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0  SCIENTIFIC DRILLING CONTROLS  0

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TGT

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 E.O.G.
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°          S C I E N T I F I C          D R I L L I N G          C O N T R O L S          °

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Depth (Feet)	T.V.D. (Feet)	V.S. (Feet)	Inc Deg.	Azimuth Deg.	Latitude (Feet)	Departure (Feet)	D-leg /100

		Mackenzie 13	Fee #4H	Gyro			
700.00	699.54	16.80	4.12	7.13	16.80	0.77	0.63
800.00	799.31	23.51	3.63	7.54	23.50	1.63	0.49
900.00	899.12	29.65	3.46	6.80	29.64	2.40	0.17
1000.00	998.95	35.30	3.07	7.01	35.29	3.09	0.40
1100.00	1098.82	40.42	2.89	11.59	40.42	3.92	0.30
1200.00	1198.72	44.67	2.11	15.28	44.66	4.91	0.79
1300.00	1298.66	47.96	1.91	25.51	47.95	6.11	0.41
1400.00	1398.61	50.84	1.70	22.60	50.82	7.40	0.23
1500.00	1498.57	53.44	1.45	13.02	53.42	8.26	0.36
1600.00	1598.55	55.46	0.90	5.18	55.44	8.61	0.57
1700.00	1698.54	56.99	0.94	335.73	56.98	8.35	0.47
1800.00	1798.53	57.93	0.27	323.04	57.91	7.87	0.68
1900.00	1898.53	58.23	0.35	291.40	58.21	7.45	0.18
2000.00	1998.53	58.17	0.36	239.20	58.16	6.89	0.31
2100.00	2098.53	57.97	0.28	259.66	57.95	6.38	0.14
2200.00	2198.53	57.58	0.50	218.38	57.57	5.87	0.34
2300.00	2298.52	57.01	0.54	239.66	56.99	5.20	0.20
2400.00	2398.51	56.31	0.68	220.22	56.30	4.41	0.25
2500.00	2498.51	55.78	0.60	260.63	55.77	3.51	0.45
2600.00	2598.50	55.37	1.11	250.97	55.37	2.08	0.53
2700.00	2698.47	54.51	1.38	243.28	54.51	0.09	0.31
2800.00	2798.45	53.40	1.16	235.85	53.40	-1.83	0.27
2900.00	2898.43	52.54	0.95	250.00	52.55	-3.45	0.33
3000.00	2998.42	51.83	1.05	242.52	51.84	-5.04	0.16
3100.00	3098.40	51.12	0.69	242.32	51.14	-6.39	0.36
3200.00	3198.39	50.47	0.88	241.52	50.49	-7.60	0.19
3300.00	3298.38	49.71	0.95	241.65	49.73	-9.00	0.07
3400.00	3398.37	49.07	0.99	253.80	49.10	-10.56	0.21
3500.00	3498.35	48.77	0.91	265.98	48.80	-12.18	0.22
3600.00	3598.34	48.55	0.92	258.42	48.58	-13.76	0.12
3700.00	3698.33	48.38	0.84	269.12	48.41	-15.28	0.18
3800.00	3798.32	48.13	0.59	243.49	48.17	-16.47	0.40
3900.00	3898.31	47.34	0.97	228.69	47.38	-17.57	0.42
4000.00	3998.30	46.15	0.84	210.09	46.19	-18.57	0.32
4100.00	4098.29	44.99	0.64	200.36	45.03	-19.13	0.24
4138.00	4136.29	44.62	0.51	171.74	44.66	-19.18	0.82

Mackenzie 13 Fee #4H Final Survey

~Version Information

VERS. 2.00: PATHFINDER ENERGY SERVICES LAS - Version 2.00
 WRAP. NO: One line per depth step

~Well Information

STRT.FT 4201.0000:
 STOP.FT 8305.0000:
 STEP.FT 0.0000:
 NULL. -999.25:

E.O.G RESOURCES: COMPANY

MACKENZIE 13 FEE #4 H: WELL

FLD. COTTONWOOD CREEK: FLD

SRVC. Pathfinder Energy Services: SERVICE COMPANY

LOC. : LOCATION

DATE. 08-Mar-06: LOG DATE

UWI. 30-015-34466: API NUMBER

APD .FT 17.00: ELEVATION ABOVE PERMANENT DATUM

CNTY. EDDY: COUNTY

CTRY. USA: COUNTRY

DMF. ROTARY TABLE: DRILLING-LOG MEASURED FROM

EPD .FT 3577.00: ELEVATION OF PERMANENT DATUM

"FL1. LAT:32^55'2""N LAT:104^32'7""W: WELL LOCATION 1"

