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VOGEL SURVEY PROGRAM

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WELL: PEDCO: MILLER FEDERAL NO. 6

Target Az:78.69

Closure Direction: 76

Target TVD 3899

MD	INC	AZ	TVD	Vert. Section	Coordinates N-S	E-W	Build Closure Rate	Walk Rate	Dog Leg
3662	0.2	86.7	3661.8	18.8	16.1	15.9	22.6		
3694	7.4	100.0	3693.7	20.8	16.0	18.0	24.1	0.23	0.42 23
3726	15.3	105.6	3725.1	26.6	14.6	24.2	28.2	0.25	0.17 25
3758	23.0	107.5	3755.3	35.8	11.6	34.2	36.1	0.24	0.06 24
3790	30.0	107.0	3783.9	48.4	7.3	47.9	48.4	0.22	-0.02 22
3801	33.0	106.9	3793.3	53.4	5.7	53.4	53.7	0.27	-0.01 27
3811	35.7	106.7	3801.5	58.4	4.0	58.8	58.9	0.27	-0.02 27
3819	37.8	106.9	3807.9	62.6	2.7	63.4	63.4	0.26	0.03 26
3852	47.9	105.6	3832.1	82.5	-3.6	84.9	85.0	0.31	-0.04 31
3862	51.0	105.6	3838.6	89.3	-5.7	92.2	92.4	0.31	0.00 31
3882	57.3	104.9	3850.3	103.8	-9.9	107.9	108.3	0.31	-0.03 32
3898	62.1	103.2	3858.4	116.3	-13.3	121.3	122.0	0.30	-0.11 31
3913	66.5	100.7	3864.9	128.7	-16.1	134.5	135.4	0.29	-0.17 33
3929	70.8	97.8	3870.7	142.7	-18.5	149.2	150.3	0.27	-0.18 32
3945	75.2	95.0	3875.4	157.2	-20.2	164.4	165.6	0.27	-0.18 32
3961	79.0	90.9	3879.0	172.4	-21.0	180.0	181.2	0.24	-0.26 34
3977	82.4	85.7	3881.5	187.9	-20.5	195.8	196.8	0.21	-0.33 38
4006	84.1	77.6	3885.0	216.7	-16.3	224.2	224.8	0.06	-0.28 28
4040	85.1	77.4	3888.2	250.5	-9.0	257.3	257.5	0.03	-0.01 3
4072	87.8	77.3	3890.1	282.5	-2.0	288.5	288.5	0.08	-0.00 8.4
4135	88.5	77.5	3892.2	345.4	11.7	349.9	350.1	0.01	0.00 1.2
4166	88.3	77.2	3893.0	376.4	18.5	380.1	380.6	-0.01	-0.01 1.2
4198	88.7	77.3	3893.9	408.4	25.6	411.3	412.1	0.01	0.00 1.3
4230	89.9	77.7	3894.3	440.4	32.5	442.6	443.8	0.04	0.01 4
4294	90.5	78.3	3894.0	504.4	45.8	505.2	507.3	0.01	0.01 1.3
4325	90.1	77.5	3893.9	535.4	52.3	535.5	538.0	-0.01	-0.03 2.9
4391	88.9	75.3	3894.5	601.3	67.8	599.6	603.5	-0.02	-0.03 3.8
4421	89.0	75.6	3895.0	631.2	75.4	628.7	633.2	0.00	0.01 1.1
4483	91.5	75.9	3894.7	693.2	90.6	688.8	694.7	0.04	0.00 4.1
4514	91.7	74.7	3893.9	724.1	98.5	718.7	725.5	0.01	-0.04 3.9
4577	90.5	72.4	3892.7	786.8	116.3	779.2	787.8	-0.02	-0.04 4.1
4611	89.7	71.4	3892.6	820.6	126.9	811.5	821.3	-0.02	-0.03 3.8
4676	88.8	72.0	3893.4	885.1	147.3	873.2	885.5	-0.01	0.01 1.7
4707	89.5	71.9	3893.9	915.9	156.9	902.6	916.2	0.02	-0.00 2.3
4739	89.5	72.1	3894.2	947.7	166.8	933.1	947.9	0.00	0.01 0.6
4772	90.4	72.5	3894.2	980.5	176.8	964.5	980.6	0.03	0.01 3
4836	89.7	71.6	3894.2	1044.0	196.5	1025.4	1044.1	-0.01	-0.01 1.8
4868	89.9	71.4	3894.3	1075.8	206.7	1055.7	1075.8	0.01	-0.01 0.9
4901	89.2	72.1	3894.5	1108.5	217.0	1087.1	1108.5	-0.02	0.02 3
4965	88.5	73.0	3895.8	1172.2	236.2	1148.1	1172.2	-0.01	0.01 1.8
5002	89.0	72.9	3896.6	1209.0	247.1	1183.5	1209.0	0.01	-0.00 1.4
5035	88.2	73.0	3897.4	1241.8	256.7	1215.0	1241.9	-0.02	0.00 2.4
5067	87.3	70.6	3898.7	1273.5	266.7	1245.4	1273.7	-0.03	-0.08 8
5099	86.4	70.7	3900.4	1305.2	277.3	1275.6	1305.4	-0.03	0.00 2.8
5130	86.9	71.4	3902.3	1335.8	287.4	1304.8	1336.1	0.02	0.02 2.8

