

Confidential

REPORT OF
SUB-SURFACE
DIRECTIONAL
SURVEY

API #

PETROLEUM DEVELOPMENT CORPORATION

WATTAM FEDERAL NO. 7

CHAVES COUNTY, NEW MEXICO

JOB NUMBER

430-1611

430-1611

TYPE OF SURVEY

Gyroscopic Survey

Steering Tool

DATE

May 9, 1993

June 12, 1993

SURVEY BY RALPH RICE/RON COLLINS

OFFICE: MIDLAND, TX

RECEIVED

1958

OLD HOME
OFFICE



2105 Market Street Midland, Texas 79703
915-694-9517 Fax 915-694-5648

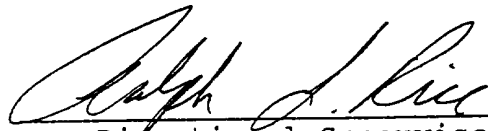
SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Ralph Rice, in the employ of Baker Hughes *INTEQ* did on the days of May 9,, 1993 thru May 9,, 1993 conduct or supervise the taking of a Gyroscopic survey by the method of magnetic orientation from a depth of 0 feet to 3556 feet, with recordings of inclination and direction being obtained at approximate intervals of 100 feet.

This survey was conducted at the request of Petroleum Development Corporation for their Wattam Federal # 7, Chaves County, State of New Mexico.

The data for this survey and the calculation were obtained and performed by me according to standards and procedures as set forth by Baker Hughes *INTEQ* and is true and correct to the best of my knowledge.



Directional Supervisor/Surveyor

RECEIVED

1957

STATE HOUSE
OFFICE



2105 Market Street Midland, Texas 79703
915-694-9517 Fax 915-694-5648

SURVEY CERTIFICATION SHEET

STATE OF TEXAS
COUNTY OF MIDLAND

I, Ron Collins, in the employ of Baker Hughes *INTEQ* did on the days of June 2,, 1993 thru June 12,, 1993 conduct or supervise the taking of a Steering Tool survey by the method of magnetic orientation from a depth of 3556 feet to 4505 feet, with recordings of inclination and direction being obtained at approximate intervals of 5 feet.

This survey was conducted at the request of Petroleum Development Corporation for their Wattam Federal # 7, Chaves County, State of New Mexico.

The data for this survey and the calculation were obtained and performed by me according to standards and procedures as set forth by Baker Hughes *INTEQ* and is true and correct to the best of my knowledge.

A handwritten signature in cursive script that reads "Ronald J. Collins".

Directional Supervisor/Surveyor

OFFICE OF THE

ATTORNEY GENERAL

STATE OF TEXAS

PETROLEUM DEVELOPMENT CORPORATION

WELL PROFILE DATA

Structure : WATTAM FEDERAL #7

Well :

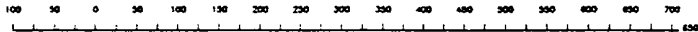
Field : TOM TOM

Location : CHAVES COUNTY, NEW MEXICO

Point	MD	Inc	Dir	TVD	North	East
Tie on	3556	1.01	32.51	3545	-213	671
End of Hold	3597	1.01	32.51	3586	-213	681
End of Build	3730	90.00	32.51	3670	-141	1131
End of Hold	4561	90.00	32.51	3670	560	560

