

KANSAS CORPORATION COMMISSION
OIL & GAS CONSERVATION DIVISION

ORIGINAL

Form ACO-1
October 2008
Form Must Be Typed

9/9/12

CONFIDENTIAL

WELL COMPLETION FORM
WELL HISTORY - DESCRIPTION OF WELL & LEASE

OPERATOR: License # 32211
Name: O'BRIEN ENERGY RESOURCES CORP.
Address 1: 18 CONGRESS STREET, STE. 207
Address 2: _____
City: PORTSMOUTH State: NH Zip: 03801 + _____
Contact Person: JOSEPH FORMA
Phone: (603) 427-2099
CONTRACTOR: License # 5929
Name: DUKE DRILLING CO., INC.
Wellsite Geologist: PETER DEBENHAM
Purchaser: DCP MIDSTREAM, NCRA

Designate Type of Completion:
 New Well Re-Entry Workover
 Oil SWD SIOW
 Gas ENHR SIGW
 CM (Coal Bed Methane) Temp. Abd.
 Dry Other
(Core, WSW, Expl., Cathodic, etc.)

If Workover/Re-entry: Old Well Info as follows:
Operator: _____
Well Name: _____
Original Comp. Date: _____ Original Total Depth: _____
 Deepening Re-perf. Conv. to Enhr. Conv. to SWD
 Plug Back: _____ Plug Back Total Depth _____
 Commingled Docket No.: _____
 Dual Completion Docket No.: _____
 Other (SWD or Enhr.?) Docket No.: _____
7/23/2010 7/29/2010 9/2/2010
Spud Date or Date Reached TD Completion Date or
Recompletion Date Recompletion Date

API No. 15 - 119-21261-00-00
Spot Description: _____
NE NW Sec. 29 Twp. 33 S. R. 29 East West
660' Feet from North / South Line of Section
1980' Feet from East / West Line of Section
Footages Calculated from Nearest Outside Section Corner:
 NE NW SE SW
County: MEADE
Lease Name: SINGLEY WEST Well #: 2-29
Field Name: SINGLEY
Producing Formation: Chester
Elevation: Ground: 2652' Kelly Bushing: 2664'
Total Depth: 6277' Plug Back Total Depth: _____
Amount of Surface Pipe Set and Cemented at: 1530' Feet
Multiple Stage Cementing Collar Used? Yes No
If yes, show depth set: _____ Feet
If Alternate II completion, cement circulated from: _____
feet depth to: _____ w/ _____ sx cmt.

Drilling Fluid Management Plan AKI INS 9-15-10
(Data must be collected from the Reserve Pit)
Chloride content: 2000 ppm Fluid volume: 4 bbls
Dewatering method used: HAUL FREE WATER, NATURAL EVAP. W/38 INCH MINIMUM
Location of fluid disposal if hauled offsite: _____
Operator Name: DILLCO FLUID SERVICE, INC.
Lease Name: I B REGIER License No.: 6652
Quarter SWNE Sec. 17 Twp. 33 S. R. 27 East West
County: MEADE Docket No.: D21232

INSTRUCTIONS: An original and two copies of this form shall be filed with the Kansas Corporation Commission, 130 S. Market - Room 2078, Wichita, Kansas 67202, within 120 days of the spud date, recompletion, workover or conversion of a well. Rule 82-3-130, 82-3-106 and 82-3-107 apply. Information of side two of this form will be held confidential for a period of 12 months if requested in writing and submitted with the form (see rule 82-3-107 for confidentiality in excess of 12 months). One copy of all wireline logs and geologist well report shall be attached with this form. ALL CEMENTING TICKETS MUST BE ATTACHED. Submit CP-4 form with all plugged wells. Submit CP-111 form with all temporarily abandoned wells.

All requirements of the statutes, rules and regulations promulgated to regulate the oil and gas industry have been fully complied with and the statements herein are complete and correct to the best of my knowledge.
Signature: _____
Title: VICE PRESIDENT Date: 9/9/2010
Subscribed and sworn to before me this 9th day of September,
2010.
Notary Public: _____
Date Commission Expires: _____

MARK EDDINGER
Notary Public - New Hampshire
My Commission Expires June 17, 2014

KCC Office Use ONLY

Letter of Confidentiality Received 9/9/10 - 9/9/12
If Denied, Yes Date: _____
 Wireline Log Received
 Geologist Report Received
 UIC Distribution

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Operator Name: O'BRIEN ENERGY RESOURCES CORP. Lease Name: SINGLEY WEST Well #: 2-29
 Sec. 29 Twp. 33 S. R. 29 East West County: MEADE

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INSTRUCTIONS: Show important tops and base of formations penetrated. Detail all cores. Report all final copies of drill stems tests giving interval tested, time tool open and closed, flowing and shut-in pressures, whether shut-in pressure reached static level, hydrostatic pressures, bottom hole temperature, fluid recovery, and flow rates if gas to surface test, along with final chart(s). Attach extra sheet if more space is needed. Attach copy of all Electric Wireline Logs surveyed. Attach final geological well site report.

Drill Stem Tests Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <i>(Attach Additional Sheets)</i> Samples Sent to Geological Survey <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Cores Taken <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Electric Log Run <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <i>(Submit Copy)</i> List All E. Logs Run: ARRAY INDUCTION, COMPENSATED NEUTRON/ DENSITY, MICROLOG	<input checked="" type="checkbox"/> Log Formation (Top), Depth and Datum <input type="checkbox"/> Sample <table style="width:100%; border-collapse: collapse;"> <tr> <td style="width:60%;">Name</td> <td style="width:20%;">Top</td> <td style="width:20%;">Datum</td> </tr> <tr> <td>HEEBNER</td> <td>4458'</td> <td>-1794'</td> </tr> <tr> <td>LANSING</td> <td>4625'</td> <td>-1961'</td> </tr> <tr> <td>MARMATON</td> <td>5283'</td> <td>-2619'</td> </tr> <tr> <td>ATOKA</td> <td>5734'</td> <td>-3070'</td> </tr> <tr> <td>MORROW</td> <td>5780'</td> <td>-3116'</td> </tr> <tr> <td>MISSISSIPPI CHESTER</td> <td>5914'</td> <td>-3250'</td> </tr> <tr> <td>STE GENEVIEVE</td> <td>6161'</td> <td>-3497'</td> </tr> </table>	Name	Top	Datum	HEEBNER	4458'	-1794'	LANSING	4625'	-1961'	MARMATON	5283'	-2619'	ATOKA	5734'	-3070'	MORROW	5780'	-3116'	MISSISSIPPI CHESTER	5914'	-3250'	STE GENEVIEVE	6161'	-3497'
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STE GENEVIEVE	6161'	-3497'																							

CASING RECORD <input checked="" type="checkbox"/> New <input type="checkbox"/> Used							
Report all strings set-conductor, surface, intermediate, production, etc.							
Purpose of String	Size Hole Drilled	Size Casing Set (In O.D.)	Weight Lbs. / Ft.	Setting Depth	Type of Cement	# Sacks Used	Type and Percent Additives
SURFACE	12 1/2	8 5/8 J55	24#/FT.	1530'	A-CON/PREMIUM	365/420	a-con w/3% CaCl
PRODUCTION	7 7/8	4 1/2 J55	10.5#/FT.	6277'	AA2/common	170/50	5%W-60,10%salt

ADDITIONAL CEMENTING / SQUEEZE RECORD				
Purpose:	Depth Top Bottom	Type of Cement	#Sacks Used	Type and Percent Additives
<input type="checkbox"/> Perforate <input type="checkbox"/> Protect Casing <input type="checkbox"/> Plug Back TD <input type="checkbox"/> Plug Off Zone				

Shots Per Foot	PERFORATION RECORD - Bridge Plugs Set/Type Specify Footage of Each Interval Perforated	Acid, Fracture, Shot, Cement Squeeze Record (Amount and Kind of Material Used)	Depth
3	6093'-6100'	2000 gal diesel breakdown w/ 20 ball sealers	6093'-6100'
		13847 gal gelled Diesel Frac, 16,122# 20/40 ottawa sand	6093'-6100'
2	6021'-6027'	Acidized w/ 1050 Gals NEFE 5% HCL, 10% addic acid wr, 40 ball sealers	6021'-6027'

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TUBING RECORD:	Size: <u>2 3/8</u>	Set At: <u>5953'</u>	Packer At: <u>5890'</u>	Liner Run: <input type="checkbox"/> Yes <input type="checkbox"/> No
Date of First, Resumed Production, SWD or Enhr. <u>9/4/2010</u>	Producing Method: <input checked="" type="checkbox"/> Flowing <input type="checkbox"/> Pumping <input type="checkbox"/> Gas Lift <input type="checkbox"/> Other (Explain)			
Estimated Production Per 24 Hours	Oil Bbls. <u>22</u>	Gas Mcf <u>13</u>	Water Bbls. <u>0</u>	Gas-Oil Ratio <u>.59</u> Gravity <u>36</u>

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DISPOSITION OF GAS: <input type="checkbox"/> Vented <input checked="" type="checkbox"/> Sold <input type="checkbox"/> Used on Lease <i>(If vented, Submit ACO-18.)</i>	METHOD OF COMPLETION: <input type="checkbox"/> Open Hole <input checked="" type="checkbox"/> Perf. <input type="checkbox"/> Dually Comp. <input type="checkbox"/> Commingled <input type="checkbox"/> Other (Specify) _____	PRODUCTION INTERVAL: <u>6093'- 6100'</u> <u>6021'- 6027'</u>
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Customer *O'Driscoll Energy* Lease No. *2-27-10* Date *7-23-10*
 Lease *Jungley West* Well # *7-1-11-10-956*
 Field Order # *17170856* Station *Liberal* Casing *956* Depth *1530* County *McPherson* State *KS*
 Type Job *242 956 Surface* Formation _____ Legal Description *29-33-29*

PIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME	
Casing Size <i>8 7/8</i>	Tubing Size <i>6 3/4</i>	Shots/Ft <i>365 sk</i>	Acid Blend <i>3% HCl</i>	Rate <i>11.4 #/gal</i>	Press <i>14.8 #/gal</i>	ISIP <i>27 WCA-1</i>	
Depth <i>1530</i>	Depth	From <i>2.75</i>	Pre Pad <i>10.11.4 #/gal</i>	Max <i>11.4 #/gal</i>		5 Min.	
Volume	Volume <i>751</i>	From <i>150 sk</i>	Pad <i>Precision Plus</i>	Min <i>14.8 #/gal</i>		10 Min.	
Max Press	Max Press	From <i>1.34</i>	Frac <i>1.34 #/sk</i>	Avg <i>14.8 #/gal</i>		15 Min.	
Well Connection	Annulus Vol. <i>1000</i>	From <i>270 sk</i>		HMP Used		Annulus Pressure	
Plug Depth <i>1192</i>	Packer Depth	From <i>1.34</i>	Flush <i>6.37 #/sk</i>	Gas Volume <i>14.8 #/gal</i>		Total Load	

