

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

SUBMIT IN DUPLICATE

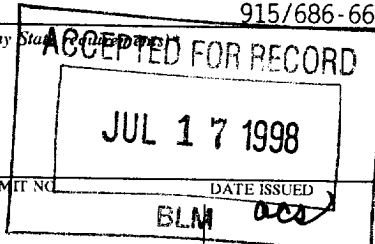
(See other in-
structions on
reverse side)

FORM APPROVED
OMB NO. 1004-0137
Expires: February 28, 1995

WELL COMPLETION OR RECOMPLETION REPORT

NM Oil Cons. Division
P.O. Box 1980
Hobbs, NM 88241

1a. TYPE OF WELL: OIL WELL ☐ GAS WELL ☒ DRY ☐ Other ☐		5. LEASE DESIGNATION AND SERIAL NO. NM-0550543	
1b. TYPE OF COMPLETION: NEW WELL ☐ WORK OVER ☐ DEEP-EN ☐ PLUG BACK ☐ DIFF. RESVR. ☐ Other ☒ Re-entry		6. IF INDIAN, ALLOTTEE OR TRIBE NAME	
2. NAME OF OPERATOR Santa Fe Energy Resources, Inc.		7. UNIT AGREEMENT NAME	
3. ADDRESS AND TELEPHONE NO. 550 W. Texas, Suite 1330, Midland, TX 79701 915/686-6612		8. FARM OR LEASE NAME, WELL NO. Topaz "19" Fed. Com. 1	
4. LOCATION OF WELL (Report location clearly and in accordance with any State Regulations) At surface (N), 660' FSL & 2083' FWL At top prod. interval reported below At total depth (M), 1074' FSL & 768' FWL 769		9. API WELL NO. 30-025-22564	
10. FIELD AND POOL, OR WILDCAT Und. Quail Ridge (Morrow)		11. SEC., T., R., M., OR BLK. AND SURVEY OR AREA Sec. 19, T-20S, R-34E	
12. COUNTY OR PARISH Lea		13. STATE NM	
15. DATE SPUDDED 11/21/97	16. DATE T.D. REACHED 1/5/98	17. DATE COMPL. (Ready to prod.) 3/10/98	18. ELEVATIONS (DF, RKB, RT, GR, ETC.)* 3662' GR
20. TOTAL DEPTH, MD & TVD 14,140'	21. PLUG, BACK T.D., MD & TVD 13,796'	22. IF MULTIPLE COMPL., HOW MANY* N/A	23. INTERVALS DRILLED BY All
24. PRODUCING INTERVAL(S), OF THIS COMPLETION - TOP, BOTTOM, NAME (MD AND TVD)* 13,686' - 13,763 (Morrow)			25. WAS DIRECTIONAL SURVEY MADE Yes
26. TYPE ELECTRIC AND OTHER LOGS RUN GR, CNL, FDC, CAL & DLL			27. WAS WELL CORED No



28. CASING RECORD (Report all strings set in well)					
CASING SIZE/GRADE	WEIGHT, LB./FT.	DEPTH SET (MD)	HOLE SIZE	TOP OF CEMENT, CEMENTING RECORD	AMOUNT PULLED
20" H-40	94.0#	177'	26"	450 sx circ. (csg in place)	N/A
13-5/8" 48,	54.4, 61, 68#	3198'	17-1/2"	2450 sx circ. (csg in place)	N/A
9-5/8" J-55 & N80	36 & 40#	5700'	12-1/4"	1675 sx circ. (csg in place)	N/A
5-1/2" L80, K55, N80, C75		13,828'	8-3/4"	2 stages w/940 sx Poz H	N/A 17 & 20#
29. LINER RECORD					
SIZE	TOP (MD)	BOTTOM (MD)	SACKS CEMENT*	SCREEN (MD)	
N/A					
30. TUBING RECORD					
SIZE	DEPTH SET (MD)	PACKER SET (MD)			
2-3/8"	13,533'	13,573'			
31. PERFORATION RECORD (Interval, size and number)					
13,686' - 94' (36 holes) w/ TCP guns					
13,725' - 28' (16 holes)					
13,732' - 37' (24 holes)					
13,748' - 63' (64 holes)					
32. ACID, SHOT, FRACTURE, CEMENT SQUEEZE, ETC.					
DEPTH INTERVAL (MD)			AMOUNT AND KIND OF MATERIAL USED		
13,686' - 13,763'			2000 gals 7-1/2% Morrow acid & 70 ball sealers. 1850 gals 3% & 1450 gals 3% w/140 ball sealers		

33.* PRODUCTION							
DATE FIRST PRODUCTION 5/22/98		PRODUCTION METHOD (Flowing, gas lift, pumping - size and type of pump) Flowing				WELL STATUS (Producing or shut-in) Producing	
DATE OF TEST 6/23/98	HOURS TESTED 4 hrs	CHOKE SIZE varied	PROD'N. FOR TEST PERIOD →	OIL - BBL. 0.16	GAS - MCF. 51	WATER - BBL. 0	GAS - OIL RATIO 33.526
FLOW. TUBING PRESS. 2028 - 669	CASING PRESSURE pkr.	CALCULATED 24-HOUR RATE →	OIL - BBL. 4	GAS - MCF. CAOF = 373	WATER - BBL. 0	OIL GRAVITY - API (CORR.) 55 deg.	
34. DISPOSITION OF GAS (Sold, used for fuel, vented, etc.) Sold - GPM connected 5/22/98						TEST WITNESSED BY	

35. LIST OF ATTACHMENTS Directional Surveys, C-122 + attach., C-104, Logs	
36. I hereby certify that the foregoing and attached information is complete and correct as determined from all available records	
SIGNED <u>Jimmy McCullough</u>	TITLE <u>Sr. Production Clerk</u>
DATE <u>7/9/98</u>	

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

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):

FORMATION	TOP	BOTTOM	DESCRIPTION, CONTENTS, ETC.	GEOLOGIC MARKERS		
				NAME	MEAS. DEPTH	TRUE VERT. DEPTH
Delaware	8150	8260'	Oil, Gas, & Water	Delaware	5610	5610
Middle Morrow	13,686	13,773'	Gas	Bone Spring	8584	8584
				Wolfcamp	11,510	11,462
				Strawn	12,611	12,466
				Atoka Clastic	12,880	12,698
				Morrow Carb.	13,130	12,925
				Morrow Clastics	13,400	13,175