Scale 1 : 50.00

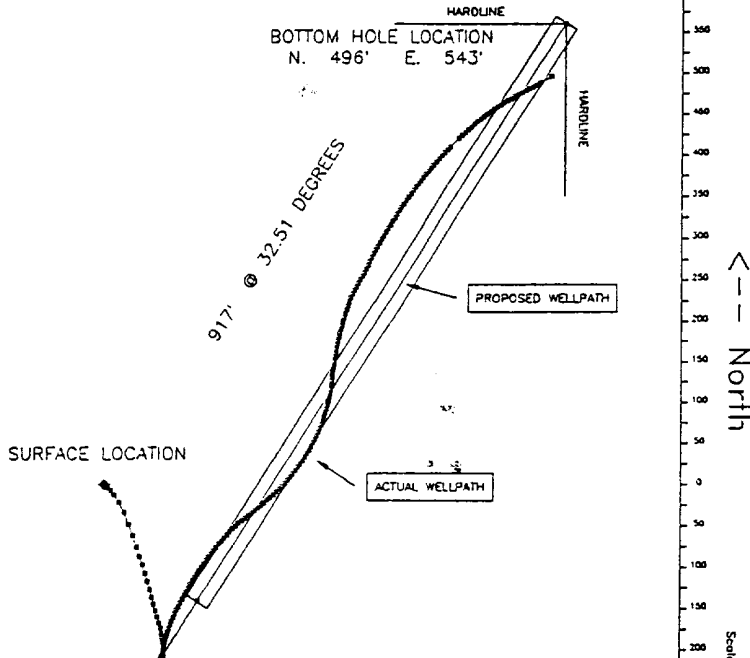
East -->



MAGNETIC DECLINATION
9 DEGREES EAST



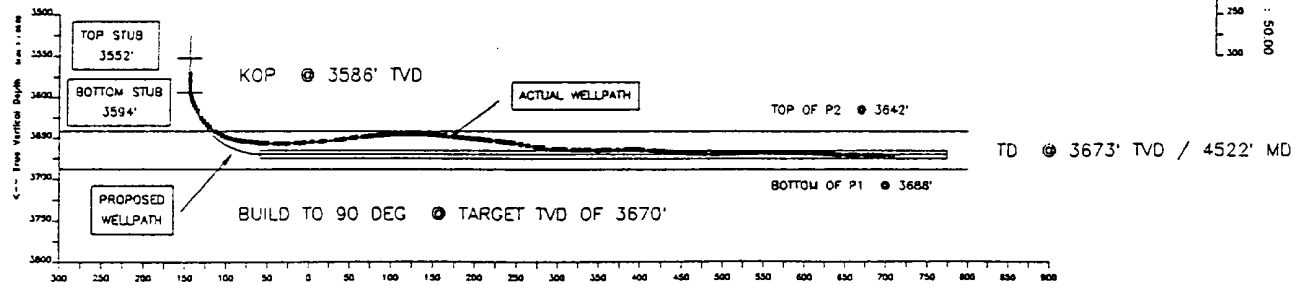
711' VERTICAL SECTION
735' HOR. DISP. F/ S/L.
777' MD DRLD AFTER BU TO 90 DEG



North

Scale 1 : 50.00

69 DEG / 100 FT BUR



Scale 1 : 50.00
Vertical Section on 32.51 azimuth with reference 0.00 N, 0.00 E from structure

1940

1941

OFFICE

PETROLEUM DEVELOPMENT CORPORATION
WATTAM FEDERAL #7

slot #1
TOM TOM
CHAVES COUNTY, NEW MEXICO

SURVEY LISTING

by
Eastman Teleco

Your ref :
Our ref : svy156
License :

Date printed : 14-Jun-93
Date created : 1-Jun-93
Last revised : 14-Jun-93

Field is centred on 0.000,0.000,0.00000,+
Structure is centred on 0.000,0.000,0.00000,N

Slot location is n0 0 0.000,w4 29 18.843
Slot Grid coordinates are N 0.000, E 0.000
Slot local coordinates are 0.00 N 0.00 E
Reference North is Grid North