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VOGEL SURVEY PROGRAM

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WELL: PEDCO: MILLER FEDERAL NO. 6

Target Az:78.69

Closure Direction: 76

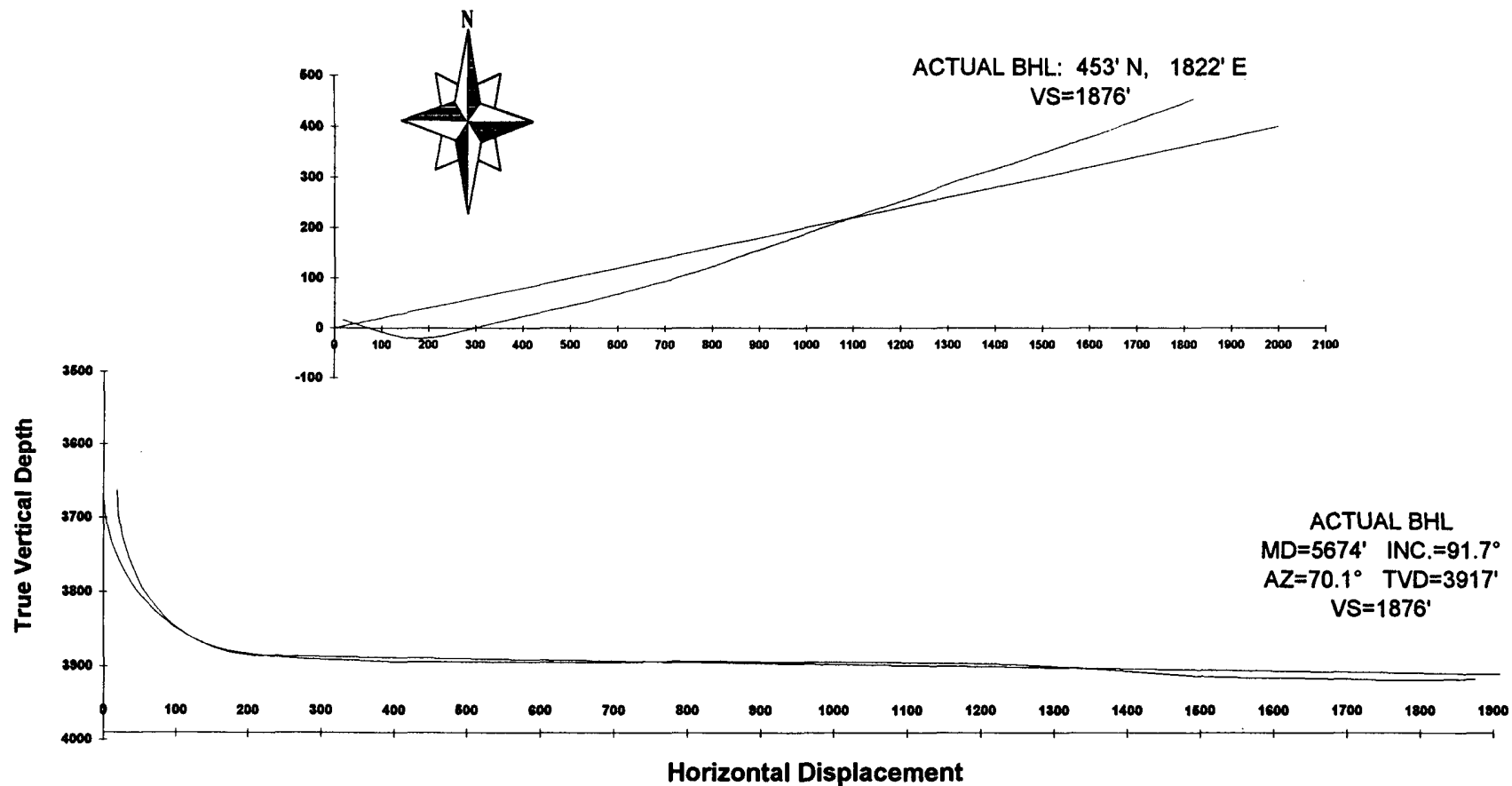
Target TVD 3899

MD	INC	AZ	TVD	Vert. Section	Coordinates N-S	E-W	Closure	Build Rate	Walk Rate	Dog Leg
5162	86.2	72.6	3904.2	1367.6	297.2	1335.2	1367.9	-0.02	0.04	4.3
5195	86.5	73.9	3906.3	1400.4	306.7	1366.7	1400.7	0.01	0.04	4
5228	86.0	74.2	3908.4	1433.2	315.8	1398.4	1433.6	-0.02	0.01	1.8
5260	85.7	73.2	3910.8	1465.0	324.7	1429.0	1465.5	-0.01	-0.03	3.3
5292	86.9	71.9	3912.8	1496.7	334.3	1459.5	1497.3	0.04	-0.04	5.5
5307	87.0	71.3	3913.6	1511.6	339.0	1473.7	1512.2	0.01	-0.04	4
5323	87.8	71.2	3914.3	1527.4	344.2	1488.8	1528.1	0.05	-0.01	5
5338	88.6	71.2	3914.8	1542.3	349.0	1503.0	1543.0	0.05	0.00	5.3
5357	90.2	73.0	3915.0	1561.2	354.8	1521.1	1562.0	0.08	0.09	13
5389	88.9	73.1	3915.3	1593.0	364.2	1551.7	1593.9	-0.04	0.00	4.1
5422	90.1	73.5	3915.6	1625.9	373.6	1583.3	1626.8	0.04	0.01	3.8
5487	88.3	70.7	3916.5	1690.4	393.6	1645.2	1691.6	-0.03	-0.04	5.1
5519	88.2	70.6	3917.4	1722.1	404.2	1675.4	1723.4	-0.00	-0.00	0.4
5552	89.8	72.2	3918.0	1754.8	414.7	1706.6	1756.3	0.05	0.05	6.9
5613	90.0	72.5	3918.1	1815.5	433.2	1764.8	1817.2	0.00	0.00	0.6
5645	91.1	70.8	3917.8	1847.2	443.3	1795.1	1849.1	0.03	-0.05	6.3
5674	91.7	70.1	3917.1	1875.9	453.0	1822.5	1877.9	0.02	-0.02	3.2