Customer Representative *R. Pearson* Station Manager *J. Bennett* Treater *M. Cochran*

Service Units	<i>21755</i>	<i>29818</i>	<i>19553</i>	<i>14355</i>	<i>14484</i>	<i>14359</i>	<i>17548</i>				
Driver Names	<i>Cochran</i>	<i>T. Johnson</i>	<i>R. Pearson</i>	<i>V. Vessene</i>							

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
<i>20:00</i>					<i>on loc. / Hold Safety / planting</i>
<i>20:45</i>					<i>Start Csg 1530' 24.24"</i>
<i>21:40</i>					<i>Csg on bottom C.O. w/ Rig</i>
<i>22:02</i>	<i>100</i>				<i>Test Pump + Lines</i>
<i>22:05</i>	<i>250</i>		<i>192</i>	<i>4.5</i>	<i>Start Lead Cont 365 sk @ 11.4 #</i>
<i>22:46</i>	<i>200</i>		<i>36</i>	<i>4</i>	<i>Start Tail Cont 150 sk @ 14.8 #</i>
<i>23:06</i>					<i>Shut down + Drop Plug</i>
<i>23:11</i>	<i>100</i>		<i>0</i>	<i>5</i>	<i>Start Disp. w/ Fresh H₂O</i>
<i>23:24</i>	<i>150</i>		<i>75</i>	<i>1.8</i>	<i>Slow Rate</i>
<i>23:37</i>	<i>1100</i>		<i>95</i>	<i>1.8</i>	<i>Bump Plug</i>
<i>23:36</i>	<i>0</i>		<i>95</i>	<i>0</i>	<i>Relative / Hit Hold / 1.1 in + C.O. Cont</i>
<i>23:40</i>					<i>Call for more Cont / Rig Running 1.1 #</i>
<i>03:45</i>					<i>Cont. in loc.</i>
<i>04:00</i>					<i>Heck up to 1"</i>
<i>04:00</i>		<i>350</i>	<i>0</i>	<i>1.7</i>	<i>Start Cont @ 14.8 #</i>
<i>05:01</i>		<i>40</i>	<i>65</i>	<i>1.8</i>	<i>Cont to Surface. Mix</i>
<i>06:25</i>					<i>Shut down + 1.1 in + C.O. Cont</i>
<i>06:30</i>					<i>Knock Loose</i>
<i>06:40</i>					<i>1.1 in + C.O. Cont</i>
<i>08:20</i>					<i>End Job</i>
	<i>500</i>				<i>Pressure Detect Plug Landed</i>

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Customer D Brian Energy Lease No. _____ Date 7-30-10
 Lease Singon West Well # 2-29
 Field Order # 00902 Station Liberal, KS-1717 Casing 4 1/2 105 Depth 6277 County Moore State KS
 Type Job 2-17-4 1/2 Longstring Formation _____ Legal Description 29-33-29

RIPE DATA		PERFORATING DATA		FLUID USED		TREATMENT RESUME	
Casing Size <u>4 1/2 105</u>	Tubing Size <u>3 1/2 105</u>	Shots/Ft <u>170</u>		Acid <u>170 sks AA2</u>	Rate <u>3</u>	Pressure <u>150</u>	ISIP <u>5 Min.</u>
Depth <u>6277</u>	Depth	From	To	Pre Pad <u>50 sks Common</u>	Max		10 Min.
Volume	Volume	From	To	Pad	Min		15 Min.
Max Press	Max Press	From	To	Frac	Avg		HHP Used
Well Connection	Annulus Vol.	From	To	Flush <u>fresh</u>	Gas Volume		Annulus Pressure
Plug Depth	Packer Depth	From	To				Total Load

Customer Representative R Darrson Station Manager J. Bennett Treater A. Oliveira

Service Units	<u>19816</u>	<u>271162</u>	<u>19805</u>	<u>19808</u>					
Driver Names	<u>D. P. M.</u>	<u>R. Cox</u>	<u>R. Chantz</u>						

Time	Casing Pressure	Tubing Pressure	Bbls. Pumped	Rate	Service Log
6:00					min loc-side assessment
6:05					spot trucks - rig up
8:30					safety meeting
8:30					csy on botm break circ. 30 min
9:00					switch on cont line - pressure lost 2500#
9:05	250		5	3	dump 5 bbl H ₂ O spacer
9:07	250		12	3	dump 500 gal (12 bbl) mud flush
9:12	250		5	3	dump 5 bbl H ₂ O spacer
9:15	250		16.6	5	mix 170 sks AA2 w/ 5% W-60, 10% S.H
9:18					X# Dolomite, 6% C-15 5# Gilsomile
					1.5 1 1/2 sk, 5.6 gal/sk @ 14.8
					1.5 1 1/2 sk, 6.6 gal/sk @ 14.8 avg
9:30					wash pumping lines - drop plug
9:35	100		0	6	disp csy
9:55	100		89	2	slow rate lost 10 bbls of disp.
10:00	1100		77.2	0	land plug float hold
10:15	0		14	3	mix 50 sks Common for rat + mouse
					job complete

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O'Brien Energy Resources, Inc.
Singley West No. 2-29, Singley Field
Section 29, T33S, R29W
Meade County, Kansas
July, 2010

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Well Summary

The O'Brien Energy Resources, Corporation, Singley West No. 2-29 was drilled to a total depth of 6280' in the Mississippi Ste. Genevieve Formation without any problems and in a total of 125 rotating hours. The Singley West No. 2-29 offset the Singley West No. 1-29 by approximately 1400' to the N, NW. Formation tops generally ran high relative to this offset although some thickening occurred from the Marmaton to the Morrow. The Chester came in 9' high and the Ste. Genevieve, 12' high. The Morrow ran 1' low.

Numerous quality hydrocarbon shows were documented in this test. Three separate Morrow Sandstones were documented (5806'-5813'), (5835-5844') and (5860'-5866') and generally consist of a similar lithology type, Sandstone in up to 50% of the samples: Light brown to gray, tan, light graygreen, speckled green, firm to friable, very fine upper, well sorted, subround grains, siliceous cement, very calcareous in part, clean, glauconitic, micaceous, good intergranular and occasionally vuggy porosity, light yellow hydrocarbon fluorescence(all Sandstone), slow light yellow streaming cut, gas bubbles when crushed, a light brown oil stain with traces of light live oil was documented in the lower bench. 90 to 210 Units of gas were documented from associated show intervals(attached mudlog).

An excellent show was documented from 6003' to 6026' and correlates to the productive Sandstone interval in the Rickers Ranch No. 1. Sandstone: Medium to dark brown, firm to friable, very fine upper, well sorted, subround grains, occasionally fine lower to very fine lower and moderately sorted, siliceous cement, slightly calcareous, occasional excellent intergranular porosity, vuggy porosity, very dull brown hydrocarbon fluorescence(all Sandstone), excellent fast streaming cut, abundant dark brown matrix oil stain, heavy dark brown live oil, trace solid black oil residue and oil odor and grading to and interbedded with Limestone: Medium to dark mottled brown, finely crystalline, dense to trace vuggy and intercrystalline porosity, very sandy, dark brown matrix oil stain, very dull brown hydrocarbon fluorescence, excellent streaming cut, live oil, oil odor. A 260 Unit gas increase occurred from the Upper Sandstone and 100 to 125 Unit gas increase from the underlying Limestone show.

A Lower Chester Sandstone was documented(6094'-6098'), Sandstone in 4% of the samples: Medium brown, hard to friable in part, medium lower to fine upper, well to moderately sorted, subround to round grains, fine lower and very well sorted in part, calcareous cement, clean to argillaceous, glauconitic, trace visible intergranular porosity, dull speckled goldbrown hydrocarbon fluorescence in all the sandstone, excellent fast streaming cut, brown oil stain and live oil, oil odor. A 120 Unit gas kick occurred.

4 1/2" production casing was run on the Singley West No. 2-29 on 7/30/10 to further evaluate the above mentioned shows.

Respectfully Submitted,


Peter Debenham

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WELL DATA

Operator: O'Brien Energy Resources, Inc., John Forma – Portsmouth, NH
Geologist: Paul Wiemann – Denver, CO

Prospect Geologist: Ed Schuett, David Ward, Denver, Land: Gordon Beamguard

Well: Singley West No. 2-29

Field: Singley West

Location: 660' FNL & 1980' FWL, Section 29, T33S, R29W, Meade County, Kansas – 15 miles SE of Meade.

Elevation: Ground Level 2652', Kelly Bushing 2664'

Contractor: Duke Drilling Rig No. 6, Type: Double jackknife, triple stand, Toolpusher Rick Schollenbarger, Drillers: ,Terry Sorter, DannyWhite, Mike Brewer

Company Man: Roger Pearson – Liberal, Kansas

Spud Date: 7/22/2010

Total Depth: 7/29/2010, Driller 6280', Logger 6277', Mississippi Ste. Genevieve

Casing Program: 41 joints of 8 5/8", J55, 24Lbs/ft, set at 1529'. 4 1/2" production casing to TD.

Mud Program: Winter Mud, engineer Don Ray Winter, Chemical gel/LCM. Displaced for the Lansing.

Wellsite Consultant: Peter Debenham with mudlogging trailer, Call depth 4400', Box 350, Drake, CO 80515, 720/220-4860.

Samples: 20' to TD. Zones of interest saved.

Electric Logs: Weatherford, engineer Steven Tottey, 1) Array Induction, 2) Neutron/Density, 3) Microlog

Status: 4 1/2 " production casing to TD on 7/30/2010.

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WELL CHRONOLOGY6 AM
DATE DEPTHFOOTAGERIG ACTIVITY

7/21 Move to location and rig up rotary tools. Dig ditches. Mix spud mud and drill rathole and mousehole.

7/22 400' 0' Set out rotary table and service same. Clean and service rig. Spud in 12 1/4" surface hole to 400'.

7/23 1530' 1130' Surveys(1/2 - 1/4 deg.). Drill to 1530' and circulate. Drop survey(1/2 deg.) and trip for surface casing. Rig up casing crew and run and cement 41 joints of 8 5/8" casing set at 1529'.