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1994

OFFICE

PETROLEUM DEVELOPMENT CORPORATION
WATTAM FEDERAL #7,
TOM TOM, CHAVES COUNTY, NEW MEXICO

SURVEY LISTING Page 1
Your ref :
Last revised : 14-Jun-93

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S		Dogleg Deg/100Ft	Vert Sect	
0.00	0.00	0.00	0.00	0.00	N	0.00	0.00	
100.00	0.59	125.68	100.00	0.30	S	0.42	0.59	
200.00	0.73	135.42	199.99	1.05	S	1.28	0.18	
300.00	1.27	133.70	299.98	2.27	S	2.53	0.54	
400.00	1.99	135.31	399.93	4.27	S	4.55	0.72	
500.00	3.14	136.33	499.83	7.49	S	7.67	1.15	
600.00	4.82	143.92	599.59	12.87	S	12.03	1.76	
700.00	6.99	149.08	699.05	21.48	S	17.63	2.23	
800.00	8.91	157.41	798.09	33.85	S	23.74	2.23	
900.00	8.77	158.29	896.90	48.09	S	29.53	0.19	
1000.00	8.34	161.41	995.79	62.04	S	34.66	0.63	
1100.00	7.76	163.11	1094.80	75.38	S	38.94	0.63	
1200.00	6.33	163.12	1194.05	87.11	S	42.50	1.43	
1300.00	5.81	162.96	1293.49	97.23	S	45.58	0.52	
1400.00	6.11	163.11	1392.94	107.16	S	48.61	0.30	
1500.00	6.04	162.78	1492.38	117.28	S	51.72	0.08	
1600.00	5.75	162.29	1591.86	127.07	S	54.80	0.29	
1700.00	5.19	164.93	1691.40	136.21	S	57.50	0.61	
1800.00	4.68	164.17	1791.03	144.51	S	59.78	0.51	
1900.00	4.65	163.49	1890.70	152.32	S	62.05	0.06	
2000.00	4.54	162.82	1990.38	159.98	S	64.37	0.12	
2100.00	3.99	164.00	2090.10	167.11	S	66.50	0.56	
2200.00	3.65	163.84	2189.88	173.51	S	68.34	0.34	
2300.00	3.28	170.44	2289.69	179.39	S	69.70	0.54	
2400.00	2.96	175.56	2389.54	184.79	S	70.38	0.42	
2500.00	2.85	172.94	2489.42	189.83	S	70.88	0.17	
2600.00	2.62	173.32	2589.30	194.56	S	71.46	0.23	
2700.00	2.22	172.45	2689.21	198.75	S	71.98	0.40	
2800.00	1.82	176.35	2789.15	202.26	S	72.33	0.42	
2900.00	1.32	180.16	2889.11	205.00	S	72.43	0.51	
3000.00	1.23	187.67	2989.09	207.21	S	72.28	0.19	
3100.00	1.18	198.80	3089.07	209.25	S	71.81	0.24	
3200.00	0.97	217.71	3189.05	210.89	S	70.96	0.41	
3300.00	0.62	222.18	3289.04	211.96	S	70.08	0.36	
3400.00	0.79	240.27	3389.03	212.71	S	69.12	0.28	
3500.00	0.69	249.14	3489.02	213.26	S	67.96	0.15	
3556.00	1.01	267.38	3545.02	213.41	S	67.15	0.74	GYRO SURVEY TO 3556'.
3582.00	0.80	264.10	3571.01	213.44	S	66.74	0.83	
3584.00	0.80	270.60	3573.01	213.44	S	66.71	4.54	
3586.00	0.70	290.30	3575.01	213.43	S	66.68	13.74	KOP. 33 DEGREE AZIMUTH.
3588.00	0.90	326.20	3577.01	213.42	S	66.66	26.43	
3590.00	2.20	351.10	3579.01	213.36	S	66.65	71.73	
3592.00	3.20	53.30	3581.01	213.29	S	66.69	145.85	
3594.00	4.50	188.50	3583.01	213.34	S	66.72	356.77	
3596.00	5.10	175.30	3585.00	213.50	S	66.72	62.65	
3598.00	5.30	167.20	3586.99	213.68	S	66.74	38.01	
3600.00	6.70	168.50	3588.98	213.89	S	66.79	70.32	ORIENTATE TO HIGH SIDE
3602.00	7.90	49.10	3590.97	213.91	S	66.92	630.58	
3604.00	9.50	19.20	3592.95	213.66	S	67.07	236.63	
3606.00	11.20	20.30	3594.92	213.33	S	67.20	85.57	

All data is in feet unless otherwise stated
Coordinates from structure and TVD from wellhead.
Vertical section is from wellhead on azimuth 32.51 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

