



2305 Market Street Midland, Texas 79703
915 694 5517 Fax 915 694 5648

New Mexico Oil Conservation Commission
P.O. Box 1980
Hobbs, New Mexico 88240

Re: Thornton Operating Corporation
McClellan Federal No. 1
182' FNL & 507' FWL of Sec. 26, T13S, R29E
Chaves County, New Mexico
API No. 30-005-63076

Enclosed, please find the original and one copy of the survey performed on the referenced well by Baker Hughes INTEQ, Midland, Texas office. Other information required by your office is as follows:

<u>Name of Surveyor</u>	<u>Drainhole Number</u>	<u>Surveyed Depths</u>	<u>Dates Performed</u>	<u>Type of Survey</u>
Ed Mason Surveyor	Vertical	0' to 9565'	12-17-97	Gyro
Damon Cadena MWD Technician	Sidetrack No. 1	9565' to 9971'	12-18 - 97 to 12-30-97	MWD
Damon Cadena MWD Technician	Sidetrack No. 2	9565' to 10060'	12-31-97 to 1-5-98	MWD

If any other information is required, please contact the undersigned at the letterhead address and phone number.

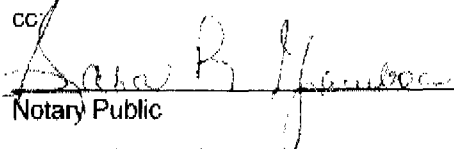
Adryan Mitcham


Evaluation Coordinator

Date: 2-18-98

Attachment

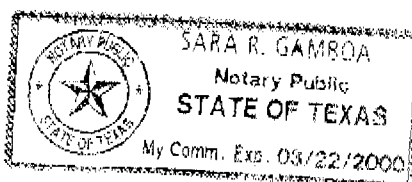
cc/


Notary Public

State of Texas

County of Midland

Date: 02-18-1998



McClellan Oil, etal
HBP
NM-2824

Marathon
9/1/97
NM-96570

Drainage
Radius
2786'

OPEN

23

SunValley 50%
Marathon 50%
9-1-97
NM-96570

Proposed
Bottom Hole
Location

Thornton, etal
5-1-98

Actual bottomhole

NM-62195

U.S.

McClellan Oil, etal
HBP
NM-2824

Thornton, etal
HBP

McClellan Oil, etal
8-15-97
NM-96569

NM-50415

Thornton Oper.
W. King Camp
-5336

26

SunValley 50%
Marathon 50%
9/1/97
NM-96570

McClellan Oil, etal
HBP
NM-50416

McClellan Oil, etal
HBP
NM-50416

WEST KING CAMP

MISSISSIPPIAN LIME DEPTH
Chaves Co., N.M. T13S-R29E

PROPOSED
PRORATION UNIT

C.I.=20'

SCALE: 1"=1000'

R.L.T.

U.S.

LOCATION OF ESTIMATED TOP OF DEVONIAN FM. AND WELL BOTTOM HOLE LOCATION

N-S value is distance in feet North(+) or South(-) of Original B/H Location

E-W value is distance in feet East(+) or West(-) of Original B/H Location

SURVEY NUMBER	MD	TRUE AZIMUTH	TVD	N-S	E-W	VERTICAL SECTION
14	10024	310.7	9821.3	229.2	-219.0	318.9
EST TOP OF DEV FM	10027	310.7	9822.5	231.0	-221.1	321.5
TD (BOTTOM HOLE)	10060	310.7	9836.0	250.6	-243.9	349.7

ORIGINAL BOTTOM HOLE LOCATION OF MANZANO #1 McCLELLAN FED #1 WELL

Section 26: 182 feet from North Line
507 feet from West Line

CALCULATED BOTTOM HOLE LOCATION OF DEVONIAN FM IN McCLELLAN FED #1-A

TOP OF DEVONIAN FM AT INITIAL PENETRATION

Section 23: 49.0 feet from South Line
285.9 feet from West Line

Distance from Objective Point: 147.2 feet
Direction from Objective Point: 132.3 degrees from N

BOTTOM HOLE (Still in Devonian Fm)