"FL2. X:437,977 Y:697,547: WELL LOCATION 2"

PDAM. GROUND LEVEL - MEAN SEA LEVEL: ELEVATION OF PERMANENT DATUM REF

STAT. GROUND LEVEL: PERMANENT DATUM

~Parameter Information

BHB1.IN 9 7/8: BOREHOLE REC; BIT 1
 BHF1.FT 0: BOREHOLE REC; FROM 1
 BH01.FT 955: BOREHOLE REC; TO 1
 BHB2.IN 6 1/8: BOREHOLE REC; BIT 2
 BHF2.FT 955: BOREHOLE REC; FROM 2
 CTS1.IN 7: CASING & TUBING REC; SIZE 1
 CTF1.FT 0: CASING & TUBING REC; FROM 1
 CTO1.FT 955: CASING & TUBING REC; TO 1
 DCOM. KEY: DRILLING COMPANY
 RIG. # 463: DRILLING RIG
 LUN. BOX KIT: LOGGING UNIT NUMBER
 DIST. WEST TEXAS: DISTRICT
 SPUD. 24-FEB-06: SPUD DATE
 STDT. 25-FEB-06: START DATE
 SDEP. FT 4247: DEPTH IN
 ENDT. 8-MAR-06: LWD END DATE
 EDEP. FT 8356: DEPTH OUT
 TDEP. FT 8356: TOTAL DEPTH

Mackenzie 13 Fee #4H Final Survey

RA01.	1:	RUN NUMBER 01
RB01.	25-FEB-06:	START DATE - RUN 01
RC01.	21:00:	START TIME - RUN 01
RD01.	28-FEB-06:	END DATE - RUN 01
RE01.	15:00:	END TIME - RUN 01
RF01. FT	4247:	DEPTH IN - RUN 01
RG01. FT	4722:	DEPTH OUT - RUN 01
RH01. FT	4212:	LOG TOP - RUN 01
RI01. FT	4687:	LOG BOTTOM - RUN 01
RJ01. IN	6 1/8:	HOLE SIZE - RUN 01
RU01.	WESLEY OTTO:	ENGINEER #1 - RUN 01
MB01. FT	4108:	MUD DEPTH - RUN 01
MD01.	WATER:	MUD TYPE - RUN 01
ME01. LB/GAL	9.20:	DENSITY - RUN 01
MF01. S/QT	29:	VISCOSITY - RUN 01
MG01.	9.0:	PH - RUN 01
MH01. PPM	105000:	SALINITY - RUN 01
MK01. DEGF	101:	MAX REC TEMP - RUN 01
RA02.	2:	RUN NUMBER 02
RB02.	28-FEB-06:	START DATE - RUN 02
RC02.	16:00:	START TIME - RUN 02
RD02.	2-MAR-06:	END DATE - RUN 02
RE02.	14:00:	END TIME - RUN 02
RF02. FT	4722:	DEPTH IN - RUN 02
RG02. FT	5101:	DEPTH OUT - RUN 02
RH02. FT	4687:	LOG TOP - RUN 02
RI02. FT	5067:	LOG BOTTOM - RUN 02
RJ02. IN	6 1/8:	HOLE SIZE - RUN 02
RU02.	WESLEY OTTO:	ENGINEER #1 - RUN 02
MB02. FT	4700:	MUD DEPTH - RUN 02
MD02.	WATER:	MUD TYPE - RUN 02
ME02. LB/GAL	9.20:	DENSITY - RUN 02
MF02. S/QT	29:	VISCOSITY - RUN 02
MG02.	9.0:	PH - RUN 02
MH02. PPM	105000:	SALINITY - RUN 02
MK02. DEGF	97:	MAX REC TEMP - RUN 02
RA03.	3:	RUN NUMBER 03
RB03.	2-MAR-06:	START DATE - RUN 03
RC03.	15:00:	START TIME - RUN 03
RD03.	8-MAR-06:	END DATE - RUN 03
RE03.	15:00:	END TIME - RUN 03
RF03. FT	5101:	DEPTH IN - RUN 03
RG03. FT	8356:	DEPTH OUT - RUN 03
RH03. FT	5067:	LOG TOP - RUN 03