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1875

DOD HOPE
OFFICE

PETROLEUM DEVELOPMENT CORPORATION
WATTAM FEDERAL #7,
TOM TOM, CHAVES COUNTY, NEW MEXICO

SURVEY LISTING Page 2
Your ref :
Last revised : 14-Jun-93

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S	Dogleg Deg/100Ft	Vert Sect
3608.00	13.00	21.30	3596.88	212.94 S 67.34 E	90.60	-143.37
3610.00	15.20	23.60	3598.82	212.48 S 67.53 E	113.49	-142.89
3612.00	17.80	25.80	3600.73	211.97 S 67.77 E	133.68	-142.33
3614.00	19.40	25.90	3602.63	211.40 S 68.05 E	80.02	-141.70
3616.00	21.00	26.00	3604.50	210.78 S 68.35 E	80.02	-141.01
3618.00	22.50	24.70	3606.36	210.10 S 68.67 E	78.77	-140.28
3620.00	23.70	22.90	3608.20	209.39 S 68.98 E	69.61	-139.50
3622.00	24.60	20.60	3610.03	208.63 S 69.29 E	65.10	-138.70
3625.00	26.00	17.80	3612.74	207.42 S 69.71 E	61.38	-137.45
3630.00	29.00	14.30	3617.17	205.20 S 70.34 E	68.13	-135.24
3635.00	32.90	12.60	3621.46	202.70 S 70.94 E	79.93	-132.81 15R TF
3640.00	36.90	12.50	3625.56	199.90 S 71.56 E	80.01	-130.12
3645.00	40.90	13.10	3629.45	196.84 S 72.26 E	80.35	-127.16
3650.00	45.00	13.70	3633.11	193.53 S 73.04 E	82.40	-123.95
3655.00	49.20	13.90	3636.51	189.98 S 73.92 E	84.05	-120.48
3660.00	52.90	14.70	3639.66	186.21 S 74.88 E	75.04	-116.78 30R TF
3665.00	57.10	15.60	3642.52	182.26 S 75.95 E	85.28	-112.88
3670.00	61.30	17.30	3645.08	178.14 S 77.17 E	88.93	-108.75
3675.00	65.00	18.70	3647.34	173.90 S 78.55 E	78.10	-104.43
3680.00	69.20	20.00	3649.29	169.55 S 80.07 E	87.34	-99.95
3685.00	73.20	20.00	3650.90	165.10 S 81.69 E	80.00	-95.33
3690.00	76.90	22.70	3652.19	160.61 S 83.45 E	90.54	-90.59
3695.00	80.10	26.10	3653.18	156.15 S 85.48 E	92.38	-85.74
3700.00	82.40	28.10	3653.94	151.75 S 87.73 E	60.65	-80.82
3705.00	83.60	29.30	3654.55	147.40 S 90.11 E	33.81	-75.87
3710.00	84.30	28.10	3655.08	143.04 S 92.50 E	27.67	-70.91
3715.00	85.00	28.50	3655.55	138.65 S 94.86 E	16.11	-65.94
3720.00	85.80	28.70	3655.95	134.28 S 97.24 E	16.49	-60.97
3725.00	86.60	29.00	3656.28	129.91 S 99.65 E	17.08	-55.99
3730.00	87.70	29.30	3656.53	125.54 S 102.08 E	22.80	-51.01
3735.00	88.40	30.20	3656.70	121.21 S 104.56 E	22.80	-46.02 90R TF
3740.00	89.40	30.60	3656.80	116.89 S 107.09 E	21.54	-41.02
3745.00	90.30	31.30	3656.81	112.61 S 109.66 E	22.80	-36.02
3750.00	91.00	32.00	3656.75	108.35 S 112.29 E	19.80	-31.02
3755.00	91.60	33.70	3656.64	104.15 S 115.00 E	36.05	-26.02
3760.00	92.10	34.50	3656.48	100.01 S 117.80 E	18.86	-21.03 105R TF
3765.00	92.70	35.20	3656.27	95.91 S 120.66 E	18.43	-16.04
3770.00	93.40	35.60	3656.00	91.84 S 123.55 E	16.12	-11.05
3775.00	93.90	36.50	3655.68	87.81 S 126.48 E	20.56	-6.07
3780.00	94.00	37.30	3655.34	83.82 S 129.48 E	16.09	-1.10 130R TF
3785.00	93.80	38.30	3655.00	79.88 S 132.54 E	20.35	3.87
3790.00	93.80	39.20	3654.67	75.99 S 135.66 E	17.96	8.83 115R TF
3795.00	93.90	40.10	3654.33	72.15 S 138.84 E	18.07	13.78
3800.00	94.30	41.90	3653.97	68.38 S 142.11 E	36.79	18.71
3805.00	94.90	42.90	3653.57	64.70 S 145.47 E	23.27	23.62 105R TF
3810.00	95.30	43.70	3653.13	61.08 S 148.89 E	17.83	28.51 115R TF
3815.00	95.80	44.00	3652.64	57.49 S 152.34 E	11.65	33.39
3820.00	96.30	45.00	3652.12	53.94 S 155.82 E	22.26	38.26
3825.00	96.60	46.00	3651.56	50.46 S 159.37 E	20.76	43.10
3830.00	96.90	49.40	3650.97	47.12 S 163.04 E	67.79	47.89 180 TF

All data is in feet unless otherwise stated
Coordinates from structure and TVD from wellhead.
Vertical section is from wellhead on azimuth 32.51 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