263.1 feet from West Line

Distance from Objective Point: 117.1 feet
Direction from Objective Point: 132.7 degrees from N

Form 3160-4
(October 1990)UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE*

(See other In-
structions on
reverse side)FOR APPROVED
OMB NO. 1004-0137
Expires, December 31, 1991

WELL COMPLETION OR RECOMPLETION REPORT AND LOG*

1. TYPE OF WELL: OIL ☒ GAS ☐ DRY ☐ Other _____
2. TYPE OF COMPLETION: NEW ☐ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DUFF GELING ☐ Other Sidetrack & Directional drill3. NAME OF OPERATOR
THORNTON OPERATING CORPORATION4. ADDRESS AND TELEPHONE NO.
P. O. Box 833, Midland, TX (817)926-33245. LOCATION OF WELL (Report location clearly and in accordance with any State requirements)*
At surface T 13S, R 29E, Sec.26: 182 FNL, 507 FWL, NMPM (NM-50415)

At top prod. interval reported below

T 13S, R 29E, Sec.23: 49 FSL, 286 FWL (NM-62195)

At total depth

T 13S, R 29E, Sec.23:

69 FSL, 263 FWL (NM62195) 14. PERMIT NO. Sundry Notice

DATE ISSUED

Dec.3, 1997

12. COUNTY OR
PARISH
Chaves

13. STATE

New Mexico

15. DATE SPUDDED

12/16/97

16. DATE T.D. REACHED

1/5/98

17. DATE COMPL. (Ready to prod.)

1/9/98

18. ELEVATIONS (DP, RMB, RT, OR, ETC.)*

GL 3807'

19. ELEV. CASINGHEAD

20. TOTAL DEPTH, MD & TVD
10060 MD, 9836' TVD21. PLUG BACK T.D., MD & TVD
N/A22. IF MULTIPLE COMPL.
HOW MANY? N/A23. INTERVALS
DRILLED BYROTARY TOOLS
AllCABLE TOOLS
None

24. PRODUCING INTERVAL(S), OF THIS COMPLETION--TOP, BOTTOM, NAME (MD AND TVD)*

Devonian Fm. - TOP 10027' MD, 9823' TVD

25. WAS DIRECTIONAL
SURVEY MADEYes, Prior to
sidetrack & MWD

26. TYPE ELECTRIC AND OTHER LOGS RUN

GR(ST#1) 9100 to 9944 MD, GR/Tilt

MD to 9573 MD, GR/Neutron(ST#2)9100-10040MD NO

28. CASING RECORD (Report all strings set in well)

CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (TVD)	SIZE	TYPE	REMARKS
13-3/8"	48#	304' KB*	17-1/2	310 sx Cl "C", Circ	None
8-5/8"	24#	2328' KB*	12-1/4	1250 sx Cl "C", Circ ??	None
5-1/2"	17#	9847' KB*	7-7/8	300 sx Cl "H", Est 9000'	None

29. LINER RECORD

SIZE	TOP (MD)	BOTTOM (MD)	BACKS CEMENT*	SCREEN (MD)	SIZE	DEPTH SET (MD)	PACKER SET (MD)
					2-7/8	9489	9489

31. PERFORATION RECORD (Interval, size and number)

Open hole 9565' to 10060' MD

Producing interval shown in Item #24

32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.

DEPTH INTERVAL (MD)	AMOUNT AND KIND OF MATERIAL USED
None	

* Casing set by original operator KB=17'

33. PRODUCTION

DATE FIRST PRODUCTION	PRODUCTION METHOD (Flowing, gas lift, pumping—size and type of pump)	WELL STATUS (Producing or shut-in)
1/9/98	Flowing	Producing

DATE OF TEST	HOURS TESTED	CHOKE SIZE	PROD'N. FOR TEST PERIOD	OIL—BBL.	GAS—MCF	WATER—BBL.	GAS-OIL RATIO
1/9-1/10/98	24	4/64		72	TSTM	0	TSTM
FLOW, TUBING PRESS.	CASING PRESSURE	CALCULATED 24-HOUR RATE	OIL—BBL.	GAS—MCF	WATER—BBL.	OIL GRAVITY-API (CORR.)	
40	0 (Packer)		72	TSTM	0	TSTM	

34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.)