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NEW MEXICO OIL CONSERVATION COMMISSION
MULTIPOINT AND ONE POINT BACK PRESSURE TEST FOR GAS WELL

Form C-122
Revised 9-1-65

Type Test ☐ Initial ☐ Annual ☐ Special						Test Date 6-23-98			
Company Santa Fe Energy				Connection					
Pool Ouail Ridge				Formation Morrow				Unit	
Completion Date		Total Depth		Plug Back TD 13796		Elevation		Farm or Lease Name Topaz '19' Fed	
Cas. Size 5.5	Wt. 17 #/ft	d	Set At	Perforations: From 13686 To 13763				Well No. 1	
Trq. Size 2.375	Wt. 4.6 #/ft	d	Set At 13565	Perforations: From To				Unit Sec. Twp. Rge.	
Type Well - Single - Bradenhead - G.C. or G.O. Multiple Single						Packer Set At 13565		County Lea	
Producing Thru Tubing		Reservoir Temp. °F 181 @ 13565		Mean Annual Temp. °F 60		Baro. Press. - P 13.2		State NM	
L 13686	H 13686	Cg 0.745	% CO ₂ 0.65	% N ₂ 0.504	% H ₂ S 0.0	Prover	Meter Run 3.069	Taps Flange	

FLOW DATA						TUBING DATA		CASING DATA		Duration of Flow	
NO.	Prover Line Size	X	Orifice Size	Press. p.s.i.g.	Diff. h _w	Temp. °F	Press. p.s.i.g.	Temp. °F	Press. p.s.i.g.		Temp. °F
SI	3.069 x 1.25						3582	78			24
1.	3.069 x 1.25			19	26.7	121	2028	85			3.25
2.	3.069 x 1.25			18	53.7	123	1520	99			4.00
3.	3.069 x 1.25			18	55	109	935	100			3.25
4.	3.069 x 1.25			16	38.1	84	669	86			3.25
5.											

RATE OF FLOW CALCULATIONS							
NO.	Coefficient (24 Hour)	$\sqrt{h_w P_m}$	Pressure P _m	Flow Temp. Factor Ft.	Gravity Factor Fg	Super Compress. Factor, F _{pv}	Rate of Flow Q, Mcfd
1	7.577	29.23	32.0	0.9457	1.1586	1.0058	244
2	7.577	40.93	31.2	0.9445	1.1586	1.0057	341
3	7.577	41.22	30.9	0.9563	1.1586	1.0062	348
4	7.577	33.18	28.9	0.9773	1.1586	1.0072	287
5							

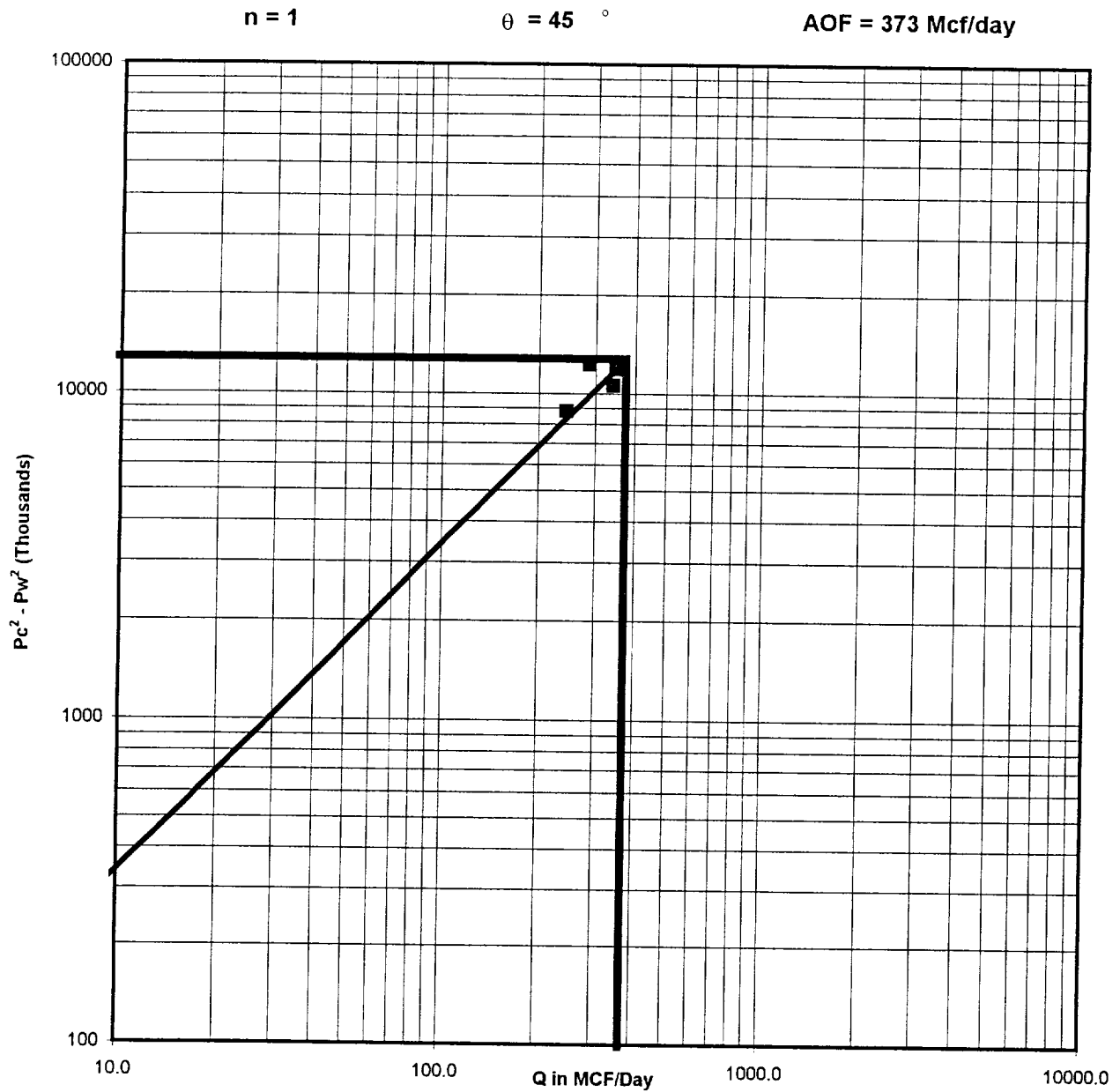
NO.	P _r	Temp. °R	T _r	Z	Gas Liquid Hydrocarbon Ratio	A.P.I. Gravity of Liquid Hydrocarbons	Specific Gravity Separator Gas	Specific Gravity Flowing Fluid	Critical Pressure	Critical Temperature
1	0.05	581	1.45	0.989	33.526	55	0.745	XXXXXXX	667	401
2	0.05	583	1.45	0.989				XXXXXXX	663	425
3	0.05	569	1.42	0.988						
4	0.04	544	1.36	0.986						
5										