7/24 2090' 560' Circulate cement plug, down 12:30, and wait on cement. Cement 1" down the backside and wait on cement. Nipple up BOP. Drill plug and cement and pressure test BOP. Drill 7 7/8" hole to 2090'.

7/25 3200' 1110' Surveys(1/2 deg.). Service rig and drill to 3200'. Survey(1/2 deg.).

7/26 4475' 1275' Survey(1/2 deg.). Drilling. Displace mud system.

7/27 5425' 950' To 5165' and circulate. Short trip 25 stands and circulate. Drilling.

7/28 6195' 770' Circulate for samples at 5830' and 5880'. Drilling ahead.

7/29 6280'TD 85' To 6280' and circulate. Short trip 41 stands and circulate and condition mud. Drop survey(1/2 deg.) and strap out for logs - no depth correction. Run elogs. Trip in and circulate.

7/30 TD Circulate. Trip out laying down and run and cement 4 1/2" production casing to TD. Rig down.

BIT RECORD

<u>NO.</u>	<u>MAKE</u>	<u>TYPE</u>	<u>SIZE</u>	<u>OUT</u>	<u>FOOTAGE</u>	<u>HOURS</u>
1	HTC	CHSIGJMS	12 1/4"	1530'	1530'	24 1/4
2	HTC	506F	7 7/8"	6280'	4750'	100 1/2

Total Rotating Hours:
Average:

124 3/4
50.34 Ft/hr

DEVIATION RECORD – degree

505' ¼, 1530' ½, 2660' ½, 4260' ½, 6280' ½

MUD PROPERTIES

<u>DATE</u>	<u>DEPTH</u>	<u>WT</u>	<u>VIS</u>	<u>PV</u>	<u>YP</u>	<u>pH</u>	<u>WL</u>	<u>CL</u>	<u>LCM-LBS/BBL</u>
7/22	0'	8.6	36	10	6	8.5	nc	500	--
7/23	921'	9.5	31	6	10	8.0	10	1400	8
7/24	1530'	8.3	28						
7/25	2693'	8.6	37	8	12	10.0	18	9K	2
7/26	3813'	9.2	42	10	24	9.5	40	12K	4
7/27	5029'	9.1	41	17	6	11.0	8.8	4K	4
7/28	5830'	9.1	49	19	12	11.0	7.6	1.8K	4
7/29	6280'	9.2	50	16	12	10.0	7.6	2K	--

ELECTRIC LOG FORMATION TOPS- KB Elev. 2633'

<u>FORMATION</u>	<u>DEPTH</u>	<u>DATUM</u>	<u>*Singley West No. 1-29</u>	
			<u>DATUM</u>	<u>POSITION</u>
Heebner	4458'	-1794'	-1807'	+13'
Toronto	4488'	-1824'	-1837'	+13'
Lansing	4625'	-1961'	-1966'	+5'
Marmaton	5283'	-2619'	-2617'	-2'
Cherokee	5441'	-2777'	-2785'	+8'
Atoka	5734'	-3070'	-3072'	+2'
Morrow	5780'	-3116'	-3115'	-1'
Mississippi Chester	5914'	-3250'	-3259'	+9'
Ste Genevieve	6161'	-3497'	-3509'	+12'
TD	6280'	-3616'		

*O'Brien Energy Corp., Singley West No. 1-29, 1980'FNL & 2310'FWL, Sec. 29 – approximately 1400' to the S, SE. K.B. Elev. 2633'.

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LITHOLOGY DESCRIPTION

SAMPLES ARE LAGGED
CORRECTED E-LOG FORMATION TOPS
*INDICATES HYDROCARBON SHOW

Gas and spls run 3300', no shows.

4400-4462 SHALE: Dk brown gray black firm sbfis to blocky waxy carbonaceous calcareous interbed with LIMESTONE: Med to dark mottled brown gray biomicr fine crystalline hard dense argillaceous

tight no show

4424-4554 LIMESTONE: Med to light brown tan biomicr micxln micsuc in part clean fossils trace moldic and intxln porosity no fluorescence no stain or cut with LIMESTONE: Med to dark mottled brown gray fine crystalline hard dense argillaceous to marly in part fossils carbonaceous tight no show interbed with SHALE: Blk dark brown to gray firm fossils in part carbonaceous calcareous silty

Heebner 4458'

4462-4470 SHALE: Blk very dark brown firm sbfis waxy carbonaceous silty in part

4470-4484 LIMESTONE: Dk brown mottled biomicr fine crystalline hard dense argillaceous fossils poor vis porosity no fluorescence no stain or cut interbed with SHALE: Blk dark brown to gray firm sbfis to blocky carbonaceous calcareous silty

Toronto 4488'

4484-4502 LIMESTONE: Med to light brown tan biomicr micxln micsuc in part clean fossils trace moldic and intxln porosity no fluorescence no stain or cut with LIMESTONE: Med to dark mottled brown gray fine crystalline hard dense argillaceous to marly in part fossils carbonaceous tight no show

4502-4524 SHALE: Blk dark brown to gray firm fossils in part carbonaceous calcareous silty

4554-4586 LIMESTONE: Lt to medium brown tan micxln micsuc in part clean to argillaceous fossils carbonaceous incl trace intxln porosity no show with LIMESTONE: Med to dark mottled brown occasional black fine crystalline dense fossils argillaceous to marly in part carbonaceous tight no show

4586-4602 SHALE: Gy brown firm blocky fossils carbonaceous occasional interbed with LIMESTONE: as above no show

4602-4624 LIMESTONE: Med to dark mottled brown occasional black fine crystalline dense fossils argillaceous to marly in part carbonaceous tight no show interbed with SHALE: Gy brown firm blocky fossils carbonaceous occasional interbed with LIMESTONE: as above no show

Lansing 4425'

4624-4640 LIMESTONE: Mot brown light brown gray biomicr fine crystalline hard dense fossils clean to argillaceous occasional trace intxln and moldic porosity no show

4640-4658 LIMESTONE: Med to light mottled brown buff micxln micsuc in part sbchky clean fossils trace intxln porosity

4658-4692 LIMESTONE: Lt mottled brown gray biomicr fine crystalline clean very fossils occasional moldic and intxln porosity predominant hard and tight no show occasional interbed with SHALE: Dk brown black blocky firm silty carbonaceous

4692-4722 LIMESTONE: Lt brown fine crystalline brittle clean very oolites well/exc moldic porosity no show

4722-4750 LIMESTONE: Med brown crpxln hard dense clean silica in part tight no show with LIMESTONE: Lt brown fine crystalline brittle clean very oolites well/exc oomoldic porosity no show

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4750-4784 LIMESTONE: Lt to medium brown oomicr fine crystalline brittle clean very oolites exc oomoldic porosity no fluorescence no stain or cut

4784-4802 LIMESTONE: Mot brown gray crpxln hard dense silica fossils tight no show

4802-4808 SHALE: Dk brown hard blocky to sbfis waxy to silty carbonaceous with LIMESTONE: Brn gray crpxln hard dense tight no show

4808-4826 LIMESTONE: Med brown micxln micsuc brittle clean exc oomoldic porosity trace intxln porosity no show with LIMESTONE: Lt brown buff micxln micsuc in part brittle clean sbchky fossils hard and silica in part no show

4826-4836 LIMESTONE: Mot brown crpxln hard dense silica fossils clean to argillaceous tight no show

4836-4870 SHALE: Blk very dark brown firm sbfis to blocky carbonaceous silty to waxy calcareous interbed with LIMESTONE: Lt brown buff micxln micsuc in part brittle clean sbchky fossils trace intxln porosity no fluorescence no stain or cut

4870-4880 LIMESTONE: Mot brown very brittle clean very oolites well/exc oomoldic porosity mottled orange mineral fluorescence no stain or cut no show

4880-4906 SHALE: Dk brown gray hard blocky silty carbonaceous with LIMESTONE: Mot brown to gray fine crystalline hard dense silica in part poor vis porosity no show

4906-4926 LIMESTONE: Lt to medium mottled brown to gray micxln micsuc in part predominant hard and silica tight/ occasional trace moldic and intxln porosity no fluorescence no stain or cut

4926-4960 LIMESTONE: Lt brown gray buff micxln micsuc very brittle clean chalky in part trace intxln porosity occasional moldic porosity no show

4960-4998 LIMESTONE: Lt brown gray buff micxln micsuc very brittle clean chalky in part trace intxln porosity occasional moldic porosity no show

4998-5026 LIMESTONE: Med to dark mottled brown light brown buff micro/crpxln micsuc in part clean to marly silica in part predominant hard and tight occasional micsuc well/intxln porosity no fluorescence no stain or cut

5026-5044 LIMESTONE: Med to dark mottled brown micr crpxln hard dense silica argillaceous to marly fossils tight no show

5044-5066 SHALE: Dk brown black dark gray hard blocky carbonaceous calcareous fossils silica in part interbed with LIMESTONE: Pred as above micsuc in part well/trace intercrystalline porosity no fluorescence no stain or cut

5066-5126 LIMESTONE: Med mottled brown oomicr fine crystalline brittle clean very oolitic with/exc oomoldic porosity no fluorescence no stain or cut mottled orange mineral fluorescence

5126-5138 LIMESTONE: Dk mottled gray to brown occasional black crpxln hard dense silica argillaceous to marly in part tight no show

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5138-5160 SHALE: Blk very dark brown hard sbfis to blocky waxy carbonaceous silty

5160-5182 LIMESTONE: Dk mottled brown gray micr crpxln hard dense argillaceous to marly fossils carbonaceous tight no show with SHALE: Blk dark brown hard sbfis carbonaceous

5182-5228 LIMESTONE: Med to dark mottled brown fine crystalline brittle clean very oolites exc oomoldic porosity trace intxln porosity mottled orange mineral fluorescence no stain or cut no show

5228-5254 LIMESTONE: Med mottled brown crpxln hard dense brittle in part argillaceous fossils occasional exc oomoldic porosity no show

5254-5276 SHALE: Blk dark brown firm fissile carbonaceous silty interbed with LIMESTONE: Pred as above occasional exc oomoldic porosity no fluorescence no stain or cut

Marmaton 5283'

5276-5296 LIMESTONE: Mot brown to gray fine crystalline hard dense silica in part fossils oolites clean tight no show

5296-5320 SHALE: Blk dark gray firm sbfis to blocky carbonaceous calcareous silty to sndy in part interbed with LIMESTONE: Lt brown buff white fine crystalline sbchky clean to argillaceous soft brittle no show

5320-5332 LIMESTONE: Lt brown white tan micxln chalky in part clean to argillaceous soft brittle poor vis porosity no fluorescence no stain or cut