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APR 11 1964

OFFICE

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	RECTANGULAR COORDINATES		Dogleg Deg/100Ft	Vert Sect	
3835.00	97.00	50.40	3650.36	43.92 S	166.83 E	19.95	52.62	
3840.00	96.90	51.10	3649.76	40.78 S	170.68 E	14.04	57.34	
3845.00	96.50	51.40	3649.17	37.67 S	174.55 E	9.98	62.04	90L TF
3850.00	96.10	51.60	3648.63	34.58 S	178.44 E	8.93	66.74	
3855.00	95.60	51.80	3648.12	31.50 S	182.34 E	10.76	71.44	
3860.00	95.30	51.70	3647.64	28.42 S	186.25 E	6.32	76.14	
3865.00	95.00	51.40	3647.19	25.32 S	190.15 E	8.47	80.84	
3870.00	94.50	50.00	3646.78	22.16 S	194.01 E	29.64	85.58	
3875.00	93.70	49.40	3646.42	18.94 S	197.81 E	19.98	90.34	
3880.00	92.90	48.30	3646.13	15.65 S	201.57 E	27.17	95.13	
3885.00	92.30	47.50	3645.91	12.30 S	205.28 E	19.99	99.95	
3890.00	92.20	46.00	3645.71	8.88 S	208.92 E	30.04	104.79	
3895.00	91.80	44.60	3645.54	5.37 S	212.47 E	29.10	109.66	
3900.00	91.30	43.20	3645.40	1.77 S	215.93 E	29.72	114.56	
3905.00	90.80	41.80	3645.31	1.92 N	219.31 E	29.73	119.49	
3910.00	90.30	40.50	3645.26	5.68 N	222.60 E	27.86	124.43	
3915.00	89.90	39.50	3645.25	9.51 N	225.81 E	21.54	129.39	
3920.00	88.70	38.90	3645.31	13.39 N	228.97 E	26.83	134.35	
3925.00	87.80	37.60	3645.46	17.31 N	232.07 E	31.61	139.32	
3930.00	87.00	36.50	3645.69	21.30 N	235.08 E	27.18	144.30	
3935.00	86.10	35.40	3645.99	25.34 N	238.01 E	28.39	149.28	
3940.00	85.20	33.90	3646.37	29.44 N	240.84 E	34.91	154.27	
3945.00	84.60	32.70	3646.82	33.60 N	243.58 E	26.75	159.25	
3950.00	83.90	31.40	3647.32	37.82 N	246.22 E	29.41	164.22	
3955.00	83.30	30.30	3647.88	42.08 N	248.76 E	24.94	169.19	80L TF
3960.00	83.20	29.40	3648.46	46.39 N	251.24 E	17.99	174.15	
3965.00	83.40	28.30	3649.05	50.74 N	253.63 E	22.21	179.10	
3970.00	83.80	26.60	3649.60	55.15 N	255.92 E	34.72	184.05	
3975.00	84.10	25.50	3650.13	59.62 N	258.10 E	22.68	188.99	
3980.00	84.60	24.30	3650.62	64.13 N	260.20 E	25.89	193.92	
3985.00	84.80	23.10	3651.08	68.69 N	262.20 E	24.23	198.84	
3990.00	84.80	21.60	3651.54	73.29 N	264.09 E	29.88	203.75	
3995.00	84.60	20.20	3652.00	77.94 N	265.87 E	28.16	208.62	
4000.00	84.50	18.40	3652.48	82.64 N	267.52 E	35.89	213.47	
4005.00	84.40	17.10	3652.96	87.38 N	269.03 E	25.96	218.28	
4010.00	84.10	15.70	3653.46	92.16 N	270.44 E	28.50	223.06	90L TF
4015.00	83.60	14.30	3654.00	96.96 N	271.72 E	29.58	227.80	
4020.00	83.20	12.80	3654.57	101.78 N	272.89 E	30.86	232.50	
4025.00	83.00	11.40	3655.17	106.64 N	273.93 E	28.08	237.15	
4030.00	82.60	9.90	3655.80	111.51 N	274.84 E	30.82	241.75	
4035.00	82.50	8.80	3656.44	116.40 N	275.65 E	21.90	246.31	
4040.00	82.30	7.60	3657.11	121.31 N	276.36 E	24.12	250.83	85L TF
4045.00	81.90	6.60	3657.79	126.22 N	276.97 E	21.36	255.30	
4050.00	81.70	6.10	3658.51	131.14 N	277.52 E	10.68	259.74	90R TF
4055.00	81.70	6.60	3659.23	136.06 N	278.06 E	9.90	264.18	
4060.00	81.90	7.20	3659.94	140.97 N	278.66 E	12.53	268.65	95R TF
4065.00	82.50	7.70	3660.62	145.88 N	279.30 E	15.56	273.13	
4070.00	83.10	8.50	3661.25	150.80 N	280.00 E	19.90	277.65	
4075.00	83.70	9.00	3661.82	155.70 N	280.76 E	15.58	282.20	
4080.00	84.40	9.50	3662.34	160.61 N	281.55 E	17.17	286.77	70R TF