VOGEL ENGINEERING, INC.
HORIZONTAL AND DIRECTIONAL DRILLING
415 WEST WALL ST. MIDLAND TX 79707
915-570-4719

PEDCO
PETROLEUM DEVELOPMENT CORPORATION

MILLER FEDERAL
NO. 6
CHAVES COUNTY
NEW MEXICO
COMPLETION DATE:
12/14/94



OPERATOR
PEDCO
PETROLEUM DEVELOPMENT CORPORATION
MILLER FEDERAL No. 6

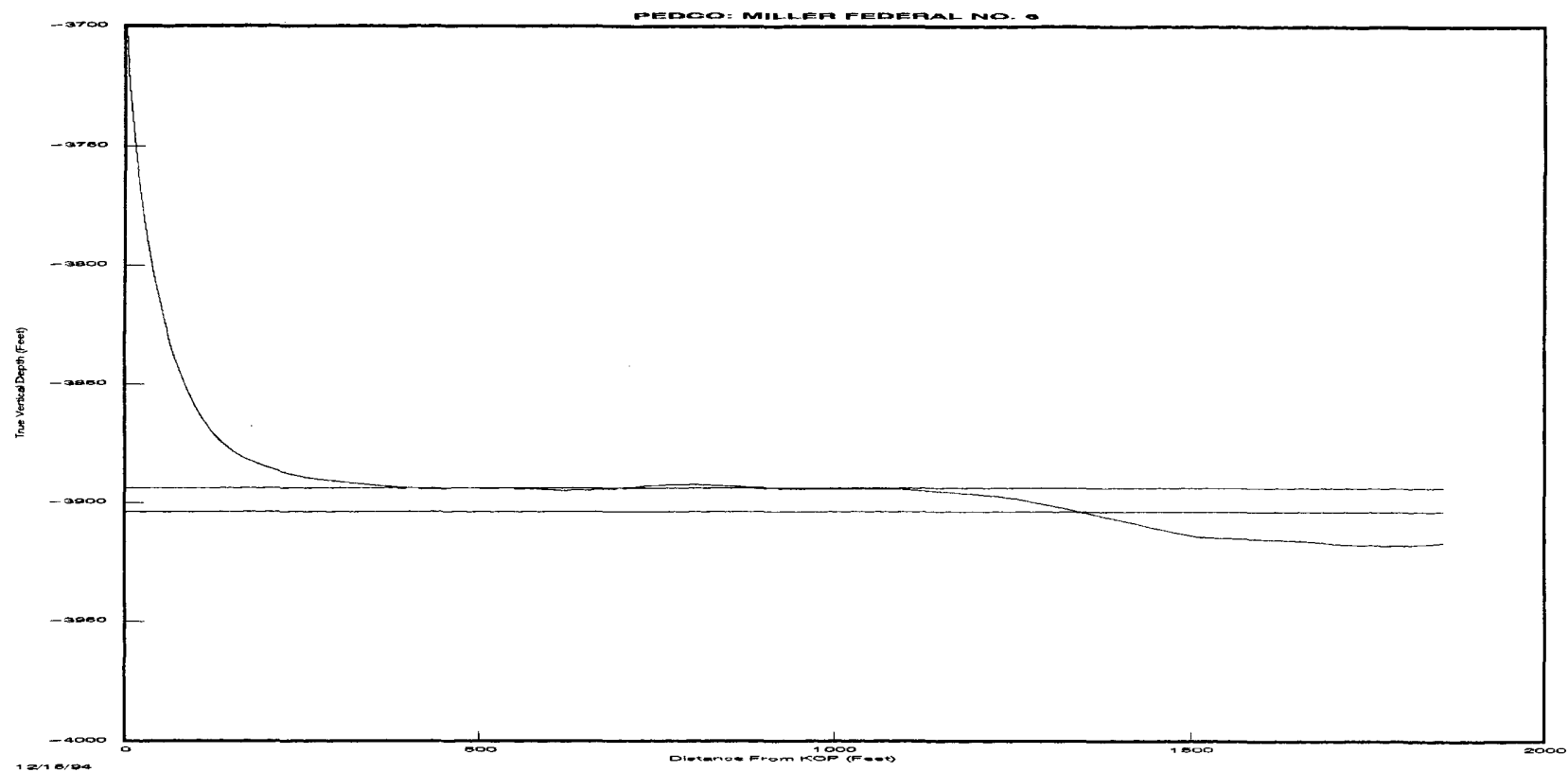
DIRECTIONAL DRILLING COMPANY
VOGEL ENGINEERING, INC.
415 WEST WALL STREET MIDLAND TX 79707
915-570-4719