5332-5350 SHALE with interbed LIMESTONE: as above no show

5350-5370 LIMESTONE: Lt brown buff white fine crystalline chalky in part soft brittle clean no show with LIMESTONE: Med mottled brown oomicr micxln very oolites well/exc oomoldic porosity no show occasional interbed with SHALE: Blk firm fissile

5370-5382 LIMESTONE: Lt brown buff white fine crystalline chalky in part soft brittle clean no show with LIMESTONE: Med mottled brown oomicr micxln very oolites well/exc oomoldic porosity no show

5382-5396 SHALE: Blk dark brown firm sbfis to blocky waxy to silty carbonaceous

5396-5432 LIMESTONE: Brn micxln micsuc in part clean fossils sbchky tight no show with LIMESTONE: Med mottled brown oomicr micxln very oolites well/exc oomoldic porosity no show interbed with SHALE: Dk brown to gray black firm sbfis to blocky carbonaceous

5432-5440 SHALE: Blk firm fissile carbonaceous

Cherokee 5441'

5440-5454 LIMESTONE: Med to dark brown gray crpxln hard dense silica fossils clean to argillaceous tight no show

5454-5462 SHALE: Blk firm fissile carbonaceous

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5462-5474 LIMESTONE: Med to dark brown occasional black crpxln hard dense silica argillaceous fossils poor vis porosity no show

5474-5492 SHALE: Blk dark gray to brown sbfis firm carbonaceous silty

5492-5520 LIMESTONE: Med to dark brown to gray biomcr crpxln hard dense fossils argillaceous to marly carbonaceous tight no shoow interbed with SHALE: Blk firm fissile carbonaceous

5520-5540 LIMESTONE: Med to dark brown to gray biomcr crpxln hard dense fossils argillaceous to marly carbonaceous tight no shoow interbed with SHALE: Blk firm fissile carbonaceous

5540-5568 LIMESTONE: Med to dark mottled brown gray occasional black micr crpxln hard dense argillaceous to marly fossils carbonaceous tight interbed with SHALE: Blk firm fissile carbonaceous

5568-5586 SHALE: Blk dark brown firm sbfis to blocky carbonaceous calcareous

5586-5614 LIMESTONE: Dk brown fine crystalline hard dense fossils argillaceous to marly tight no show with SHALE: as above

5614-5628 SHALE: Blk dark brown to gray hard blocky to sbfis carbonaceous calcareous silty

5628-5642 LIMESTONE: Mot brown to gray buff micxln firm dense to trace intxln porosity sbchky in part clean to argillaceous no fluorescence no stain or cut

5642-5678 SHALE: Blk dark brown firm sbfis to blocky carbonaceous interbed with LIMESTONE: Mot brown buff fine crystalline hard dense sbchky poor vis porosity no fluorescence no stain or cut

5678-5694 LIMESTONE: Dk brown black medium to light brown buff micr crpxln to micxln dense sbchky in part fossils clean to marly fossils tight no show trace CHRT

5694-5710 SHALE: Blk firm fissile carbonaceous interbed with LIMESTONE: Dk brown black medium to light brown buff micr crpxln to micxln dense sbchky in part fossils clean to marly occasional fair inpart and intxln porosity trace light yellow to blue hydrocarbon fluorescence fair strng cut no stain trace CHRT

Atoka 5734'

5710-5748 SHALE; Blk dark brown firm fissile to blocky waxy to silty carbonaceous interbed with LIMESTONE: Dk to medium brown occasional black crpxln hard dense argillaceous to marly occasional sbchky and clean poor vis porosity no fluorescence no stain or cut

5750-5776 LIMESTONE: Dk brown gray black mottled micr fine crystalline dense argillaceous to marly silty carbonaceous occasional sbchky no show interbed with SHALE: Blk dark gray firm waxy subfissile to fissile carbonaceous

Morrow 5780'

5776-5796 SHALE: Black dark gray firm subfissile carbonaceous waxy

5802-5808 SHALE: Blk gray brown sbfis firm calcareous sndy glauconitic in part occasional interbed with LIMESTONE: as above

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5808-5820 *210 Units Gas, SANDSTONE(30% sample): Lt brown to gray light gygn speck green tan firm to friable vfu well sorted sbrnd grains silica cement very calcareous in part clean to argillaceous in part glauconitic gd intgran and fine vug porosity light to pale yellow hydrocarbon fluorescence(all SANDSTONE) fair slow strmg cut gas bubbles

5820-5844 SHALE: Blk gray brown sbfis firm calcareous sndy glauconitic in part occasional interbed with LIMESTONE: Lt to medium gray brown micr fine crystalline dense sndy glauconitic poor vis porosity occasional light pale blue hydrocarbon fluorescence faint cut no stain

5844-5854 *90 Units Gas, SANDSTONE(35% sample): Spec green light to medium brown to gray firm friable vfu well sorted sbrnd grains silica cement calcareous in part glauconitic mica pyrite in part carbonaceous incls occasional fair intgran porosity vug porosity pale yelbl hydrocarbon fluorescence(10% sample) slow strmg cut slightly oil odor

5854-5864 SHALE: Blk dark gray firm sbfis to blocky carbonaceous calcareous sndy in part with LIMESTONE: AA

5864-5872 *140 Units Gas, SANDSTONE(60% sample): Lt to medium brown tan speck green S&P firm to friable vfu well sorted sbrnd grains silica cement very calcareous in part clean glauconitic mica carbonaceous incls gd intgran porosity abt pale yellow to blue hydrocarbon fluorescence(all SANDSTONE) gd strmg cut gas bubbles trace live oil when crushed light brown oil stain oil odor exc show

5872-5899 SHALE: Blk dark gray firm sbfis to blocky carbonaceous calcareous sndy in part with LIMESTONE: Lt brown buff fine crystalline sbchky sndy glauconitic fossils tight no show

Chester 5914'

5899-5928 LIMESTONE: Med mottled brown to gray dark brown micr crpxln hard dense silica argillaceous to marly fossils pyrite tight interbed with SHALE: Blk firm sbfis to fissile waxy trace CHRT

5928-5950 LIMESTONE: Med mottled brown to gray dark brown micr crpxln hard dense silica argillaceous to marly fossils pyrite tight interbed with SHALE: Blk firm sbfis to fissile waxy trace CHRT

5950-6005 SHALE: Blk firm fissile waxy occasional gygn to green waxy occasional interbed with LIMESTONE: Pred as above poor vis porosity no show

6005-6028 *260 Units Gas, SANDSTONE: Med to dark brown very firm to slightly friable vfu well sorted sbrnd grains silica cement slightly calcareous very dull brown hydrocarbon fluorescence(most SANDSTONE) exc fast strmg cut abt very dark brown matrix oil stain with heavy dark brown live oil trace solid black oil residue gd intgran and vug porosity with LIMESTONE: Med to dark mottled brown fine crystalline dense to trace vug and intxln porosity argillaceous very sndy dark brown matrix oil stain very dull brown hydrocarbon fluorescence exc strmg cut trace live oil

6022-6044 LIMESTONE: Med to light brown mottled orngbrn to brown occasional dark mottled brown biomicr fine crystalline chalky clean to argillaceous fossils carbonaceous tight no show

6044-6096 LIMESTONE: Med to light brown mottled orngbrn to brown occasional dark mottled brown biomicr fine crystalline chalky clean to argillaceous fossils carbonaceous tight no show interbed

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with SHALE: Dk gray black gygn firm sbfis to blocky waxy carbonaceous

6096-6100 *120 Units Gas, SANDSTONE(4% sample): Med brown hard to friable in part ml/fill well to moderately sorted sbrnd to rounded grains occasional fill and vw sorted ca cement clean to argillaceous glauconitic tight to trace intgran porosity dull speck goldbrn hydrocarbon fluorescence(all sandstone) exc strmg cut brown oil stain and live oil slightly odor

6100-6120 SHALE: Dk gray to brown black firm sbfis to blocky waxy carbonaceous mica interbed with LIMESTONE: Brn gray gygn micr crpxln hard dense fossils in part clean sndy tight no show

6120-6164 SHALE: Red to brown gray to gygn light green maroon varic in part firm fissile to blocky waxy

Ste. Genevieve 6161'

6164-6190 LIMESTONE: Med to dark mottled brown to gray fine crystalline hard dense sndy argillaceous tight no show with SHALE: Red to brown gray to gygn light green maroon varic in part firm fissile to blocky waxy and SHALE: Blk firm sbfis waxy carbonaceous

6190-6226 LIMESTONE: Lt to medium gray brown light gygn micr fine crystalline dense very silty to sndy argillaceous no show occasional interbed with SHALE: as above

6226-6280 LIMESTONE: Lt mottled brown buff micr fine crystalline dense clean fossils tight no fluorescence no stain or cut

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Petrolific Consulting Services

Peter Debenham
P.O. Box 350
Drake, Colorado 80515

Wellsite Geology
720/220-4860
petrolific@earthlink.net

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Scale 1:240 (5"=100') Imperial

Well Name: O'Brien Energy, Singley West No. 2-29, Singley Field
Location: 660'FNL & 1980'FWL, Section 29, 33S, R29W, Meade Co., KS
Licence Number: API: 15-119-21261 Region: Hougaton
Spud Date: 7/22/10 Drilling Completed: 7/29/10
Surface Coordinates: 660'FNL & 1980'FWL, Section 29, 33S, R29W, Meade Co., KS
Bottom Hole Coordinates: 660'FNL & 1980'FWL, Section 29, 33S, R29W, Meade Co., KS
Ground Elevation (ft): 2652' K.B. Elevation (ft): 2664'
Logged Interval (ft): 3200' To: TD Total Depth (ft): 6280'
Formation: Lansing, Morrow, Chester, Ste. Genevieve
Type of Drilling Fluid: Chemical Gel/LSND/LCM, displaced 2800'

Printed by MUD.LOG from WellSight Systems 1-800-447-1534 www.WellSight.com

OPERATOR

Company: O'Brien Energy Resources, Corp.
Address: 18 Congress St., Suite 207
Portsmouth, NH 03801
President/Owner John Forma, Geologist Paul Wiemann

GEOLOGIST




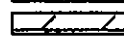
Name: Wellsite: Peter Debenham
Company: Petrolific Consulting Services
Address: P.O. Box 350
Drake, CO 80515
720/220-4860, Petrolific@gmail.com

Comments

Engineer Roger Pearson, Duke Drilling Rig No. 6, T.P. Rick Schollenbarger, Drillers Terry Sorter, Danny White, Mike Brewer, Weatherford Logs, engineer Steve Tottey, Winter Mud engineer Don Ray Winter, 8 5/8" set to 1529', 4 1/2" production casing set to TD on 7/30/10.