Vented

TEST WITNESSED BY

C. Brown

35. LIST OF ATTACHMENTS

Logs show in Item 26, Directional Surveys for Cased hole, ST #1, & ST#2

36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records

SIGNED

TITLE

President

DATE

2/19/98

*(See Instructions and Spaces for Additional Data on Reverse Side)

Title 18 U.S.C. Section 1001, makes it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

37. SUMMARY OF POROUS ZONES: (Show all important zones of porosity and contents thereof; cored intervals; and all drill-stem, tests, including depth interval tested, cushion used, time tool open, flowing and shut-in pressures, and recoveries):					38. GEOLOGIC MARKERS		
FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	NAME	MEAS. DEPTH	TOP VERT. DEPTH	TRUE VERT. DEPTH
Devonian Fm	10027' MD 9823' TVD	10060' MD 9836' TVD		(ORIGINAL HOLE AS REPORTED BY PREV OPER)			
				San Andres	2347		
				Glorietta	3714		
				Tubb	5145		
				Abo	5956		
				Wolfcamp	7088		
				Strawn	8502		
				Chester	9054		
				Miss	9160		
				Low Miss			
				(Sidetrack #1 all in Miss Fm)			
				(Sidetrack #2)			
				Woodford	9940		9790
				Devonian	10027		9823



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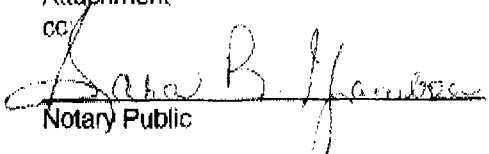
Adryan Mitcham


Evaluation Coordinator

Date: 2-18-98

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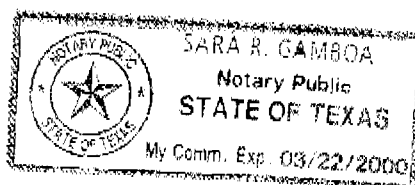
cc:


Notary Public

State of Texas

County of Midland

Date: 02-18-1998



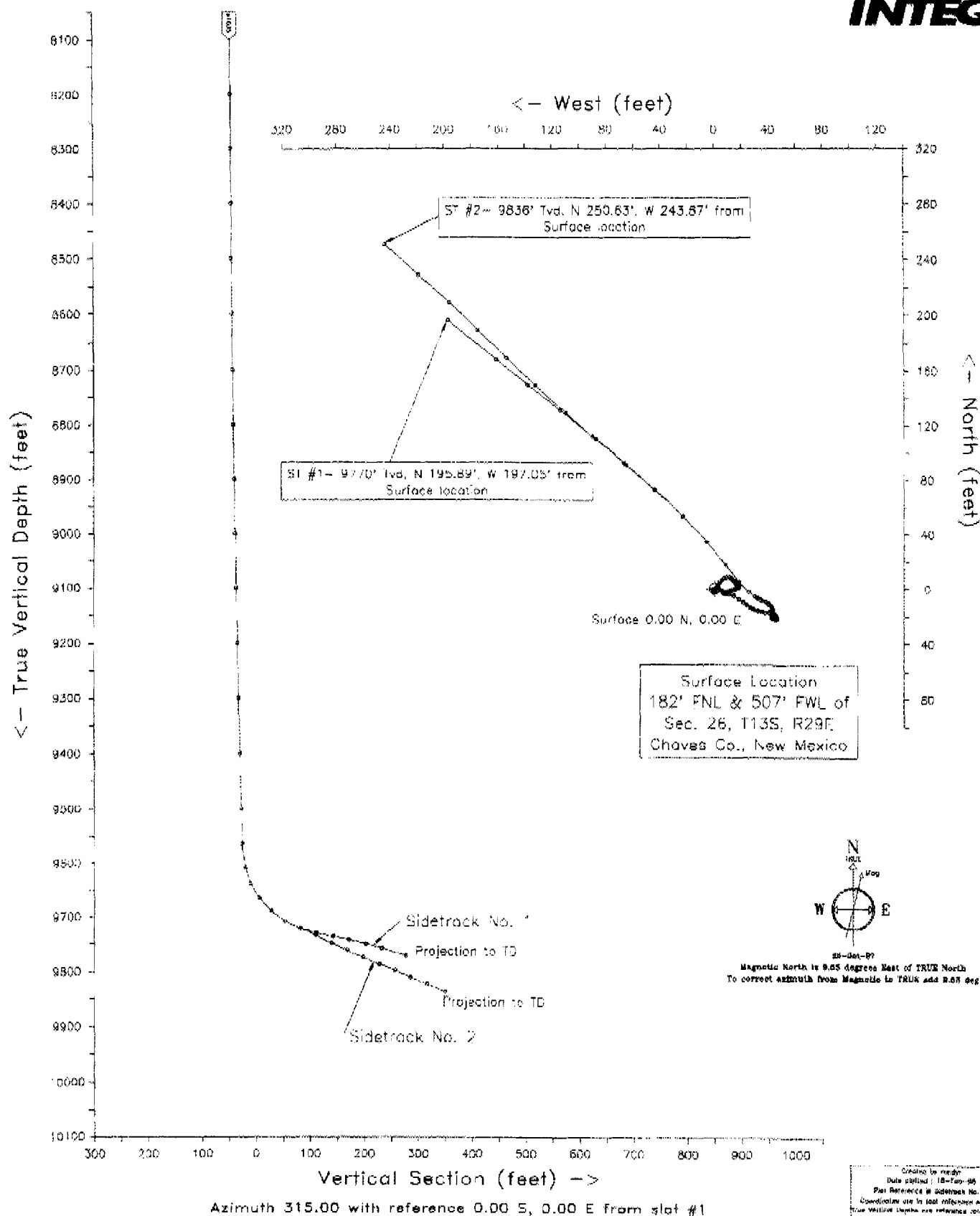
THORNTON OPERATING CO.

Structure : McCLELLAN FEDERAL NO. 1

Slot : slot #1

Field : non designated

Location : CHAVES COUNTY, NEW MEXICO



THORNTON OPERATING CO.
McCLELLAN FEDERAL NO. 1

slot #1
non designated
CHAVES COUNTY, NEW MEXICO

S U R V E Y L I S T I N G

by
Baker Hughes INTEQ

Your ref : gyro
Our ref : svy1035
License :

Date printed : 18-Feb-98
Date created : 17-Dec-97
Last revised : 18-Feb-98

Field is centred on 0.000,0.000,0.00000,+
Structure is centred on n33 30 0.000,w104 15 0

Slot location is n33 30 0.000,w104 15 0.000
Slot Grid coordinates are N 733057.909, E -56258.701
Slot local coordinates are 0.00 N 0.00 E

Projection type: lambert - Texas North Central (4202), Spheroid: Clarke - 1866

Reference North is True North

SURVEY LISTING Page 1
Your ref : gyro
Last revised : 18-Feb-98

THORNTON OPERATING CO.
McCLELLAN FEDERAL NO. 1, slot #1
non designated, CHAVES COUNTY, NEW MEXICO