Target Az: 78.69
Target TVD: 3912

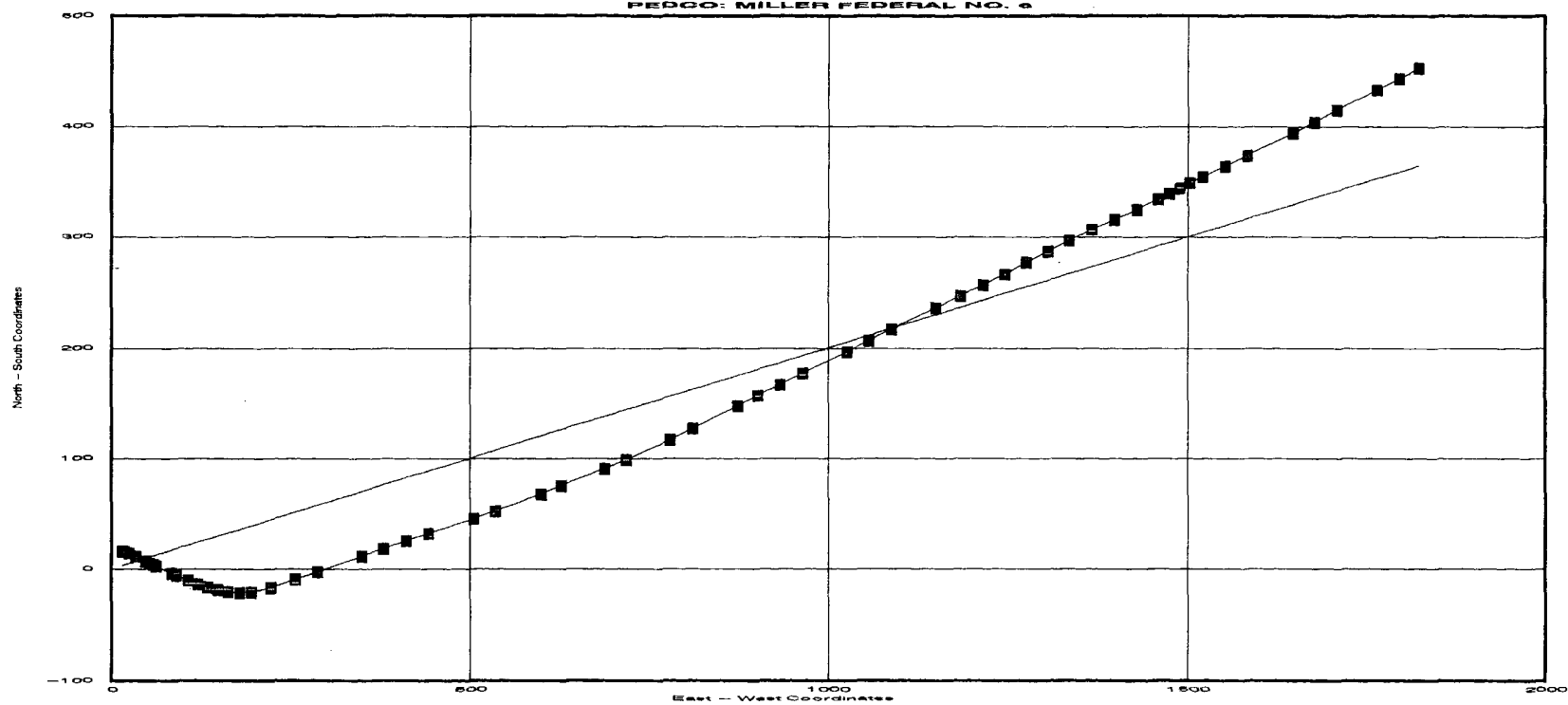
Start Date: 12/11/1994
End Date: 12/14/1994

MD	INC	AZ	TVD	Vert. Section	Coordinates N-S	E-W	Closure	Build Rate	Walk Rate
3662	0.2	86.7	3661.8	18.7	16.1	15.9	22.6		
3694	7.4	100.0	3693.7	20.8	16.0	18.0	24.1	0.23	0.42
3726	15.3	105.6	3725.1	26.5	14.6	24.2	28.2	0.25	0.18
3758	23.0	107.5	3755.3	35.8	11.6	34.2	36.1	0.24	0.06
3790	30.0	107.0	3783.9	48.4	7.4	47.9	48.4	0.22	-0.02
3801	33.0	106.9	3793.3	53.4	5.7	53.3	53.7	0.27	-0.01
3811	35.7	106.7	3801.5	58.4	4.1	58.8	58.9	0.27	-0.02
3819	37.8	106.9	3807.9	62.6	2.7	63.3	63.4	0.26	0.03
3852	47.9	105.6	3832.1	82.5	-3.6	84.9	85.0	0.31	-0.04
3862	51.0	105.6	3838.6	89.3	-5.7	92.2	92.4	0.31	0.00
3882	57.3	104.9	3850.3	103.8	-9.9	107.8	108.3	0.32	-0.03
3898	62.1	103.2	3858.4	116.3	-13.3	121.2	122.0	0.30	-0.11
3913	66.5	100.7	3864.9	128.7	-16.1	134.5	135.4	0.29	-0.17
3929	70.8	97.8	3870.7	142.7	-18.5	149.2	150.3	0.27	-0.18
3945	75.2	95.0	3875.4	157.2	-20.2	164.4	165.6	0.28	-0.18
3961	79.0	90.9	3879.0	172.3	-21.0	180.0	181.2	0.24	-0.26
