,594.1	-9,698.8	65.7	9,699.0	1.90	1.88	-0.25
19,589.0	91.12	179.04	9,593.8	-9,793.8	66.4	9,794.0	2.27	1.95	-1.16
19,616.0	91.60	178.77	9,593.2	-9,820.8	66.9	9,821.0	2.04	1.78	-1.00
19,671.0	91.60	178.77	9,591.6	-9,875.8	68.1	9,876.0	0.00	0.00	0.00

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Site:	BULLDOG	MD Reference:	RKB=3698.7+26 @ 3724.7usft (IDC 205)
Well:	AVION FED #301H	North Reference:	Grid
Wellbore:	OWB	Survey Calculation Method:	Minimum Curvature
Design:	ACTUAL WELLPATH	Database:	EDM_Users

Design Targets									
Target Name	Dip Angle	Dip Dir.	TVD	+N/-S	+E/-W	Northing	Easting	Latitude	Longitude
- hit/miss target	(°)	(°)	(usft)	(usft)	(usft)	(usft)	(usft)		
- Shape									
PBHL-Avion Fed Com #:	0.00	0.00	9,603.0	-9,882.3	64.2	462,171.97	709,807.50	32° 16' 7.693 N	103° 39' 16.353 W
- actual wellpath misses target center by 13.7usft at 19671.0usft MD (9591.6 TVD, -9875.8 N, 68.1 E)									
- Point									

Checked By: _____ Approved By: _____ Date: _____