ROCK TYPES

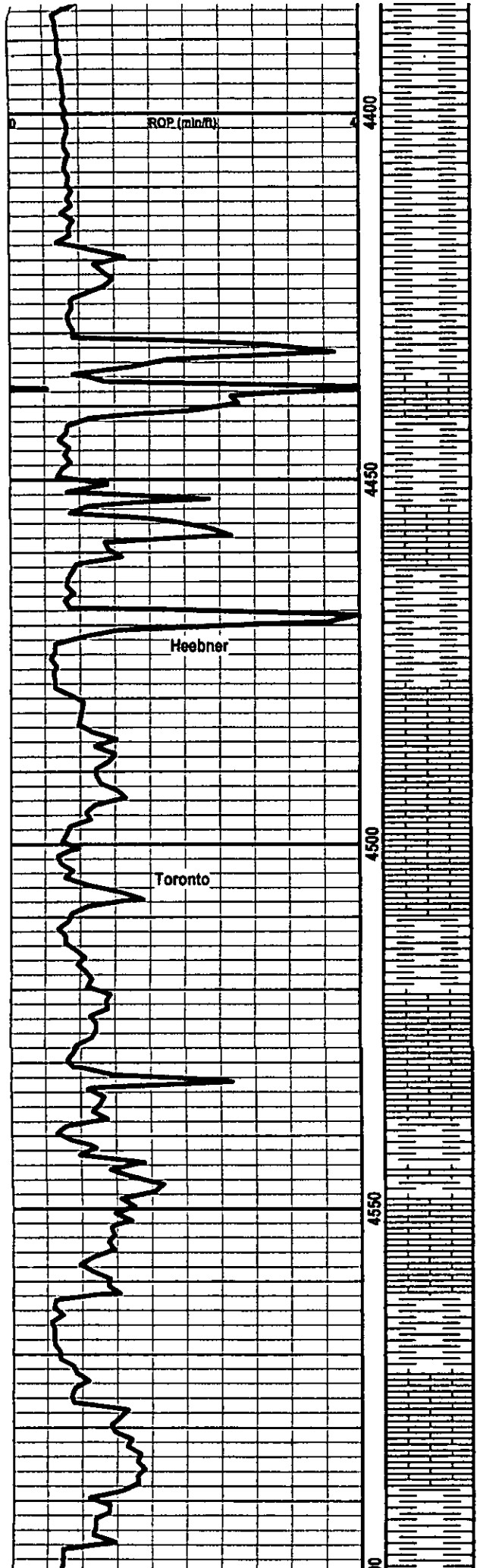
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Gas and spls run 3300' - no shows.

SHALE: Dk brown gray black firm sbfis to blocky waxy carbonaceous calcareous interbed with Limestone: Med to dark mottled brown gray biomicr fine crystalline hard dense argillaceous tight no show

Limestone: Med to light brown tan biomicr micxl n micsuc in part clean fossils trace moldic and intxn porosity no fluorescence no stain or cut with Limestone: Med to dark mottled brown gray fine crystalline hard dense argillaceous to marly in part fossils carbonaceous tight no show interbed with SHALE: Blk dark brown to gray firm fossils in part carbonaceous calcareous silty

SHALE: Blk very dark brown firm sbfis waxy carbonaceous silty in part

Heebner

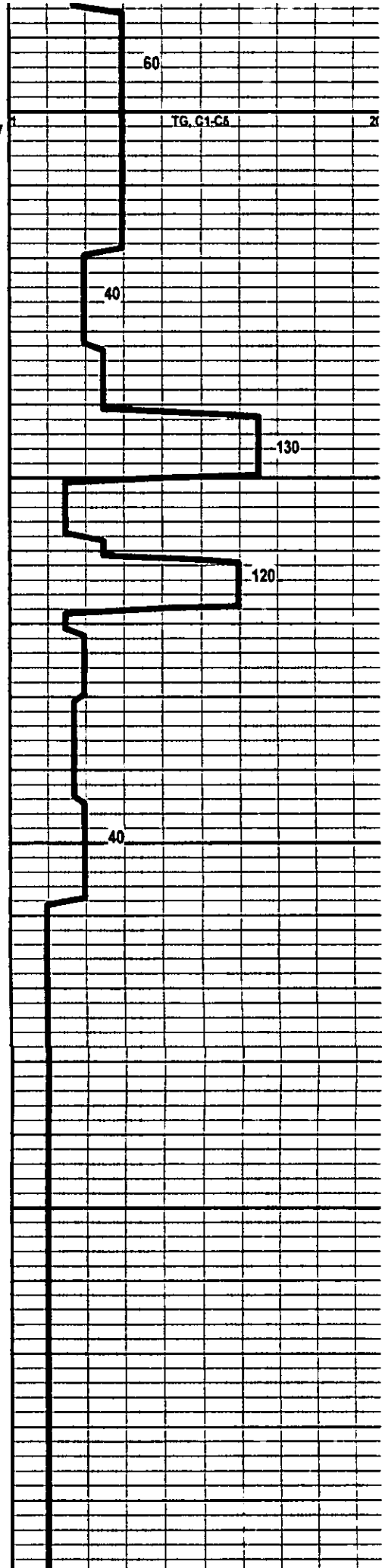
Limestone: Dk brown mottled biomicr fine crystalline hard dense argillaceous fossils poor vis porosity no fluorescence no stain or cut interbed with SHALE: Blk dark brown to gray firm sbfis to blocky carbonaceous calcareous silty

Limestone: Med to light brown tan biomicr micxl n micsuc in part clean fossils trace moldic and intxn porosity no fluorescence no stain or cut with Limestone: Med to dark mottled brown gray fine crystalline hard dense argillaceous to marly in part fossils carbonaceous tight no show

SHALE: Blk dark brown to gray firm fossils in part carbonaceous calcareous silty

Limestone: Lt to medium brown tan micxl n micsuc in part clean to argillaceous fossils carbonaceous incis trace intxn porosity no show with Limestone: Med to dark mottled brown occasional black fine crystalline dense fossils argillaceous to marly in part carbonaceous tight no show

SHALE: Gy brown firm blocky fossils carbonaceous occasional interbed with Limestone: as above no show

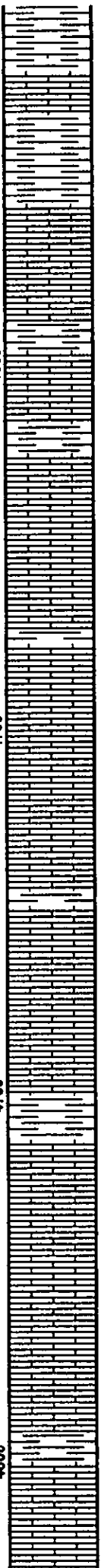


ROP (min/r)

Lansing

ROP (min/r)

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4650
4700
4750
4800



LIMESTONE: Med to dark mottled brown occasional black fine crystalline dense fossils argillaceous to marly in part carbonaceous tight no show interbed with SHALE: Gy brown firm blocky fossils carbonaceous occasional interbed with LIMESTONE: as above no show

LIMESTONE: Mot brown light brown gray biomicr fine crystalline hard dense fossils clean to argillaceous occasional trace intxn and moldic porosity no show

LIMESTONE: Med to light mottled brown buff micxn micsuc in part sbchky clean fossils trace intxn porosity

LIMESTONE: Lt mottled brown gray biomicr fine crystalline clean very fossils occasional moldic and intxn porosity predominant hard and tight no show occasional interbed with SHALE: Dk brown black blocky firm silty carbonaceous

LIMESTONE: Lt brown fine crystalline brittle clean very oolites well/exc moldic porosity no show

LIMESTONE: Med brown crpxln hard dense clean silica in part tight no show with LIMESTONE: Lt brown fine crystalline brittle clean very oolites well/exc oomoldic porosity no show

LIMESTONE: Lt to medium brown oomicr fine crystalline brittle clean very oolites exc oomoldic porosity no fluorescence no stain or cut

LIMESTONE: Mot brown gray crpxln hard dense silica fossils tight no show

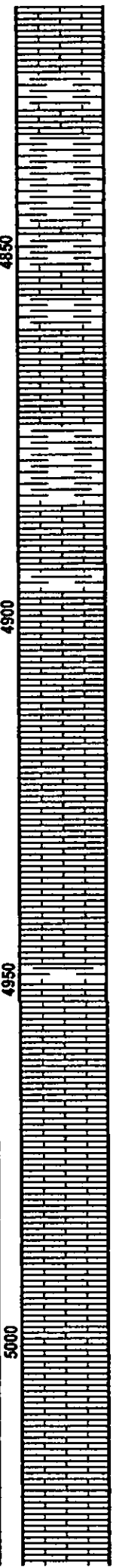
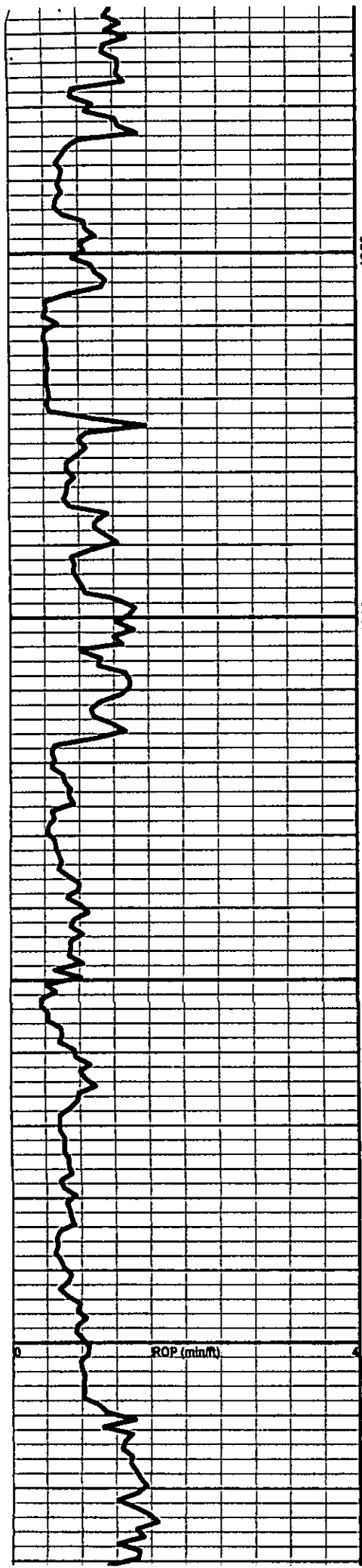
SHALE: Dk brown hard blocky to sbfys waxy to silty carbonaceous with LIMESTONE: Bm gray crpxln hard dense tight no show