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 E	0.00	0.00
100.00	0.37	215.64	100.00	0.19 W	0.37	-0.07
200.00	0.37	205.07	200.00	0.51 W	0.07	-0.26
300.00	0.30	204.51	300.00	0.76 W	0.07	-0.49
400.00	0.15	183.34	399.99	0.87 W	0.17	-0.68
500.00	0.13	177.78	499.99	0.88 W	0.02	-0.86
600.00	0.17	167.28	599.99	0.84 W	0.05	-1.08
700.00	0.14	190.67	699.99	0.83 W	0.07	-1.28
800.00	0.20	90.19	799.99	0.68 W	0.26	-1.47
900.00	0.29	92.77	899.99	0.25 W	0.09	-1.77
1000.00	0.37	42.64	999.99	0.22 E	0.29	-1.92
1100.00	0.82	15.74	1099.99	0.63 E	0.52	-1.51
1200.00	0.88	17.63	1199.97	1.06 E	0.07	-0.74
1300.00	1.09	28.65	1299.96	1.75 E	0.28	-0.05
1400.00	1.17	31.27	1399.94	2.73 E	0.10	0.56
1500.00	1.18	32.16	1499.92	3.81 E	0.02	1.12
1600.00	1.18	51.27	1599.90	5.16 E	0.39	1.34
1700.00	1.30	64.01	1699.88	6.99 E	0.30	0.96
1800.00	1.25	73.63	1799.85	9.05 E	0.22	0.17
1900.00	0.91	108.72	1899.83	10.85 E	0.73	-1.00
2000.00	0.88	118.78	1999.82	12.28 E	0.16	-2.42
2100.00	0.89	132.97	2099.81	13.52 E	0.22	-3.92
2200.00	0.94	137.68	2199.80	14.64 E	0.09	-5.52
2300.00	0.78	145.22	2299.79	15.58 E	0.20	-7.01
2400.00	0.46	131.36	2399.78	16.27 E	0.35	-8.08

All data is in feet unless otherwise stated.

Coordinates from slot #1 and TVD from rotary table.

Bottom hole distance is 30.58 on azimuth 100.30 degrees from wellhead.

Vertical section is from N 0.00 E 0.00 on azimuth 317.80 degrees.

Calculation uses the minimum curvature method.

Presented by Baker Hughes INTEQ

SURVEY LISTING Page 2

Your ref : gyro
Last revised : 18-Feb-98THORNTON OPERATING CO.
McCLELLAN FEDERAL NO. 1, slot #1
non designated, CHAVES COUNTY, NEW MEXICO

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
2500.00	0.34	121.45	2499.78	3.42 N 16.82 E	0.14	-8.77
2600.00	0.37	117.46	2599.78	3.11 N 17.36 E	0.04	-9.36
2700.00	0.23	126.25	2699.77	2.85 N 17.81 E	0.15	-9.85
2800.00	0.12	153.74	2799.77	2.63 N 18.02 E	0.14	-10.15
2900.00	0.14	150.13	2899.77	2.43 N 18.13 E	0.02	-10.37
3000.00	0.15	170.47	2999.77	2.20 N 18.21 E	0.05	-10.60
3100.00	0.17	188.36	3099.77	1.92 N 18.21 E	0.05	-10.81
3200.00	0.42	219.89	3199.77	1.50 N 17.95 E	0.29	-10.95
3300.00	0.65	239.24	3299.77	0.92 N 17.23 E	0.29	-10.89
3400.00	0.75	249.39	3399.76	0.40 N 16.13 E	0.16	-10.54
3500.00	0.75	243.34	3499.75	0.12 S 14.93 E	0.08	-10.12
3600.00	0.84	250.57	3599.74	0.66 S 13.66 E	0.13	-9.66
3700.00	0.82	250.24	3699.73	1.14 S 12.29 E	0.02	-9.10
3800.00	0.85	249.81	3799.72	1.64 S 10.92 E	0.03	-8.55
3900.00	0.80	255.95	3899.71	2.07 S 9.55 E	0.10	-7.95
4000.00	0.31	227.48	3999.71	2.42 S 8.67 E	0.55	-7.62
4100.00	0.22	147.14	4099.70	2.76 S 8.58 E	0.35	-7.81
4200.00	0.19	152.65	4199.70	3.07 S 8.76 E	0.04	-8.16
4300.00	0.10	191.78	4299.70	3.30 S 8.81 E	0.13	-8.37
4400.00	0.03	162.63	4399.70	3.42 S 8.80 E	0.08	-8.44
4500.00	0.08	297.32	4499.70	3.41 S 8.75 E	0.10	-8.40
4600.00	0.17	302.76	4599.70	3.30 S 8.56 E	0.09	-8.19
4700.00	0.17	305.47	4699.70	3.13 S 8.32 E	0.01	-7.91
4800.00	0.22	308.99	4799.70	2.92 S 8.05 E	0.05	-7.57
4900.00	0.34	304.38	4899.70	2.63 S 7.65 E	0.12	-7.09

All data is in feet unless otherwise stated.