NO.	P _i ²	P _w	P _w ²	P _c ² - P _w ²	(1) $\frac{P_c^2}{P_c^2 - P_w^2} =$	(2) $\left[\frac{P_c^2}{P_c^2 - P_w^2} \right]^n =$
1	3563.2	12697			1.0707	1.0707
2		1978	3911	8785		
3		1454	2113	10583		
4		915	838	11859		
5		671	451	12246		

Absolute Open Flow 373 Mcfd @ 15.025				Angle of Slope @ 45		Slope, n 1.0	
Remarks:							
Approved By Commission:		Conducted By: ARC Pressure Data		Calculated By: Rod Dodson		Checked By:	

GAS WELL BACK-PRESSURE CURVE

SANTA FE ENERGY RESOURCES, INC.
TOPAZ '19' FED #1
LEA COUNTY, NM
6/23/98



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NAVY DEPT. OFFICE

Lean Directional/Horizontal

Operator: **SANTAFE**
Well Name: **TOPAZ 19 FEED COM #1**
Field:
Location: **LEA COUNTY, NM.**

4:21 PM

1/22/98

Minimum Curvature Calculation

Target Latitude: 440.0
Target departure: -1423.0
Target Top TVD: 14,000
Target Line TVD: 14,000
Target Bottom TVD: 14,000
Terminal Angle: 24.00
Dip angle:
Survey spacing: 35
Proposed Direction: 287.18

No	CL	MD	Inc.	True Azimuth	Vertical Depth	North + South	East + West	Vertical Section	DLS/100	Target Line TVD	Above + Below Line	Right + Left of line	Direction Needed	Temp	Comment
0		10.000	0.22	2.33	8988.70	-21.68	-13.11	6.12	0.00	14,000.00	4001.30	-5.94	288.13		
1	82	10.082	2.20	274.20	10080.68	-21.41	-14.67	7.70	2.69	14,000.00	3919.32	-7.35	288.14		
2	94	10.176	3.00	283.90	10174.58	-20.68	-18.86	11.91	0.97	14,000.00	3825.42	-10.78	288.16		
3	95	10.271	3.40	289.60	10269.43	-19.14	-23.93	17.21	0.54	14,000.00	3730.57	-14.24	288.17		
4	118	10.389	6.60	297.30	10386.97	-14.86	-33.25	27.38	2.76	14,000.00	3613.03	-18.05	288.12		
5	93	10.482	8.20	290.00	10479.20	-10.14	-44.24	39.27	1.99	14,000.00	3520.80	-19.69	288.08		
6	93	10.575	9.00	287.20	10571.15	-5.72	-57.42	53.17	0.97	14,000.00	3428.85	-20.66	288.08		
7	124	10.699	11.20	285.80	10693.22	0.43	-78.27	74.91	1.79	14,000.00	3308.78	-21.73	288.10		
8	94	10.793	13.40	286.80	10785.06	6.06	-97.49	94.93	2.35	14,000.00	3214.94	-22.35	288.13		
9	95	10.888	14.90	289.10	10877.17	13.24	-119.57	118.14	1.69	14,000.00	3122.83	-22.26	288.13		
10	94	10.982	16.50	292.00	10967.66	22.20	-143.37	143.53	1.90	14,000.00	3032.34	-20.91	288.08		
11	93	11.075	18.50	290.80	11056.36	32.39	-169.41	171.41	2.19	14,000.00	2943.64	-18.98	288.01		
12	94	11.169	20.40	290.60	11144.99	43.45	-198.69	202.65	2.02	14,000.00	2855.01	-17.12	287.95		
13	95	11.264	19.80	294.20	11234.20	55.87	-228.86	235.15	1.45	14,000.00	2765.80	-14.20	287.83		
14	94	11.358	21.50	293.80	11322.16	69.35	-259.15	268.07	1.81	14,000.00	2677.84	-10.28	287.67		
15	94	11.452	21.50	291.80	11409.62	82.70	-290.90	302.35	0.78	14,000.00	2590.38	-6.92	287.52		
16	93	11.545	23.50	288.60	11495.54	94.94	-324.30	337.88	2.52	14,000.00	2504.46	-5.08	287.44		
17	94	11.639	25.10	286.20	11581.21	106.48	-361.21	376.55	2.00	14,000.00	2418.79	-4.96	287.44		
18	149	11.788	23.00	284.00	11717.27	122.34	-419.81	437.22	1.53	14,000.00	2282.73	-7.12	287.57		
19	102	11.890	22.60	285.50	11811.30	132.40	-458.04	476.71	0.69	14,000.00	2188.70	-8.80	287.68		
20	93	11.983	24.40	287.00	11896.59	142.80	-493.63	513.78	2.04	14,000.00	2103.41	-9.38	287.73		
21	92	12.075	26.30	288.60	11979.73	154.85	-531.12	553.16	2.20	14,000.00	2020.27	-8.93	287.73		
22	93	12.168	26.40	288.40	12063.06	167.95	-570.27	594.43	0.14	14,000.00	1936.94	-7.98	287.68		
23	93	12.261	26.00	289.20	12146.51	181.18	-609.14	635.47	0.57	14,000.00	1853.49	-6.83	287.64		
24	94	12.355	26.30	288.10	12230.89	194.43	-648.39	676.89	0.61	14,000.00	1769.11	-5.77	287.59		
25	94	12.449	26.20	289.30	12315.20	207.75	-687.77	718.45	0.57	14,000.00	1684.80	-4.66	287.53		