RI03.FT	8314: LOG BOTTOM - RUN 03	DLSE.DG/H	DEPT	MTVD	INC	AZI	SECT	RCN	RCE	DLSE
RJ03.IN	6 1/8: HOLE SIZE - RUN 03		FT	FT	DEG	DEG	FT	FT	FT	DG/H
RU03.	WESLEY OTTO: ENGINEER #1 - RUN 03									
MB03.FT	5050: MUD DEPTH - RUN 03									
ME03.	WATER: MUD TYPE - RUN 03									
ME03.LB/GAL	9.30: DENSITY - RUN 03									
MF03.S/QT	29: VISCOSITY - RUN 03									
MG03.	9.0: PH - RUN 03									
MH03.PPM	105000: SALINITY - RUN 03									
MK03.DEGF	108: MAX REC TEMP - RUN 03									
TTL1.	GAMMA-RAY: HEADER TITLE LINE 1									
TTL2.	: HEADER TITLE LINE 2									
TTL3.	: HEADER TITLE LINE 3									
SC1.	: LOG SCALE 1									
"SC2.	5"" = 100' : LOG SCALE 2"									
OS1.	DIRECTIONAL: OTHER SERVICES LINE 1									
OS2.	ROP: OTHER SERVICES LINE 2									
~Curve Information										
DEPT.FT	: MWD Tool Measurement Depth									
MTVD.FT	: MWD Tool Measurement TVD									
INC .DEG	: Inclination									
AZI .DEG	: Azimuth									
SECT.FT	: Section									
RCN .FT	: Rectangular Co-ordinates North									
RCE .FT	: Rectangular Co-ordinates East									
DLSE.DG/H	: Dog-leg Severity									
#	INC									
#	DEPT									
#	FT									
#	Relog Number									
#										
~ASCII Data										
4201.00	4199.29	0.53		130.80		44.15		44.19	-18.92	0.58
4232.00	4230.29	0.53		79.03		44.08		44.13	-18.67	1.49
4263.00	4261.27	2.81		14.79		44.85		44.89	-18.34	8.48
4295.00	4293.12	8.00		5.82		47.83		47.87	-17.91	16.38
4327.00	4324.52	13.98		2.39		53.91		53.95	-17.52	18.79
4359.00	4355.06	20.58		1.34		63.41		63.45	-17.23	20.63
4392.00	4385.36	25.94		1.08		76.43		76.47	-16.96	16.26
4423.00	4412.91	28.67		1.16		90.65		90.68	-16.68	8.79
4455.00	4440.67	30.95		1.25		106.55		106.59	-16.34	7.15
4487.00	4467.73	33.59		1.52		123.63		123.67	-15.93	8.26
4519.00	4494.00	36.05		1.87		141.90		141.93	-15.39	7.72
4551.00	4519.29	39.48		1.43		161.48		161.52	-14.83	10.75