Coordinates from slot #1 and TVD from rotary table.

Bottom hole distance is 30.58 on azimuth 100.30 degrees from wellhead.

Vertical section is from N 0.00 E 0.00 on azimuth 317.80 degrees.

Calculation uses the minimum curvature method.

Presented by Baker Hughes INTEQ

SURVEY LISTING Page 3

Your ref : gyro

Last revised : 18-Feb-98

THORNTON OPERATING CO.

McCLELLAN FEDERAL NO. 1, slot #1

non designated, CHAVES COUNTY, NEW MEXICO

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
5000.00	0.35	291.47	4999.70	2.35 S 7.13 E	0.08	-6.53
5100.00	0.31	304.79	5099.70	2.09 S 6.62 E	0.09	-5.99
5200.00	0.22	253.30	5199.70	1.99 S 6.21 E	0.24	-5.65
5300.00	0.21	235.54	5299.70	2.15 S 5.88 E	0.07	-5.54
5400.00	0.24	134.47	5399.70	2.40 S 5.88 E	0.35	-5.72
5500.00	0.39	122.99	5499.69	2.73 S 6.31 E	0.16	-6.26
5600.00	0.37	114.73	5599.69	3.05 S 6.89 E	0.06	-6.89
5700.00	0.40	94.55	5699.69	3.21 S 7.53 E	0.14	-7.44
5800.00	0.77	85.16	5799.68	3.19 S 8.55 E	0.38	-8.10
5900.00	1.87	105.19	5899.66	3.56 S 10.79 E	1.18	-9.88
6000.00	2.50	116.94	5999.58	4.97 S 14.31 E	0.77	-13.30
6100.00	2.60	125.22	6099.48	7.27 S 18.11 E	0.38	-17.55
6200.00	2.21	126.59	6199.40	9.73 S 21.51 E	0.39	-21.65
6300.00	1.72	129.00	6299.34	11.82 S 24.22 E	0.50	-25.03
6400.00	1.67	117.99	6399.29	13.45 S 26.68 E	0.33	-27.88
6500.00	1.64	111.84	6499.25	14.66 S 29.29 E	0.18	-30.54
6600.00	1.79	107.93	6599.21	15.68 S 32.11 E	0.19	-33.18
6700.00	1.71	102.60	6699.16	16.48 S 35.05 E	0.18	-35.75
6800.00	1.78	95.50	6799.11	16.96 S 38.05 E	0.23	-38.12
6900.00	1.42	96.07	6899.08	17.24 S 40.83 E	0.36	-40.19
7000.00	1.19	102.74	6999.05	17.60 S 43.07 E	0.28	-41.97
7100.00	0.82	134.42	7099.03	18.33 S 44.60 E	0.65	-43.53
7200.00	0.75	146.30	7199.03	19.37 S 45.47 E	0.18	-44.90
7300.00	0.66	150.95	7299.02	20.42 S 46.11 E	0.11	-46.10
7400.00	0.49	163.81	7399.01	21.33 S 46.51 E	0.21	-47.05

All data is in feet unless otherwise stated.

Coordinates from slot #1 and TVD from rotary table.

Bottom hole distance is 30.58 on azimuth 100.30 degrees from wellhead.

Vertical section is from N 0.00 E 0.00 on azimuth 317.80 degrees.

Calculation uses the minimum curvature method.

Presented by Baker Hughes INTEQ

SURVEY LISTING Page 4

Your ref : gyro

Last revised : 18-Feb-98

THORNTON OPERATING CO.
 McCLELLAN FEDERAL NO. 1, slot #1
 non designated, CHAVES COUNTY, NEW MEXICO