LIMESTONE: Med brown micxn micsuc brittle clean exc oomoldic porosity trace intxn

TG, C1-C5

TG, C1-C5

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buff micxn micsuc in part brittle clean sbchky fossils hard and silica in part no show

LIMESTONE: Mot brown crpxln hard dense silica fossils clean to argillaceous tight no show

SHALE: Blk very dark brown firm sbfis to blocky carbonaceous silty to waxy calcareous interbed with LIMESTONE: Lt brown buff micxn micsuc in part brittle clean sbchky fossils trace intxn porosity no fluorescence no stain or cut

LIMESTONE: Mot brown very brittle clean very oolites well/exc oomoldic porosity mottled orange mineral fluorescence no stain or cut no show

SHALE: Dk brown gray hard blocky silty carbonaceous with LIMESTONE: Mot brown to gray fine crystalline hard dense silica in part poor vis porosity no show

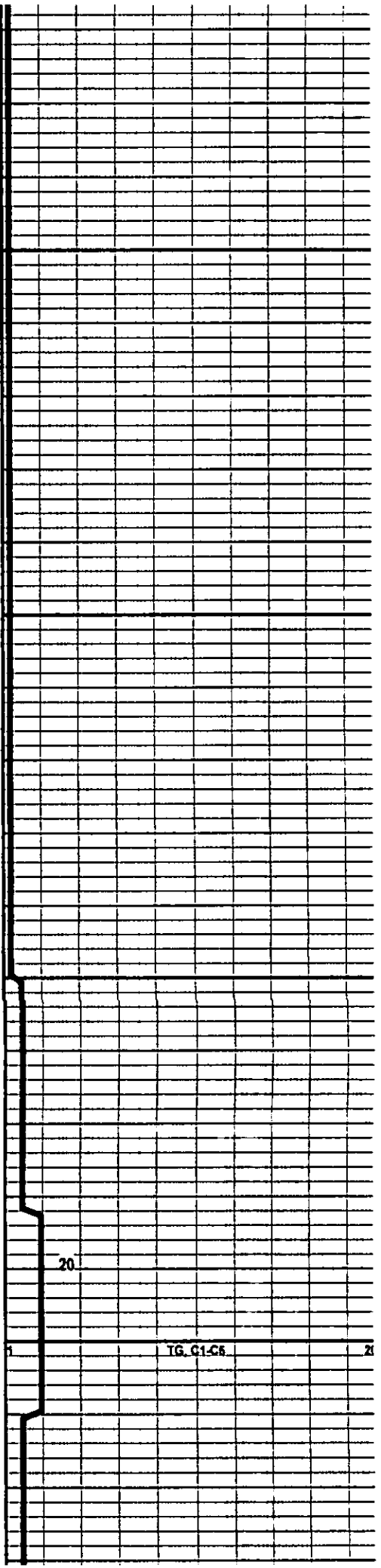
LIMESTONE: Lt to medium mottled brown to gray micxn micsuc in part predominant hard and silica tight/ occasional trace moldic and intxn porosity no fluorescence no stain or cut

LIMESTONE: Lt brown gray buff micxn micsuc very brittle clean chalky in part trace intxn porosity occasional moldic porosity no show

LIMESTONE: Lt brown gray buff micxn micsuc very brittle clean chalky in part trace intxn porosity occasional moldic porosity no show

LIMESTONE: Med to dark mottled brown light brown buff micro/crpxln micsuc in part clean to marly silica in part predominant hard and tight occasional micsuc well/intxn porosity no fluorescence no stain or cut

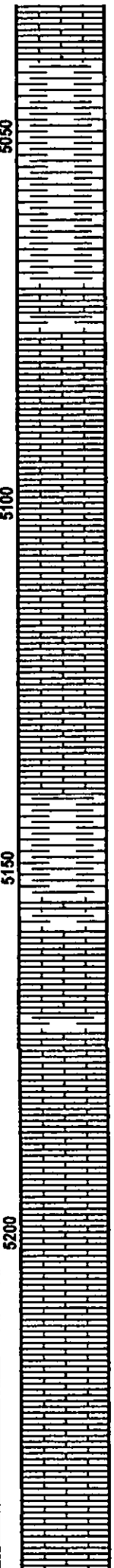
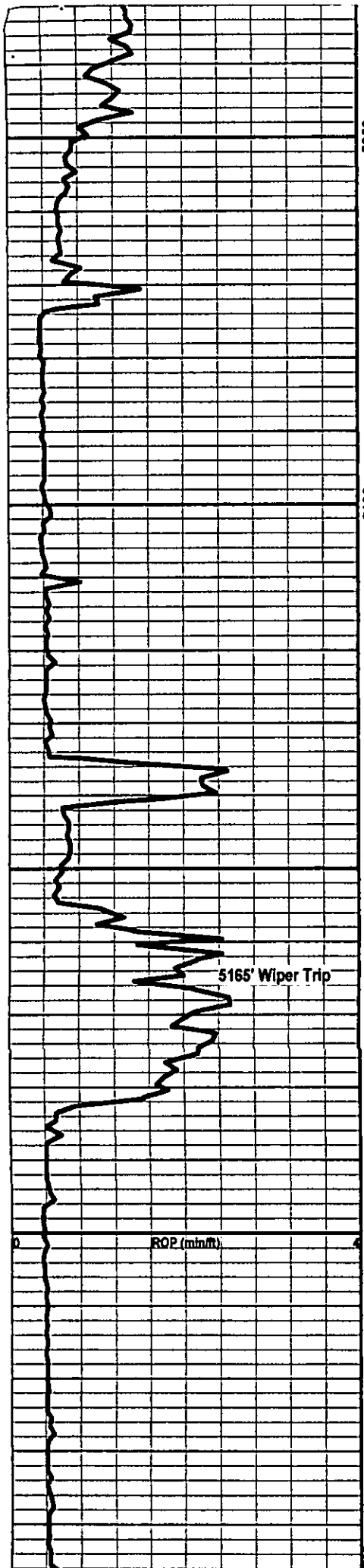
LIMESTONE: Med to dark mottled brown micr crpxln hard dense silica argillaceous to marly fossils tight no show



20

TG. G1-C6

21



SHALE: Dk brown black dark gray hard blocky carbonaceous calcareous fossils silica in part interbedded with LIMESTONE: Pred as above micruc in part well/trace intercrystalline porosity no fluorescence no stain or cut

LIMESTONE: Med mottled brown oolitic fine crystalline brittle clean very oolitic with/exc oomoldic porosity no fluorescence no stain or cut mottled orange mineral fluorescence

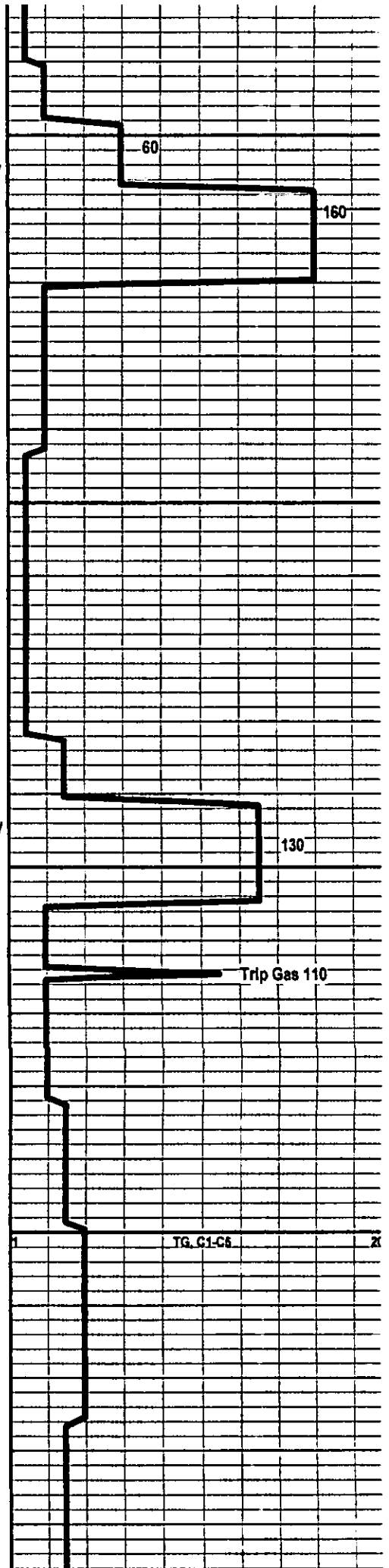
LIMESTONE: Dk mottled gray to brown occasional black crpxin hard dense silica argillaceous to marly in part tight no show

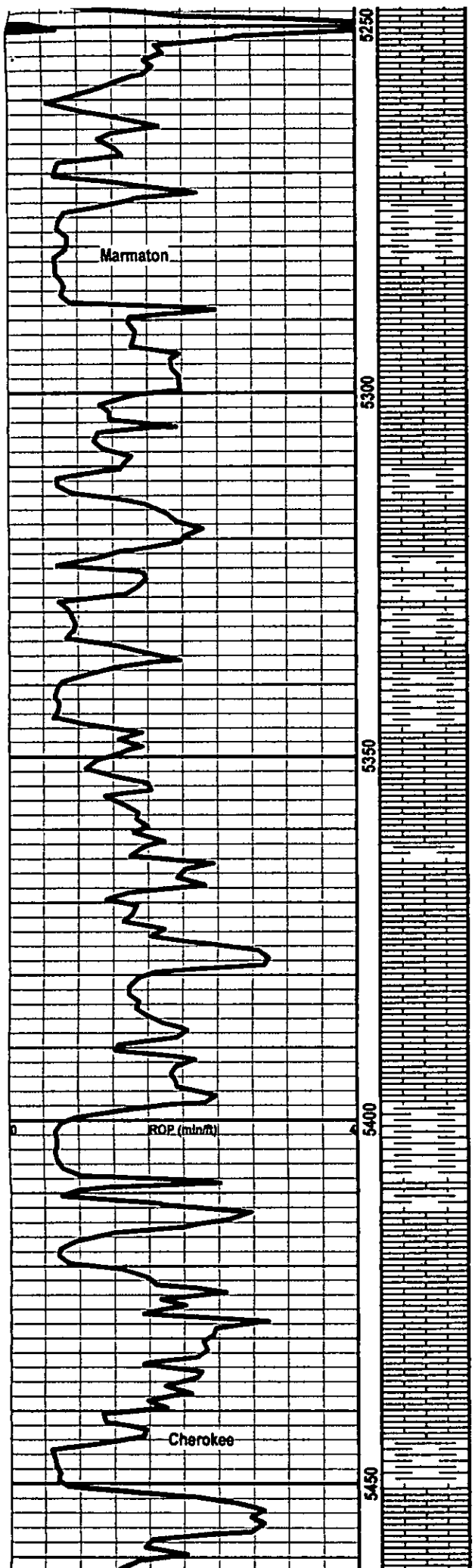
SHALE: Blk very dark brown hard sbfis to blocky waxy carbonaceous silty