4583.00	4543.35	43.00	0.99	Mackenzie 13	Fee #4H	Final Survey	11.03
4615.00	4566.26	45.55	0.90	182.57	182.61	-14.39	7.97
4647.00	4588.00	48.80	1.16	204.91	204.94	-14.02	10.18
4678.00	4607.77	51.97	0.84	228.37	228.40	-13.60	10.24
4710.00	4626.72	55.40	0.56	252.25	252.28	-13.18	10.74
4742.00	4644.09	58.83	359.95	278.03	278.06	-12.87	10.83
4774.00	4659.96	61.73	358.27	304.89	304.92	-12.75	10.15
4806.00	4674.44	64.46	356.86	332.67	332.71	-13.19	9.39
4838.00	4687.57	67.09	355.65	361.18	361.21	-14.41	8.93
4869.00	4698.68	70.87	354.77	390.29	390.33	-16.31	12.47
4900.00	4707.82	74.83	353.54	419.11	419.16	-18.73	13.33
4932.00	4715.22	78.44	352.38	448.57	448.62	-21.75	11.80
4964.00	4720.57	82.31	351.76	479.45	479.51	-25.57	12.24
4996.00	4723.83	86.00	351.66	510.68	510.75	-29.92	11.55
5028.00	4724.93	90.04	352.39	542.17	542.25	-34.51	12.84
5060.00	4724.74	90.66	353.39	573.82	573.91	-38.95	3.68
5092.00	4723.83	92.59	355.79	605.57	605.67	-42.91	9.62
5157.00	4721.98	90.66	357.46	637.40	637.51	-45.92	3.94
5221.00	4722.55	88.32	357.63	702.25	702.36	-49.75	3.67
5285.00	4723.91	89.25	358.15	766.18	766.30	-52.48	1.66
5349.00	4724.30	90.04	359.21	830.11	830.24	-54.84	2.06
5382.00	4724.43	89.52	358.56	894.09	894.22	-56.32	2.54
5445.00	4724.38	90.57	359.30	927.08	927.21	-56.96	2.05
5509.00	4723.20	91.54	0.37	990.06	990.20	-58.14	2.25
5573.00	4721.63	91.28	0.91	1054.05	1054.19	-58.33	0.94
5637.00	4720.70	90.40	0.44	1118.03	1118.16	-57.61	1.55
5700.00	4719.68	91.45	0.49	1182.02	1182.15	-56.86	1.68
5764.00	4718.01	91.54	0.70	1245.01	1245.14	-56.35	0.36
5828.00	4716.90	90.45	0.50	1308.98	1309.11	-55.69	1.73
5892.00	4716.04	91.10	0.31	1372.97	1373.10	-55.02	1.06
5954.00	4715.23	90.40	0.44	1436.96	1437.09	-54.56	1.15
6018.00	4714.20	91.45	0.73	1498.96	1499.09	-54.16	1.71
6081.00	4712.55	91.54	1.63	1562.95	1563.07	-53.51	1.44
6146.00	4710.96	91.28	2.04	1625.91	1626.04	-52.21	0.75
6209.00	4709.89	90.66	1.27	1690.87	1690.98	-50.13	1.57
6273.00	4709.35	90.31	1.68	1753.83	1753.95	-48.31	0.85
6336.00	4709.16	90.04	3.32	1817.81	1817.92	-46.66	2.62
6400.00	4708.57	91.01	4.25	1880.76	1880.86	-43.91	2.10
6464.00	4707.93	90.13	3.68	1944.62	1944.72	-39.69	1.63
6527.00	4708.17	89.43	0.26	2008.48	2008.56	-35.27	5.55
6591.00	4708.32	90.31	359.99	2071.43	2071.51	-33.10	1.43
6656.00	4707.97	90.31	359.46	2135.43	2135.51	-32.96	0.81
6720.00	4707.19	91.10	1.36	2200.43	2200.51	-33.27	3.21
6783.00	4708.06	87.32	1.00	2264.42	2264.50	-32.81	6.03
				2327.39	2327.47	-31.51	

6847.00	4710.61	88.11	0.82	2391.33	2391.41	-30.50	1.27
6909.00	4711.94	89.43	359.56	2453.32	2453.39	-30.30	2.93
6973.00	4712.19	90.13	358.88	2517.31	2517.39	-31.16	1.53
7037.00	4711.75	90.66	358.59	2581.29	2581.37	-32.58	0.94
7101.00	4710.62	91.36	358.27	2645.25	2645.33	-34.33	1.20
7165.00	4709.34	90.92	358.66	2709.21	2709.30	-36.05	0.92
7229.00	4707.13	93.03	358.98	2773.15	2773.24	-37.37	3.34
7293.00	4703.99	92.59	358.66	2837.06	2837.15	-38.68	0.84
7357.00	4701.04	92.68	359.08	2900.97	2901.07	-39.94	0.66
7421.00	4698.39	92.07	358.68	2964.90	2965.00	-41.20	1.15
7486.00	4695.95	92.24	358.94	3029.84	3029.94	-42.55	0.48
7550.00	4694.38	90.57	358.72	3093.80	3093.91	-43.85	2.63
7614.00	4694.33	89.52	0.11	3157.79	3157.90	-44.50	2.73
7678.00	4694.23	90.66	0.10	3221.79	3221.90	-44.39	1.79
7742.00	4692.85	91.80	1.16	3285.77	3285.88	-43.69	2.44
7805.00	4691.79	90.13	0.37	3348.76	3348.86	-42.85	2.93
7868.00	4692.52	88.55	358.78	3411.75	3411.85	-43.32	3.57
7932.00	4693.30	90.04	359.21	3475.73	3475.84	-44.44	2.43
7996.00	4693.15	90.22	359.35	3539.72	3539.83	-45.24	0.35
8060.00	4693.35	89.43	358.78	3603.71	3603.82	-46.29	1.53
8124.00	4693.55	90.22	358.72	3667.69	3667.81	-47.68	1.24
8188.00	4693.25	90.31	359.04	3731.67	3731.79	-48.93	0.51
8252.00	4693.25	89.69	359.03	3795.66	3795.78	-50.01	0.96
8305.00	4693.66	89.43	358.93	3848.65	3848.77	-50.95	0.53

Mackenzie 13 Fee #4H Final Survey