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
7500.00	0.26	193.15	7499.01	21.97 S	0.29	-47.56
7600.00	0.22	209.93	7599.01	22.35 S	0.08	-47.75
7700.00	0.71	267.77	7699.01	22.54 S	0.62	-47.41
7800.00	0.65	280.34	7799.00	22.47 S	0.16	-46.56
7900.00	0.40	303.75	7899.00	22.17 S	0.32	-45.77
8000.00	0.35	325.18	7998.99	21.73 S	0.15	-45.13
8100.00	0.49	359.36	8098.99	21.05 S	0.28	-44.51
8200.00	0.49	5.29	8198.99	20.19 S	0.05	-43.90
8300.00	0.30	37.79	8298.98	19.56 S	0.29	-43.57
8400.00	0.18	359.36	8398.98	19.20 S	0.19	-43.40
8500.00	0.33	20.78	8498.98	18.77 S	0.18	-43.15
8600.00	0.55	357.63	8598.98	18.02 S	0.28	-42.66
8700.00	0.89	348.31	8698.97	16.78 S	0.36	-41.62
8800.00	1.07	356.93	8798.96	15.09 S	0.23	-40.22
8900.00	0.97	337.95	8898.94	13.37 S	0.35	-38.71
9000.00	0.97	319.64	8998.93	11.94 S	0.31	-37.06
9100.00	1.39	300.20	9098.91	10.69 S	0.57	-35.06
9200.00	1.26	291.26	9198.88	9.68 S	0.24	-32.92
9300.00	1.44	296.52	9298.85	8.72 S	0.22	-30.77
9400.00	1.30	292.50	9398.82	7.72 S	0.17	-28.57
9500.00	1.61	299.93	9498.79	6.59 S	0.36	-26.21
9565.00	1.94	307.32	9563.76	5.47 S	0.62	-24.26

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Calculation uses the minimum curvature method.

Presented by Baker Hughes INTEQ

THORNTON OPERATING CO.
MCCLLELLAN FEDERAL NO. 1

slot #1
non designated
CHAVES COUNTY, NEW MEXICO

S U R V E Y L I S T I N G

by
Baker Hughes INTEQ

Your ref : Sidetrack No. 1
Our ref : svy1065
License :

Date printed : 18-Feb-98
Date created : 18-Feb-98
Last revised : 18-Feb-98

Field is centred on 0.000,0.000,0.00000,+
Structure is centred on n33 30 0.000,w104 15 0

Slot location is n33 30 0.000,w104 15 0.000
Slot Grid coordinates are N 733057.909, E -56258.701
Slot local coordinates are 0.00 N 0.00 E

Projection type: lambert - Texas North Central (4202), Spheroid: Clarke - 1866

Reference North is True North

THORNTON OPERATING CO.

McCLELLAN FEDERAL NO. 1, slot #1

non designated, CHAVES COUNTY, NEW MEXICO

SURVEY LISTING

Page 1

Your ref : Sidetrack No. 1

Last revised : 18-Feb-98

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
9565.00	1.94	307.32	9563.76	5.47 S 30.08 E	0.62	-25.14
9610.00	12.90	305.80	9608.32	2.06 S 25.39 E	24.36	-19.41
9642.00	24.60	319.60	9638.58	5.13 N 18.15 E	38.86	-9.20
9673.00	37.10	322.10	9665.14	17.47 N 8.18 E	40.53	6.57
9705.00	49.20	319.30	9688.45	34.34 N 5.70 W	38.28	28.31
9737.00	59.40	315.50	9707.10	53.40 N 23.30 W	33.29	54.23
9769.00	70.60	310.50	9720.61	73.09 N 44.51 W	37.74	83.16
9800.00	76.90	311.70	9729.28	92.65 N 66.92 W	20.66	112.83
9831.00	78.70	307.80	9735.83	112.02 N 90.21 W	13.60	143.00
9862.00	77.70	307.60	9742.17	130.58 N 114.22 W	3.29	173.10
9893.00	75.80	308.10	9749.28	149.09 N 138.04 W	6.33	203.04
9924.00	74.70	308.50	9757.17	167.67 N 161.57 W	3.76	232.81
9971.00	74.70	308.50	9769.57	195.89 N 197.05 W	0.00	277.85

Projection to TD

All data is in feet unless otherwise stated.
Coordinates from slot #1 and TVD from rotary table.
Bottom hole distance is 277.85 on azimuth 314.83 degrees from wellhead.
Vertical section is from N 0.00 E 0.00 on azimuth 315.00 degrees.
Calculation uses the minimum curvature method.
Presented by Baker Hughes INTEQ