3977	82.4	85.7	3881.5	187.9	-20.5	195.7	196.8	0.21	-0.33
4006	84.1	77.6	3885.0	216.7	-16.3	224.2	224.8	0.06	-0.28
4040	85.1	77.4	3888.2	250.5	-9.0	257.3	257.4	0.03	-0.01
4072	87.8	77.3	3890.1	282.4	-2.0	288.4	288.4	0.08	0.00
4135	88.5	77.5	3892.2	345.4	11.7	349.9	350.1	0.01	0.00
4166	88.3	77.2	3893.0	376.4	18.5	380.1	380.6	-0.01	-0.01
4198	88.7	77.3	3893.9	408.4	25.6	411.3	412.1	0.01	0.00
4230	89.9	77.7	3894.3	440.3	32.5	442.6	443.8	0.04	0.01
4294	90.5	78.3	3894.0	504.3	45.8	505.2	507.2	0.01	0.01
4325	90.1	77.5	3893.9	535.3	52.3	535.5	538.0	-0.01	-0.03
4391	88.9	75.3	3894.5	601.3	67.8	599.6	603.4	-0.02	-0.03
4421	89.0	75.6	3895.0	631.2	75.4	628.7	633.2	0.00	0.01
4483	91.5	75.9	3894.7	693.1	90.6	688.7	694.7	0.04	0.00
4514	91.7	74.7	3893.9	724.1	98.5	718.7	725.4	0.01	-0.04
4577	90.5	72.4	3892.7	786.8	116.3	779.1	787.8	-0.02	-0.04
4611	89.7	71.4	3892.6	820.6	126.9	811.4	821.3	-0.02	-0.03
4676	88.8	72.0	3893.4	885.1	147.3	873.2	885.5	-0.01	0.01
4707	89.5	71.9	3893.9	915.9	156.9	902.6	916.2	0.02	0.00
4739	89.5	72.1	3894.2	947.6	166.8	933.1	947.8	0.00	0.01