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Lean Directional/Horizontal

Operator: **SANTA FE**
Well Name: **TOPAZ 19 FED COM #1**
Field:
Location: **LEA COUNTY, NM.**

4:21 PM

1/22/98

Target Latitude: 440.0
Target departure: -1423.0
Target Top TVD: 14,000
Target Line TVD: 14,000
Target Bottom TVD: 14,000
Terminal Angle: 24.00
Dip angle:
Survey spacing: 35
Proposed Direction: **287.18**

Minimum Curvature Calculation

No.	CL	MD	Inc.	True Azimuth	True Vertical Depth	North + South -	East + West -	Vertical Section	DLS/ 100	Target Line TVD	Above + Below - Line	Right + Left - of line	Direction Needed	Temp.	Comment
26	94	12,543	27.50	288.40	12399.06	221.46	-727.95	760.88	1.45	14,000.00	1600.94	-3.43	287.45		
27	93	12,636	26.80	289.00	12481.81	235.07	-768.14	803.30	0.81	14,000.00	1518.19	-2.31	287.38		
28	125	12,761	28.40	286.70	12592.59	252.79	-823.27	861.20	1.54	14,000.00	1407.41	-1.67	287.34		
29	85	12,846	28.75	290.00	12667.24	265.59	-861.84	901.83	1.90	14,000.00	1332.76	-0.83	287.27		
30	94	12,940	27.25	291.00	12750.23	281.03	-903.18	845.89	1.67	14,000.00	1249.77	1.72	287.00		
31	89	13,029	20.00	295.00	12831.72	294.79	-936.04	981.35	8.34	14,000.00	1168.28	5.15	286.60		
32	101	13,130	20.40	291.00	12926.52	308.39	-968.13	1016.02	1.42	14,000.00	1073.48	8.67	286.14		
33	95	13,225	22.20	288.00	13015.03	319.87	-1000.66	1050.49	2.21	14,000.00	984.87	10.03	285.88		
34	94	13,319	23.30	288.90	13101.71	331.38	-1035.14	1086.83	1.23	14,000.00	898.29	10.85	285.64		
35	92	13,411	25.00	285.80	13185.66	342.57	-1071.06	1124.46	2.30	14,000.00	814.34	10.92	285.47		
36	95	13,506	24.20	284.90	13272.04	353.05	-1109.19	1163.98	0.93	14,000.00	727.96	9.67	285.49		
37	94	13,600	25.60	284.60	13357.30	363.12	-1147.47	1203.52	1.50	14,000.00	642.70	7.98	285.59		
38	113	13,713	25.00	285.00	13459.46	375.45	-1194.16	1251.77	0.55	14,000.00	540.54	5.98	285.75		
39	89	13,802	24.00	286.00	13540.44	385.31	-1229.72	1288.66	1.22	14,000.00	459.56	4.89	285.80		
40	90	13,892	22.25	288.00	13623.21	395.62	-1263.52	1324.00	2.13	14,000.00	376.79	4.76	285.55		
42	153	14,045	19.50	291.00	13766.16	413.73	-1314.92	1378.46	1.93	14,000.00	233.84	6.87	283.66		

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Gyrodata Incorporated
P.O. Box 79389
Houston, Texas 77279

713/461-3146
Fax: 713/461-0920

SURVEY REPORT
SANTA FE ENERGY
TOPAZ 19, WELL FEDERAL COM, #2
LEE COUNTY, NEW MEXICO
NORTON #14
H1297GME795

DECEMBER 3, 1997

COPY

Serving the Worldwide Energy Industry with Precision Survey Instrumentation

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713/461-3146
Fax: 713/461-0920

December 19, 1997

Mr. Mike Burton
Santa Fe Energy
550 West Texas
Midland, Texas 79701

Re: **Topaz 19, Well Federal Com, #2**
Lee County, New Mexico

Enclosed, please find one (1) original, four (4) copies, and one (1) disk of the completed survey of Well #2.

We would like to take this opportunity to thank you for using Gyrodata, and we look forward to serving you in the future.

Sincerely,

A handwritten signature in dark ink, appearing to read "Jack May", written over a horizontal line.

Jack May
Assistant Operations Manager

JM/lr

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A G Y r o d a t a D i r e c t i o n a l S u r v e y

for

SANTA FE ENERGY

WELL: TOPAZ #19, FEDERAL COM., WELL #2, 4.5" DRILL PIPE

Location: NORTON #14, LEA CO., NEW MEXICO

Job Number: H1297GME795

Run Date: 3-Dec-97 15:56:28

Surveyor: JEFF CLARK

Calculation Method: MINIMUM CURVATURE

Survey Latitude: 32.570000 deg. N

Azimuth Correction:

Gyro: Bearings are Relative to True North

Vertical Section Calculated from Well Head Location

Closure Calculated from Well Head Location

Horizontal Coordinates Calculated from Local Horizontal Reference

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Page 1

SANTA FE ENERGY

WELL: TOPAZ #19, FEDERAL COM. WELL #2 4 5" DRILL

Location: NORTON #14, LEA CO., NEW MEXICO

Job Number: H1297GME795

[illegible]