All data is in feet unless otherwise stated
 Coordinates from structure and TVD from wellhead.
 Vertical section is from wellhead on azimuth 32.51 degrees.
 Declination is 0.00 degrees, Convergence is 0.00 degrees.
 Calculation uses the minimum curvature method.
 Presented by Eastman Teleco

RECEIVED

1993

OFFICE OF
OFFICE

PETROLEUM DEVELOPMENT CORPORATION
WATTAM FEDERAL #7,
TOM TOM, CHAVES COUNTY, NEW MEXICO

SURVEY LISTING Page 4
Your ref :
Last revised : 14-Jun-93

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	RECTANGULAR COORDINATES		Dogleg Deg/100Ft	Vert Sect	
4085.00	85.10	10.10	3662.80	165.52 N	282.40 E	18.41	291.36	75R TF
4090.00	85.90	10.80	3663.19	170.42 N	283.31 E	21.23	295.98	
4095.00	86.40	10.80	3663.53	175.32 N	284.24 E	10.00	300.61	
4100.00	87.20	13.00	3663.80	180.21 N	285.27 E	46.75	305.29	
4105.00	87.90	14.10	3664.02	185.06 N	286.44 E	26.06	310.01	
4110.00	88.60	15.10	3664.17	189.90 N	287.70 E	24.40	314.76	85R TF
4115.00	88.70	15.40	3664.29	194.72 N	289.02 E	6.32	319.54	
4120.00	88.50	15.10	3664.41	199.54 N	290.33 E	7.21	324.31	
4125.00	88.30	14.80	3664.55	204.37 N	291.62 E	7.21	329.08	
4130.00	88.40	15.90	3664.70	209.19 N	292.94 E	22.08	333.85	
4135.00	88.80	16.70	3664.82	213.99 N	294.34 E	17.88	338.65	
4140.00	89.30	17.90	3664.90	218.76 N	295.83 E	26.00	343.48	90R TF
4145.00	90.10	19.70	3664.93	223.50 N	297.44 E	39.39	348.33	
4150.00	90.90	21.80	3664.88	228.17 N	299.21 E	44.94	353.23	
4155.00	91.80	24.50	3664.76	232.77 N	301.18 E	56.91	358.16	
4160.00	92.20	27.20	3664.59	237.26 N	303.36 E	54.56	363.12	
4165.00	92.40	29.00	3664.39	241.67 N	305.71 E	36.19	368.10	120R TF
4170.00	92.20	30.50	3664.19	246.01 N	308.19 E	30.24	373.09	
4175.00	91.30	30.80	3664.04	250.31 N	310.74 E	18.97	378.09	110R TF
4180.00	89.90	28.40	3663.98	254.65 N	313.21 E	55.57	383.08	
4185.00	90.00	27.50	3663.99	259.07 N	315.55 E	18.11	388.07	
4190.00	89.70	27.00	3664.00	263.52 N	317.84 E	11.66	393.04	
4195.00	88.10	26.20	3664.10	267.99 N	320.08 E	35.78	398.02	
4200.00	86.90	26.20	3664.32	272.47 N	322.28 E	24.00	402.98	
4205.00	86.20	26.30	3664.62	276.94 N	324.49 E	14.14	407.94	105R TF
4210.00	85.50	26.50	3664.98	281.41 N	326.71 E	14.56	412.90	
4215.00	85.50	27.10	3665.37	285.86 N	328.96 E	11.96	417.86	
4220.00	85.60	28.20	3665.76	290.28 N	331.27 E	22.02	422.83	
4225.00	85.90	30.40	3666.13	294.62 N	333.71 E	44.29	427.81	
4230.00	86.10	31.00	3666.48	298.91 N	336.26 E	12.62	432.79	
4235.00	85.80	31.50	3666.83	303.18 N	338.84 E	11.64	437.78	
4240.00	85.70	31.70	3667.20	307.42 N	341.46 E	4.46	442.76	110R TF
4245.00	85.80	31.90	3667.57	311.66 N	344.08 E	4.46	447.75	
4250.00	86.10	32.00	3667.92	315.89 N	346.72 E	6.32	452.74	75R TF
4255.00	86.10	31.20	3668.26	320.14 N	349.34 E	15.96	457.72	
4260.00	86.20	31.80	3668.60	324.40 N	351.94 E	12.14	462.71	
4265.00	86.10	32.50	3668.94	328.62 N	354.60 E	14.11	467.70	
4270.00	86.70	33.20	3669.25	332.81 N	357.30 E	18.42	472.69	
4275.00	87.90	34.00	3669.49	336.97 N	360.07 E	28.83	477.68	
4280.00	89.90	35.30	3669.58	341.08 N	362.91 E	47.70	482.68	110R TF
4285.00	91.60	35.70	3669.52	345.15 N	365.81 E	34.93	487.67	
4290.00	92.50	36.20	3669.34	349.20 N	368.75 E	20.59	492.66	
4295.00	92.50	36.70	3669.12	353.22 N	371.72 E	9.99	497.64	
4300.00	92.50	37.10	3668.90	357.21 N	374.71 E	7.99	502.62	
4305.00	92.40	37.60	3668.69	361.18 N	377.74 E	10.19	507.60	
4310.00	92.10	38.50	3668.49	365.12 N	380.82 E	18.96	512.57	
4315.00	92.00	39.80	3668.31	368.99 N	383.98 E	26.06	517.54	
4320.00	91.80	40.50	3668.15	372.81 N	387.20 E	14.55	522.49	
4325.00	91.50	41.00	3668.00	376.60 N	390.46 E	11.66	527.44	
4330.00	91.20	41.40	3667.88	380.36 N	393.76 E	10.00	532.38	