4772	90.4	72.5	3894.2	980.4	176.8	964.5	980.6	0.03	0.01
4836	89.7	71.6	3894.2	1044.0	196.5	1025.4	1044.0	-0.01	-0.01
4868	89.9	71.4	3894.3	1075.8	206.7	1055.7	1075.8	0.01	-0.01
4901	89.2	72.1	3894.5	1108.5	217.0	1087.1	1108.5	-0.02	0.02
4965	88.5	73.0	3895.8	1172.1	236.2	1148.1	1172.2	-0.01	0.01
5002	89.0	72.9	3896.6	1208.9	247.1	1183.5	1209.0	0.01	0.00
5035	88.2	73.0	3897.4	1241.8	256.7	1215.0	1241.8	-0.02	0.00
5067	87.3	70.6	3898.7	1273.5	266.7	1245.4	1273.6	-0.03	-0.08
5099	86.4	70.7	3900.4	1305.2	277.3	1275.5	1305.3	-0.03	0.00
5130	86.9	71.4	3902.3	1335.8	287.4	1304.8	1336.1	0.02	0.02
5162	86.2	72.6	3904.2	1367.6	297.2	1335.2	1367.9	-0.02	0.04
5195	86.5	73.9	3906.3	1400.3	306.7	1366.7	1400.7	0.01	0.04
5228	86.0	74.2	3908.4	1433.2	315.8	1398.4	1433.6	-0.02	0.01
5260	85.7	73.2	3910.8	1465.0	324.7	1429.0	1465.4	-0.01	-0.03
5292	86.9	71.9	3912.8	1496.7	334.3	1459.5	1497.3	0.04	-0.04
5307	87.0	71.3	3913.6	1511.6	339.0	1473.7	1512.2	0.01	-0.04
5323	87.8	71.2	3914.3	1527.4	344.2	1488.8	1528.1	0.05	-0.01
5338	88.6	71.2	3914.8	1542.3	349.0	1503.0	1543.0	0.05	0.00
5357	90.2	73.0	3915.0	1561.2	354.8	1521.1	1561.9	0.08	0.09
5389	88.9	73.1	3915.3	1593.0	364.2	1551.7	1593.9	-0.04	0.00
5422	90.1	73.5	3915.6	1625.8	373.7	1583.3	1626.8	0.04	0.01
5487	88.3	70.7	3916.5	1690.4	393.6	1645.2	1691.6	-0.03	-0.04
5519	88.2	70.6	3917.4	1722.1	404.2	1675.3	1723.4	0.00	0.00
5552	89.8	72.2	3918.0	1754.8	414.8	1706.6	1756.3	0.05	0.05
5613	90.0	72.5	3918.1	1815.4	433.2	1764.7	1817.1	0.00	0.00
5645	91.1	70.8	3917.8	1847.2	443.3	1795.1	1849.0	0.03	-0.05
5674	91.7	70.1	3917.1	1875.9	453.0	1822.4	1877.9	0.02	-0.02



PEDCO: MILLER FEDERAL NO. 6



—■— Hole Direction

—— Azimuth Target From Well Location

12/15/94