0.0	0.00	0.00	N	0	0	E	0.0	0.00 N	0.00 E
10000	0.00	0.00	N	0	0	E	0.0	0.00 N	0.00 E

0 -10000 FT. RATE-GYROSCOPIC MULTISHOT SURVEY RUN INSIDE DRILL PIPE
ALL MEASURED DEPTHS AND COORDINATES ARE BASED ON THE

----- COORDINATES ARE REFERENCED TO NORTON #14 R.K.B. -----

100.0	.25	307.45	N 52 33 W	.25	100.0	.2	307.4	.13 N	.17 W
200.0	.27	41.21	N 41 13 E	.38	200.0	.5	336.3	.44 N	.19 W
300.0	.32	197.55	S 17 33 W	.57	300.0	.4	340.9	.36 N	.12 W
400.0	.33	149.65	S 30 21 E	.26	400.0	.2	201.9	.15 S	.06 W
500.0	.50	71.61	N 71 37 E	.54	500.0	.6	117.9	.26 S	.50 E
600.0	.53	64.72	N 64 43 E	.07	600.0	1.3	86.8	.07 N	1.33 E
700.0	.51	32.79	N 32 47 E	.29	700.0	2.1	72.1	.65 N	1.99 E
800.0	.39	12.39	N 12 23 E	.20	800.0	2.7	59.7	1.35 N	2.31 E
900.0	.32	209.73	S 29 44 W	.69	900.0	2.7	57.3	1.44 N	2.24 E
1000.0	.41	140.74	S 39 16 E	.42	1000.0	2.5	68.5	.92 N	2.33 E
1100.0	.35	110.42	S 69 35 E	.21	1100.0	2.9	79.3	.54 N	2.84 E
1200.0	.04	355.52	N 4 29 W	.37	1200.0	3.2	81.6	.46 N	3.13 E
1300.0	.08	286.91	N 73 6 W	.07	1300.0	3.1	80.4	.52 N	3.06 E
1400.0	.47	243.08	S 63 5 W	.42	1400.0	2.7	82.4	.35 N	2.63 E
1500.0	.48	241.00	S 61 0 W	.02	1500.0	1.9	91.0	.03 S	1.90 E
1600.0	.50	233.56	S 53 33 W	.07	1600.0	1.3	112.7	.50 S	1.19 E
1700.0	.27	196.38	S 16 23 W	.32	1700.0	1.2	142.0	.98 S	.77 E
1800.0	.38	131.02	S 48 59 E	.36	1800.0	1.7	146.4	1.43 S	.95 E
1900.0	.45	106.42	S 73 35 E	.19	1900.0	2.4	138.2	1.76 S	1.57 E
2000.0	.46	96.20	S 83 48 E	.08	2000.0	3.0	129.2	1.91 S	2.35 E

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A Gyrodata Directional Survey

Page 2

SANTA FE ENERGY

WELL: TOPAZ #19, FEDERAL COM., WELL #2, 4.5" DRILL PIPE
Location: NORTON #14, LEA CO., NEW MEXICO
Job Number: H1297GME795

MEASURED I N C L AZIMUTH BORE HOLE				DOGLEG		CLOSURE		H O R I Z O N T A L	
DEPTH	deg.	deg.	BEARING	SEVERITY	VERTICAL	DIST.	AZIMUTH	C O O R D I N A T E S	
feet			deg. min.	deg./ 100 ft.	DEPTH feet	feet	deg.	feet	
2100.0	.53	52.83	N 52 50 E	.37	2100.0	3.5	118.3	1.67 S	3.11 E
2200.0	.44	78.85	N 78 51 E	.24	2200.0	4.1	108.9	1.32 S	3.85 E
2300.0	.49	73.45	N 73 27 E	.07	2300.0	4.8	103.6	1.13 S	4.64 E
2400.0	.54	72.54	N 72 32 E	.05	2399.9	5.6	98.9	.86 S	5.49 E
2500.0	.67	67.09	N 67 5 E	.15	2499.9	6.5	94.4	.49 S	6.48 E
2600.0	.78	65.16	N 65 10 E	.11	2599.9	7.6	89.9	.02 N	7.64 E
2700.0	.98	62.61	N 62 37 E	.20	2699.9	9.0	85.6	.70 N	9.01 E
2800.0	1.58	75.18	N 75 11 E	.66	2799.9	11.2	82.6	1.44 N	11.11 E
2900.0	1.70	66.99	N 66 59 E	.26	2899.9	14.0	80.2	2.38 N	13.80 E
3000.0	1.67	66.99	N 67 0 E	.03	2999.8	16.9	77.9	3.53 N	16.51 E
3100.0	1.73	67.08	N 67 5 E	.06	3099.8	19.8	76.3	4.69 N	19.25 E
3200.0	1.50	68.84	N 68 51 E	.24	3199.7	22.6	75.3	5.75 N	21.86 E
3300.0	1.32	62.52	N 62 31 E	.24	3299.7	25.0	74.4	6.75 N	24.09 E
3400.0	1.23	72.52	N 72 31 E	.24	3399.7	27.2	73.8	7.60 N	26.14 E
3500.0	1.06	72.43	N 72 26 E	.17	3499.7	29.2	73.7	8.20 N	28.05 E
3600.0	.87	83.86	N 83 52 E	.27	3599.6	30.9	73.9	8.57 N	29.69 E
3700.0	.60	97.26	S 82 45 E	.32	3699.6	32.1	74.5	8.58 N	30.96 E
3800.0	.04	137.72	S 42 17 E	.57	3799.6	32.6	74.9	8.49 N	31.50 E
3900.0	.37	122.78	S 57 13 E	.32	3899.6	32.9	75.4	8.29 N	31.80 E
4000.0	.53	153.68	S 26 19 E	.29	3999.6	33.2	76.6	7.70 N	32.27 E
4100.0	.56	165.74	S 14 16 E	.12	4099.6	33.3	78.2	6.81 N	32.59 E
4200.0	.55	166.18	S 13 49 E	.02	4199.6	33.4	79.9	5.87 N	32.83 E
4300.0	.50	115.33	S 64 40 E	.45	4299.6	33.7	81.1	5.22 N	33.34 E
4400.0	.51	45.25	N 45 15 E	.58	4399.6	34.5	81.1	5.34 N	34.04 E
4500.0	.65	22.46	N 22 28 E	.27	4499.6	35.1	79.9	6.18 N	34.58 E