THORNTON OPERATING CO.
McCLELLAN FEDERAL NO. 1, slot #1
non designated, CHAVES COUNTY, NEW MEXICO

SURVEY LISTING Page 2
Your ref : Sidetrack No. 1
Last revised : 18-Feb-98

Comments in wellpath

MD	TVD	Rectangular Coords.	Comment
9971.00	9769.57	195.89 N 197.05 W	Projection to TD

Targets associated with this wellpath

Target name	Geographic Location	T.V.D.	Rectangular Coordinates	Revised
		9832.00	282.84N 282.84W	18-Dec-97

THORNTON OPERATING CO.
MCCLLELLAN FEDERAL NO. 1

slot #1
non designated
CHAVES COUNTY, NEW MEXICO

S U R V E Y L I S T I N G

by
Baker Hughes INTEQ

Your ref : Sidetrack No. 2
Our ref : svy1064
License :

Date printed : 18-Feb-98
Date created : 18-Feb-98
Last revised : 18-Feb-98

Field is centred on 0.000,0.000,0.00000,+
Structure is centred on n33 30 0.000,w104 15 0

Slot location is n33 30 0.000,w104 15 0.000
Slot Grid coordinates are N 733057.909, E -56258.701
Slot local coordinates are 0.00 N 0.00 E

Projection type: lambert - Texas North Central (4202), Spheroid: Clarke - 1866

Reference North is True North

THORNTON OPERATING CO.
 McCLELLAN FEDERAL NO. 1, slot #1
 non designated, CHAVES COUNTY, NEW MEXICO

SURVEY LISTING
 Your ref : Sidetrack No. 2
 Last revised : 18-Feb-98

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
9565.00	1.94	307.32	9563.76	5.47 S	0.62	-25.14
9610.00	12.90	305.80	9608.32	2.06 S	24.36	-19.41
9642.00	24.60	319.60	9638.58	5.13 N	38.86	-9.20
9673.00	37.10	322.10	9665.14	17.47 N	40.53	6.57
9705.00	49.20	319.30	9688.45	34.34 N	38.28	28.31
9737.00	59.40	315.50	9707.10	53.40 N	33.29	54.23
9769.00	68.20	310.50	9721.22	72.92 N	30.86	82.88
9800.00	63.10	310.40	9734.00	91.23 N	16.45	111.03
9832.00	64.40	310.40	9748.15	109.83 N	4.06	139.64
9864.00	68.50	310.90	9760.93	128.94 N	12.89	168.88
9896.00	68.30	312.30	9772.71	148.69 N	4.12	198.58
9928.00	67.00	313.60	9784.88	168.86 N	5.53	228.15
9960.00	67.60	313.00	9797.23	189.10 N	2.55	257.66
9991.00	67.90	313.30	9808.97	208.73 N	1.32	286.34
10024.00	68.00	310.70	9821.36	229.19 N	7.31	316.88
10060.00	64.00	310.70	9836.00	250.63 N	11.11	349.67

Projection to TD

All data is in feet unless otherwise stated.
 Coordinates from slot #1 and TVD from rotary table.
 Bottom hole distance is 349.70 on azimuth 315.78 degrees from wellhead.
 Vertical section is from N 0.00 E 0.00 on azimuth 315.00 degrees.
 Calculation uses the minimum curvature method.
 Presented by Baker Hughes INTEQ

THORNTON OPERATING CO.
McCLELLAN FEDERAL NO. 1, slot #1
non designated, CHAVES COUNTY, NEW MEXICO

SURVEY LISTING Page 2
Your ref : Sidetrack No. 2
Last revised : 18-Feb-98

Comments in wellpath
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MD	TVD	Rectangular Coords.	Comment
10060.00	9836.00	250.63 N 243.87 W	Projection to TD

Targets associated with this wellpath
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Target name	Geographic Location	T.V.D.	Rectangular Coordinates	Revised
		9832.00	282.84N 282.84W	18-Dec-97