All data is in feet unless otherwise stated
Coordinates from structure and TVD from wellhead.
Vertical section is from wellhead on azimuth 32.51 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

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PETROLEUM DEVELOPMENT CORPORATION
WATTAM FEDERAL #7,
TOM TOM, CHAVES COUNTY, NEW MEXICO

SURVEY LISTING Page 5
Your ref :
Last revised : 14-Jun-93

Measured Depth	Inclin. Degrees	Azimuth Degrees	True Vert. Depth	R E C T A N G U L A R C O O R D I N A T E S			Dogleg Deg/100Ft	Vert Sect
4335.00	90.90	41.70	3667.79	384.10 N	397.07 E	8.48	537.32	
4340.00	90.40	41.90	3667.74	387.83 N	400.40 E	10.77	542.25	
4345.00	90.30	42.20	3667.71	391.54 N	403.75 E	6.32	547.18	
4350.00	90.30	42.40	3667.68	395.24 N	407.12 E	4.00	552.11	
4355.00	90.70	42.60	3667.64	398.92 N	410.50 E	8.94	557.03	
4360.00	91.00	43.10	3667.56	402.59 N	413.90 E	11.66	561.95	
4365.00	91.00	43.70	3667.48	406.22 N	417.33 E	12.00	566.86	
4370.00	90.40	44.50	3667.41	409.81 N	420.81 E	20.00	571.76	
4385.00	88.70	45.30	3667.53	420.44 N	431.40 E	12.52	586.40	
4390.00	88.10	45.80	3667.67	423.94 N	434.96 E	15.62	591.27	
4395.00	87.60	46.60	3667.86	427.39 N	438.57 E	18.86	596.13	
4400.00	87.20	47.40	3668.09	430.80 N	442.22 E	17.87	600.96	
4405.00	87.20	48.30	3668.33	434.15 N	445.93 E	17.98	605.78 85R TF	
4410.00	87.10	49.00	3668.58	437.45 N	449.68 E	14.12	610.58	
4415.00	86.70	49.90	3668.85	440.70 N	453.47 E	19.67	615.35	
4420.00	86.30	50.70	3669.15	443.88 N	457.31 E	17.86	620.11	
4425.00	86.50	51.70	3669.47	447.01 N	461.20 E	20.36	624.83	
4430.00	86.60	52.60	3669.77	450.07 N	465.14 E	18.08	629.53	
4435.00	87.10	53.90	3670.04	453.06 N	469.14 E	27.82	634.20	
4440.00	87.90	55.20	3670.26	455.96 N	473.21 E	30.51	638.83	
4445.00	88.90	56.40	3670.40	458.77 N	477.34 E	31.23	643.42	
4450.00	90.00	57.80	3670.45	461.48 N	481.54 E	35.61	647.97 90L TF	
4455.00	90.70	59.00	3670.42	464.10 N	485.80 E	27.78	652.47	
4460.00	90.90	60.00	3670.35	466.64 N	490.10 E	20.39	656.92	
4465.00	90.40	60.70	3670.29	469.11 N	494.45 E	17.20	661.34	
4470.00	90.10	61.20	3670.27	471.54 N	498.82 E	11.66	665.74	
4475.00	89.60	61.30	3670.28	473.95 N	503.20 E	10.20	670.12 90L TF	
4480.00	88.60	62.20	3670.36	476.31 N	507.61 E	26.90	674.49	
4485.00	87.30	61.70	3670.54	478.66 N	512.02 E	27.85	678.84	
4490.00	86.50	61.60	3670.81	481.03 N	516.41 E	16.12	683.20	
4495.00	85.60	61.30	3671.16	483.42 N	520.79 E	18.97	687.56	
4500.00	85.50	61.00	3671.54	485.82 N	525.16 E	6.31	691.94	
4505.00	85.70	60.60	3671.93	488.25 N	529.51 E	8.92	696.33	
4521.00	86.70	59.30	3672.99	496.25 N	543.33 E	10.24	710.50 PROJECTED F/ PREVIOUS SURVEY	