A G Y r o d a t a D i r e c t i o n a l S u r v e y

SANTA FE ENERGY

WELL: TOPAZ #19, FEDERAL COM., WELL #2, 4.5" DRILL PIPE

Location: NORTON #14, LEA CO., NEW MEXICO

Job Number: H1297GME795

MEASURED I N C L A Z I M U T H B O R E H O L E				D O G L E G		V E R T I C A L		C L O S U R E		H O R I Z O N T A L	
DEPTH	deg.	deg.	deg.	BEARING	SEVERITY	DEPTH	DIST.	AZIMUTH	C O O R D I N A T E S	feet	feet
feet				deg. min.	deg./	feet	feet	deg.			
					100 ft.						
4600.0	.99	350.64	N 9 21 W	.55		4599.6	35.5	77.7	7.55 N	34.65 E	
4700.0	.96	349.45	N 10 33 W	.03		4699.6	35.6	75.0	9.22 N	34.36 E	
4800.0	1.14	339.25	N 20 45 W	.26		4799.6	35.6	72.0	10.98 N	33.85 E	
4900.0	.94	311.36	N 48 39 W	.54		4899.5	35.2	69.3	12.46 N	32.88 E	
5000.0	.78	305.21	N 54 47 W	.19		4999.5	34.4	67.1	13.39 N	31.71 E	
5100.0	.79	306.89	N 53 7 W	.03		5099.5	33.7	65.1	14.20 N	30.60 E	
5200.0	.71	318.35	N 41 39 W	.17		5199.5	33.3	63.0	15.07 N	29.64 E	
5300.0	.58	269.69	S 89 41 W	.54		5299.5	32.7	61.6	15.53 N	28.72 E	
5400.0	.86	313.78	N 46 13 W	.60		5399.5	32.0	59.9	16.05 N	27.67 E	
5500.0	.76	296.85	N 63 9 W	.26		5499.5	31.4	57.5	16.87 N	26.53 E	
5600.0	.41	323.94	N 36 3 W	.44		5599.5	31.1	55.8	17.46 N	25.73 E	
5700.0	.78	292.70	N 67 18 W	.48		5699.5	30.7	54.1	18.01 N	24.89 E	
5800.0	.89	280.43	N 79 34 W	.21		5799.5	29.8	51.9	18.42 N	23.49 E	
5900.0	.63	282.39	N 77 36 W	.26		5899.5	29.0	49.9	18.67 N	22.19 E	
6000.0	.64	281.04	N 78 58 W	.02		5999.5	28.3	48.2	18.90 N	21.11 E	
6100.0	.81	264.60	S 84 36 W	.27		6099.5	27.4	46.4	18.94 N	19.86 E	
6200.0	.70	260.39	S 80 24 W	.13		6199.4	26.4	44.7	18.77 N	18.55 E	
6300.0	.71	269.74	S 89 44 W	.11		6299.4	25.5	42.9	18.67 N	17.33 E	
6400.0	.61	271.16	N 88 50 W	.09		6399.4	24.7	40.9	18.68 N	16.18 E	
6500.0	.49	274.80	N 85 12 W	.13		6499.4	24.1	39.1	18.72 N	15.22 E	
6600.0	.76	250.19	S 70 11 W	.37		6599.4	23.3	37.4	18.53 N	14.17 E	
6700.0	.71	239.27	S 59 16 W	.15		6699.4	22.2	35.9	17.99 N	13.01 E	
6800.0	.69	254.71	S 74 42 W	.19		6799.4	21.2	34.2	17.52 N	11.91 E	
6900.0	1.12	231.25	S 51 15 W	.56		6899.4	19.8	32.2	16.75 N	10.57 E	
7000.0	.95	236.40	S 56 24 W	.19		6999.4	18.1	30.2	15.68 N	9.11 E	

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SANTA FE ENERGY

WELL: TOPAZ #19, FEDERAL COM., WELL #2, 4.5" DRILL PIPE

Location: NORTON #14, LEA CO., NEW MEXICO

Job Number: H1297GME795

MEASURED I N C L A Z I M U T H B O R E H O L E				D O G L E G		V E R T I C A L		C L O S U R E		H O R I Z O N T A L	
DEPTH	deg.	deg.	deg.	BEARING	SEVERITY	DEPTH	DIST.	AZIMUTH	COORDINATES	COORDINATES	COORDINATES
feet				deg. min.	deg./100 ft.	feet	feet	deg.			feet
7100.0	.98	232.21	S 52 13 W		.08	7099.4	16.6	27.8	14.70 N	7.75 E	
7200.0	1.12	225.26	S 45 16 W		.19	7199.3	14.9	25.3	13.49 N	6.38 E	
7300.0	1.18	223.69	S 43 42 W		.07	7299.3	13.0	22.4	12.06 N	4.97 E	
7400.0	1.41	200.57	S 20 34 W		.56	7399.3	10.9	20.7	10.16 N	3.83 E	
7500.0	1.46	215.26	S 35 16 W		.37	7499.3	8.4	18.5	7.97 N	2.66 E	
7600.0	1.41	203.18	S 23 11 W		.31	7599.2	6.0	14.0	5.80 N	1.44 E	
7700.0	1.44	216.90	S 36 54 W		.34	7699.2	3.7	3.2	3.66 N	.20 E	
7800.0	1.50	215.96	S 35 58 W		.06	7799.2	2.1	320.6	1.60 N	1.32 W	
7900.0	1.48	219.40	S 39 24 W		.09	7899.1	2.9	261.1	.45 S	2.90 W	
8000.0	1.66	211.42	S 31 25 W		.29	7999.1	5.2	239.0	2.69 S	4.48 W	
8100.0	1.70	214.79	S 34 48 W		.11	8099.1	8.0	229.8	5.14 S	6.08 W	
8200.0	1.58	208.70	S 28 42 W		.21	8199.0	10.7	225.1	7.57 S	7.59 W	
8300.0	1.46	205.73	S 25 44 W		.14	8299.0	13.3	221.6	9.93 S	8.80 W	
8400.0	1.36	207.20	S 27 12 W		.11	8399.0	15.7	219.2	12.13 S	9.90 W	
8500.0	1.34	205.22	S 25 13 W		.05	8498.9	18.0	217.5	14.24 S	10.94 W	
8600.0	1.38	220.28	S 40 17 W		.36	8598.9	20.3	217.0	16.22 S	12.21 W	
8700.0	1.41	218.10	S 38 6 W		.07	8698.9	22.7	217.2	18.11 S	13.75 W	
8800.0	1.12	223.62	S 43 37 W		.32	8798.8	24.9	217.5	19.78 S	15.19 W	
8900.0	.86	215.18	S 35 11 W		.29	8898.8	26.7	217.7	21.11 S	16.29 W	
9000.0	1.09	205.44	S 25 27 W		.28	8998.8	28.3	217.2	22.58 S	17.13 W	
9100.0	1.03	217.43	S 37 26 W		.23	9098.8	30.2	216.8	24.14 S	18.09 W	
9200.0	.70	240.87	S 60 52 W		.48	9198.8	31.6	217.3	25.15 S	19.16 W	
9300.0	.36	316.02	N 43 59 W		.70	9298.8	32.1	218.3	25.22 S	19.91 W	
9400.0	.60	36.88	N 36 53 E		.65	9398.8	31.6	218.9	24.58 S	19.82 W	
9500.0	.99	52.03	N 52 2 E		.45	9498.8	30.2	218.5	23.63 S	18.82 W	