LIMESTONE: Dk mottled brown gray micr crpxin hard dense argillaceous to marly fossils carbonaceous tight no show with SHALE: Blk dark brown hard sbfis carbonaceous

LIMESTONE: Med to dark mottled brown fine crystalline brittle clean very oolites exc oomoldic porosity trace intxn porosity mottled orange mineral fluorescence no stain or cut no show

LIMESTONE: Med mottled brown crpxin hard dense brittle in part argillaceous fossils occasional exc oomoldic porosity no show





SHALE: Blk dark brown firm fissile carbonaceous silty interbed with LIMESTONE: Pred as above occasional exc oomoldic porosity no fluorescence no stain or cut

Marmaton

LIMESTONE: Mot brown to gray fine crystalline hard dense silica in part fossils oolites clean tight no show

SHALE: Blk dark gray firm sbfis to blocky carbonaceous calcareous silty to sndy in part interbed with LIMESTONE: Lt brown buff white fine crystalline sbchky clean to argillaceous soft brittle no show

LIMESTONE: Lt brown white tan micxn chalky in part clean to argillaceous soft brittle poor vis porosity no fluorescence no stain or cut

SHALE with interbed LIMESTONE: as above no show

LIMESTONE: Lt brown buff white fine crystalline chalky in part soft brittle clean no show with LIMESTONE: Med mottled brown oomicr micxn very oolites well/exc oomoldic porosity no show occasional interbed with SHALE: Blk firm fissile

LIMESTONE: Lt brown buff white fine crystalline chalky in part soft brittle clean no show with LIMESTONE: Med mottled brown oomicr micxn very oolites well/exc oomoldic porosity no show

SHALE: Blk dark brown firm sbfis to blocky waxy to silty carbonaceous

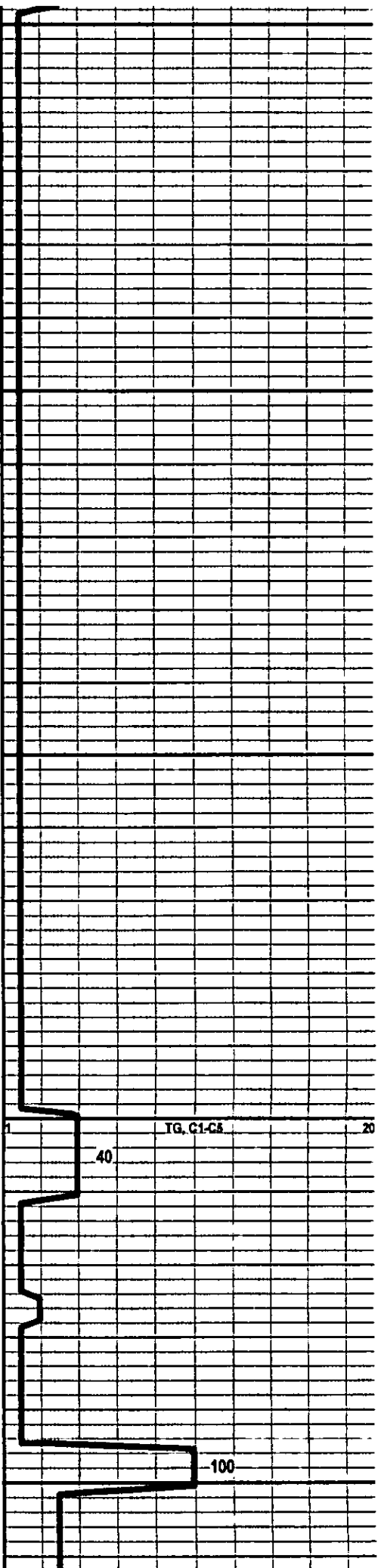
LIMESTONE: Brn micxn micsuc in part clean fossils sbchky tight no show with LIMESTONE: Med mottled brown oomicr micxn very oolites well/exc oomoldic porosity no show interbed with SHALE: Dk brown to gray black firm sbfis to blocky carbonaceous

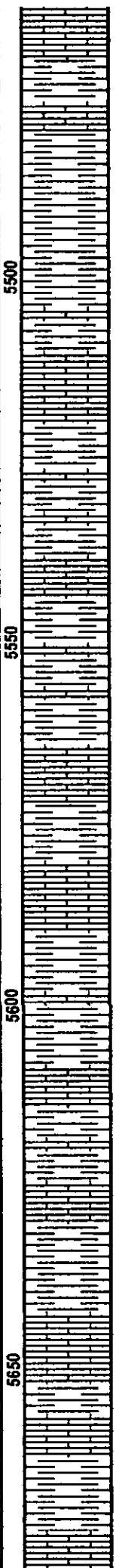
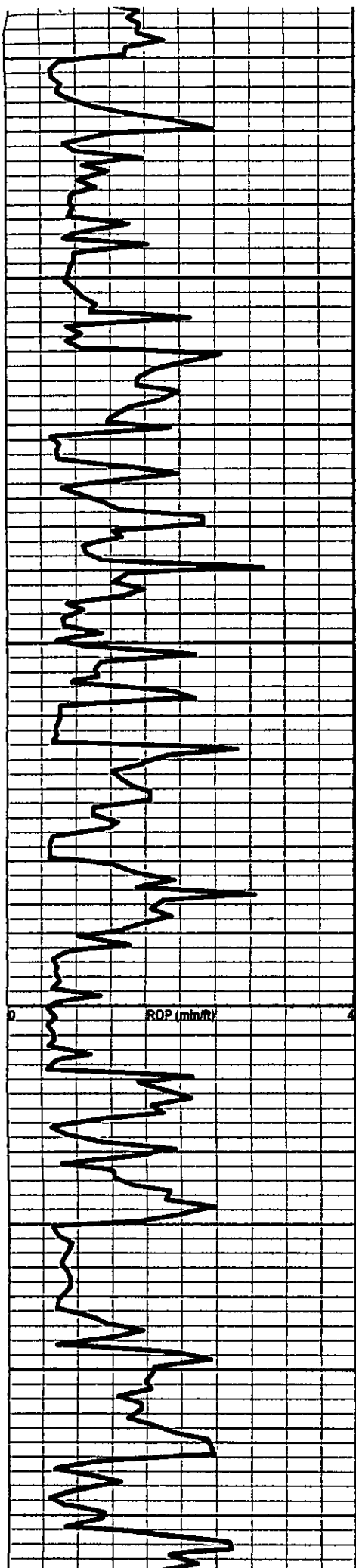
SHALE: Blk firm fissile carbonaceous

LIMESTONE: Med to dark brown gray crpxln hard dense silica fossils clean to argillaceous tight no show

Cherokee

SHALE: Blk firm fissile carbonaceous





LIMESTONE: Med to dark brown occasional black crpxln hard dense silica argillaceous fossils poor vis porosity no show

SHALE: Blk dark gray to brown sbfis firm carbonaceous silty

LIMESTONE: Med to dark brown to gray biomcr crpxln hard dense fossils argillaceous to marly carbonaceous tight no show interbed with **SHALE:** Blk firm fissile carbonaceous

LIMESTONE: Med to dark brown to gray biomcr crpxln hard dense fossils argillaceous to marly carbonaceous tight no show interbed with **SHALE:** Blk firm fissile carbonaceous

LIMESTONE: Med to dark mottled brown gray occasional black micr crpxln hard dense argillaceous to marly fossils carbonaceous tight interbed with **SHALE:** Blk firm fissile carbonaceous

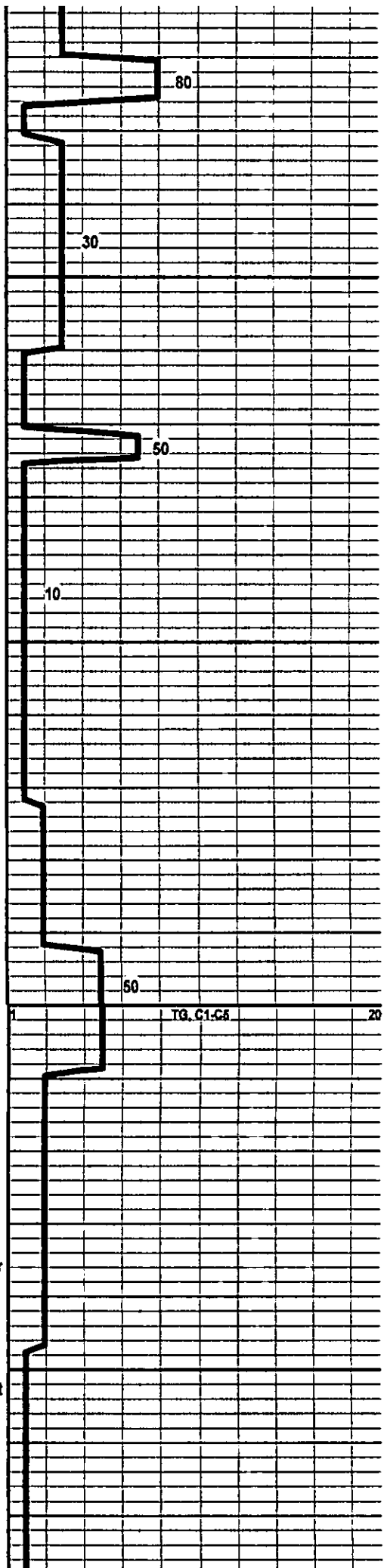
SHALE: Blk dark brown firm sbfis to blocky carbonaceous calcareous