All data is in feet unless otherwise stated
Coordinates from structure and TVD from wellhead.
Vertical section is from wellhead on azimuth 32.51 degrees.
Declination is 0.00 degrees, Convergence is 0.00 degrees.
Calculation uses the minimum curvature method.
Presented by Eastman Teleco

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				Comments in wellpath
				=====
MD	TVD	Rectangular Coords.		Comment

3556.00	3545.02	213.41 S	67.15 E	GYRO SURVEY TO 3556'.
3586.00	3575.01	213.43 S	66.68 E	KOP. 33 DEGREE AZIMUTH.
3600.00	3588.98	213.89 S	66.79 E	ORIENTATE TO HIGH SIDE
3635.00	3621.46	202.70 S	70.94 E	15R TF
3660.00	3639.66	186.21 S	74.88 E	30R TF
3735.00	3656.70	121.21 S	104.56 E	90R TF
3760.00	3656.48	100.01 S	117.80 E	105R TF
3780.00	3655.34	83.82 S	129.48 E	130R TF
3790.00	3654.67	75.99 S	135.66 E	115R TF
3805.00	3653.57	64.70 S	145.47 E	105R TF
3810.00	3653.13	61.08 S	148.89 E	115R TF
3830.00	3650.97	47.12 S	163.04 E	180 TF
3845.00	3649.17	37.67 S	174.55 E	90L TF
3955.00	3647.88	42.08 N	248.76 E	80L TF
4010.00	3653.46	92.16 N	270.44 E	90L TF
4040.00	3657.11	121.31 N	276.36 E	85L TF
4050.00	3658.51	131.14 N	277.52 E	90R TF
4060.00	3659.94	140.97 N	278.66 E	95R TF
4080.00	3662.34	160.61 N	281.55 E	70R TF
4085.00	3662.80	165.52 N	282.40 E	75R TF
4110.00	3664.17	189.90 N	287.70 E	85R TF
4140.00	3664.90	218.76 N	295.83 E	90R TF
4165.00	3664.39	241.67 N	305.71 E	120R TF
4175.00	3664.04	250.31 N	310.74 E	110R TF
4205.00	3664.62	276.94 N	324.49 E	105R TF
4240.00	3667.20	307.42 N	341.46 E	110R TF
4250.00	3667.92	315.89 N	346.72 E	75R TF
4280.00	3669.58	341.08 N	362.91 E	110R TF
4405.00	3668.33	434.15 N	445.93 E	85R TF
4450.00	3670.45	461.48 N	481.54 E	90L TF
4475.00	3670.28	473.95 N	503.20 E	90L TF
4521.00	3672.99	496.25 N	543.33 E	PROJECTED F/ PREVIOUS SURVEY

Targets associated with this wellpath			
=====			
Target name	Position	T.V.D.	Local rectangular coords. Date revised

	not specified	3665.00	209.51N 336.74E 1-Jun-93

All data is in feet unless otherwise stated
 Coordinates from structure and TVD from wellhead.
 Bottom hole distance is 735.85 on azimuth 47.59 degrees from wellhead.
 Vertical section is from wellhead on azimuth 32.51 degrees.
 Declination is 0.00 degrees, Convergence is 0.00 degrees.
 Calculation uses the minimum curvature method.
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