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SANTA FE ENERGY

WELL: TOPAZ #19, FEDERAL COM., WELL #2, 4.5" DRILL PIPE
 Location: NORTON #14, LEA CO., NEW MEXICO
 Job Number: H1297GME795

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MEASURED I N C L AZIMUTH BORE HOLE									
DEPTH	deg.	deg.	deg.	BEARING	DOGLEG SEVERITY	VERTICAL DEPTH	CLOSURE		H O R I Z O N T A L
feet				deg. min.	deg./ 100 ft.	feet	DIST. feet	AZIMUTH deg.	C O O R D I N A T E S
9600.0	1.04	67.73		N 67 44 E	.28	9598.8	28.6	217.2	22.75 S
9700.0	.48	71.28		N 71 17 E	.57	9698.7	27.5	215.8	22.27 S
9800.0	.64	96.35		S 83 39 E	.29	9798.7	26.9	214.2	22.20 S
9900.0	.85	74.70		N 74 42 E	.35	9898.7	26.0	212.1	22.06 S
10000.0	.22	2.33		N 2 20 E	.81	9998.7	25.3	211.2	21.68 S
									17.29 W
									16.05 W
									15.10 W
									13.84 W
									13.11 W

Final Station Closure: Distance: 25.33 ft Az: 211.17 deg.

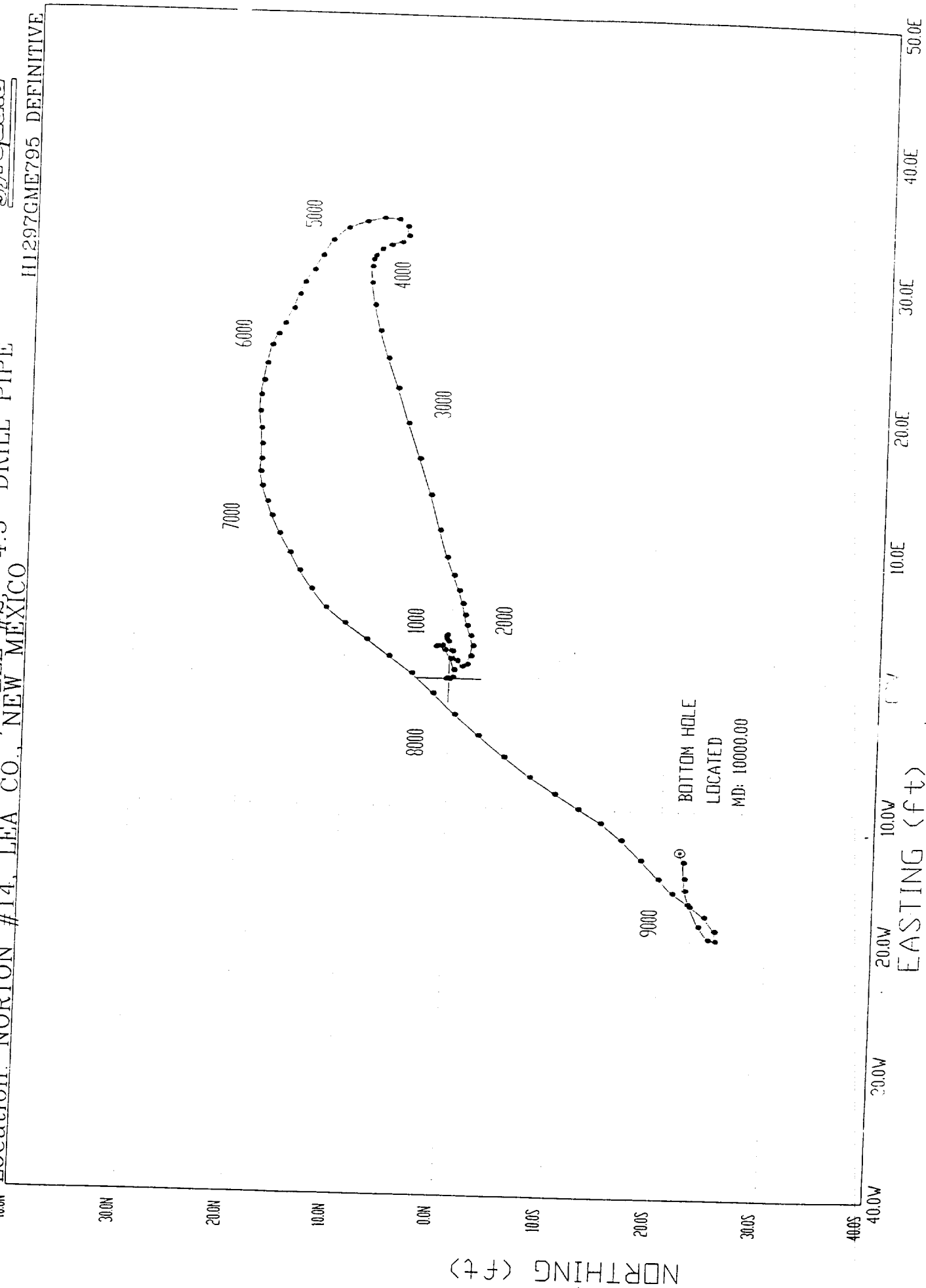
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1998 JUL 10 A 10: 33
FEDERAL BUREAU OF INVESTIGATION
U.S. DEPARTMENT OF JUSTICE

SANTA FE ENERGY
WELL: TOPAZ #19

FEDERAL COM., WELL #2, 4.5" DRILL PIPE
Location: NORTON #14, LEA CO., NEW MEXICO

gyrodata

H1297GME795 DEFINITIVE



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ROSWELL OFFICE

SANTA FE ENERGY
WELL: TOPAZ #19
Location: NORTON #14, LEA CO., NEW MEXICO

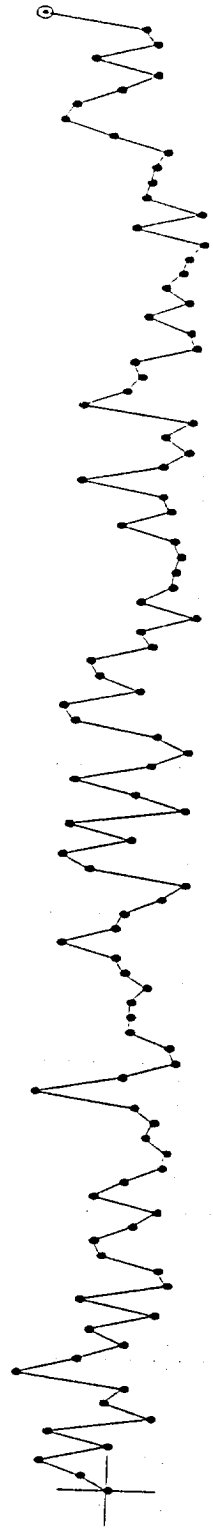
SYNOPSIS

H1297GME795 DEFINITIVE

DOGLEG SEVERITY (deg/100ft)

30
20
10
00
-10
-20
-30

BOTTOM HOLE
LOCATED
MD: 10000.00



0.0 1000.0 2000.0 3000.0 4000.0 5000.0 6000.0 7000.0 8000.0 9000.0 10000.0 11000.0
MEASURED DEPTH (ft)

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U.S. DEPARTMENT OF JUSTICE

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SANTA FE ENERGY
WELL: TOPAZ #19
Location: NORTON #14, LEA CO., NEW MEXICO

FEDERAL COM., WELL #2, 4.5" DRILL PIPE

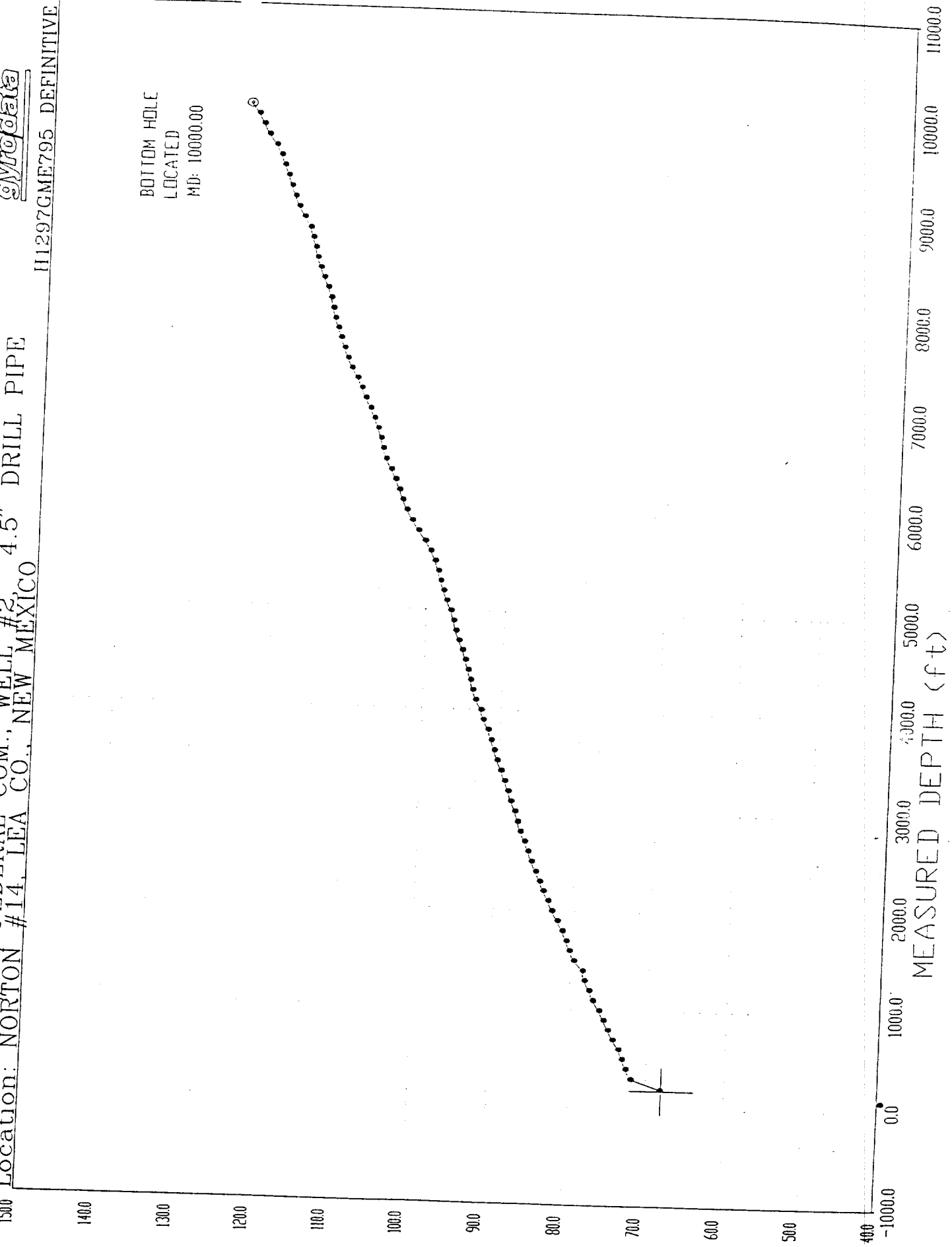
H1297GME795 DEFINITIVE

SYNOPSIS

BOTTOM HOLE
LOCATED
MD: 10000.00

TEMPERATURE (deg-F)

MEASURED DEPTH (ft)



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