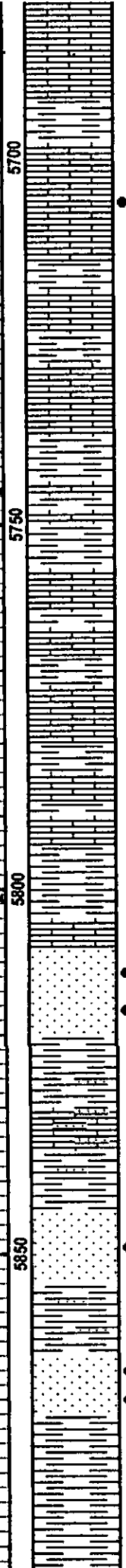
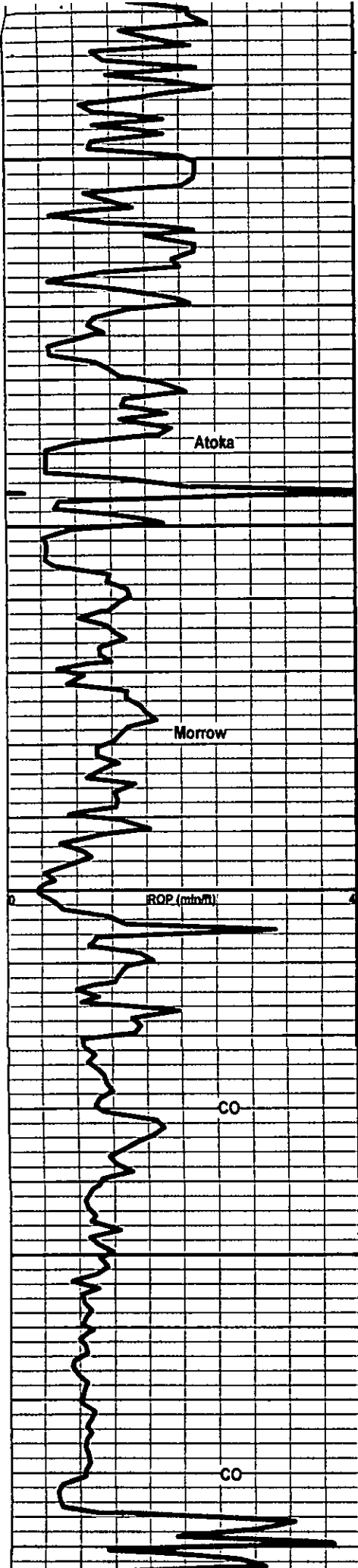
LIMESTONE: Dk brown fine crystalline hard dense fossils argillaceous to marly tight no show with **SHALE:** as above

SHALE: Blk dark brown to gray hard blocky to sbfis carbonaceous calcareous silty

LIMESTONE: Mot brown to gray buff micxln firm dense to trace intxln porosity sbchky in part clean to argillaceous no fluorescence no stain or cut

SHALE: Blk dark brown firm sbfis to blocky carbonaceous interbed with **LIMESTONE:** Mot brown buff fine crystalline hard dense sbchky poor vis porosity no fluorescence no stain or cut





LIMESTONE: Dk brown black medium to light brown buff micr crpxin to micxn dense sbchky in part fossils clean to marly fossils tight no show trace CHRT

SHALE: Blk firm fissile carbonaceous interbed with LS: Dk brown black medium to light brown buff micr crpxin to micxn dense sbchky in part fossils clean to marly occ fr intpart & intxn por fr lt yel to bl hydc flor fr strmg cut no stn trace CHRT

SHALE: Blk dark brown firm fissile to blocky waxy to silty carbonaceous interbed with **LIMESTONE:** Dk to medium brown occasional black crpxin hard dense argillaceous to marly occasional sbchky and clean poor vis porosity no fluorescence no stain or cut

LIMESTONE: Dk brown gray black mottled micr fine crystalline dense argillaceous to marly silty carbonaceous occasional sbchky no show interbed with **SHALE:** Blk dark gray firm waxy subfissile to fissile carbonaceous

Morrow

SHALE: Black dark gray firm subfissile carbonaceous waxy

SHALE: Blk gray brown sbfis firm calcareous sndy glauconitic in part occasional interbed with **LIMESTONE:** as above

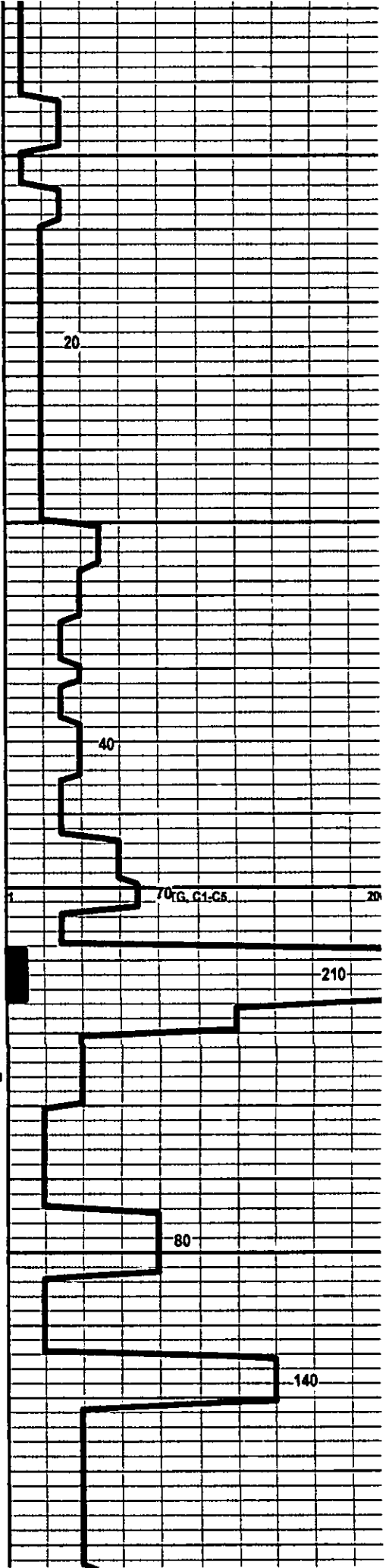
SS(30% spl): Lt brn to gy lt gygn spec gn tan frm to fri vfu w srted sbrnd grs sil cmt v calc lp cin to arg ip glauc gd intgran & f vug por lt to pale yel hydc flor(all SS) fr slow strmg cut gas bubbles

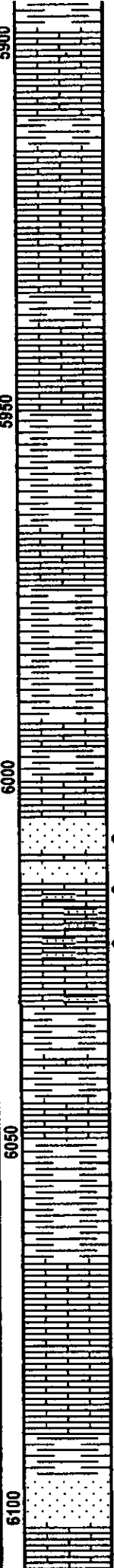
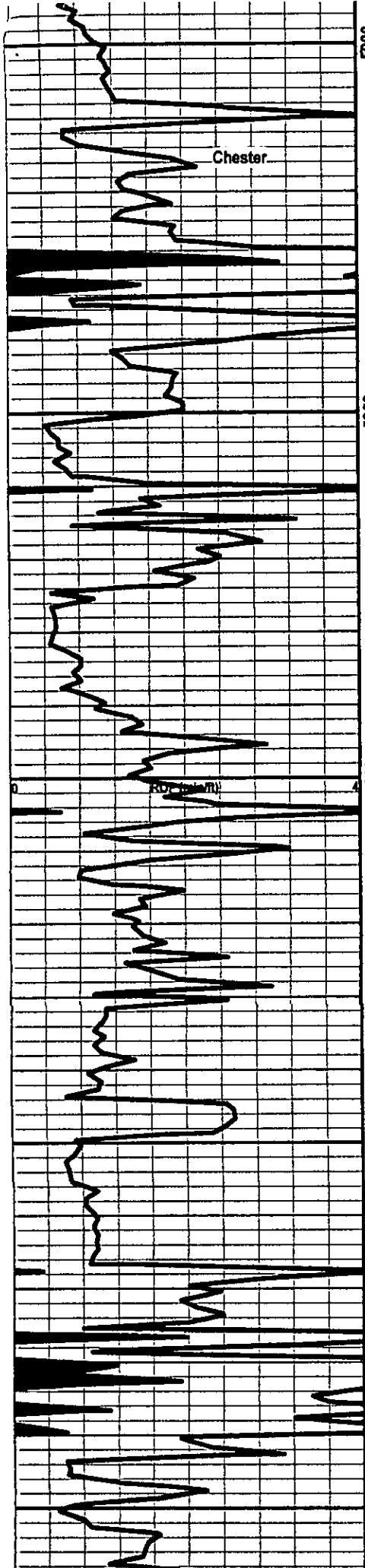
SHALE: Blk gray brown sbfis firm calcareous sndy glauconitic in part occasional interbed with **LIMESTONE:** Lt to med gy brn micr f xln dns sndy glauc p vis por occ lt pale bl hydc flor fnt cut no stn

SS(35% spl): Spec gn lt to med brn to gy frm fri vfu w srted sbrnd grs sil cmt calc lp glauc mica pyr ip carb inclc occ fr intgran por vug por pale yeibl hydc flor(10% spl) slow strmg cut sl o odor

SHALE: Blk dark gray firm sbfis to blocky carbonaceous calcareous sndy in part with **LIMESTONE:** AA

SANDSTONE(60% spl): Lt to medium brown tan speck green S&P frm to fri vfu well sorted sbrnd grains sil cmt v calc lp clean glauc mica carb inclc gd intgran porosity abt pale yel to bl hydc flor(all SS) gd strmg cut gas bubbles trace live oil when crushed light brown oil stain oil odor exc show





carbonaceous calcareous sandy in part with
LIMESTONE: Lt brown buff fine crystalline
 sbchky sandy glauconitic fossils tight no show

LIMESTONE: Med mottled brown to gray dark
 brown micr crpxln hard dense silica argillaceous
 to marly fossils pyrite tight interbed with
SHALE: Blk firm sbfis to fissile waxy trace CHRT

LIMESTONE: Med mottled brown to gray dark
 brown micr crpxln hard dense silica argillaceous
 to marly fossils pyrite tight interbed with
SHALE: Blk firm sbfis to fissile waxy trace CHRT

LIMESTONE: Med mottled brown to gray dark
 brown micr crpxln hard dense silica argillaceous
 to marly fossils pyrite tight interbed with
SHALE: Blk firm sbfis to fissile waxy trace CHRT

SHALE: Blk firm fissile waxy occasional gygn to
 green waxy occasional interbed with
LIMESTONE: Pred as above poor vis porosity no
 show

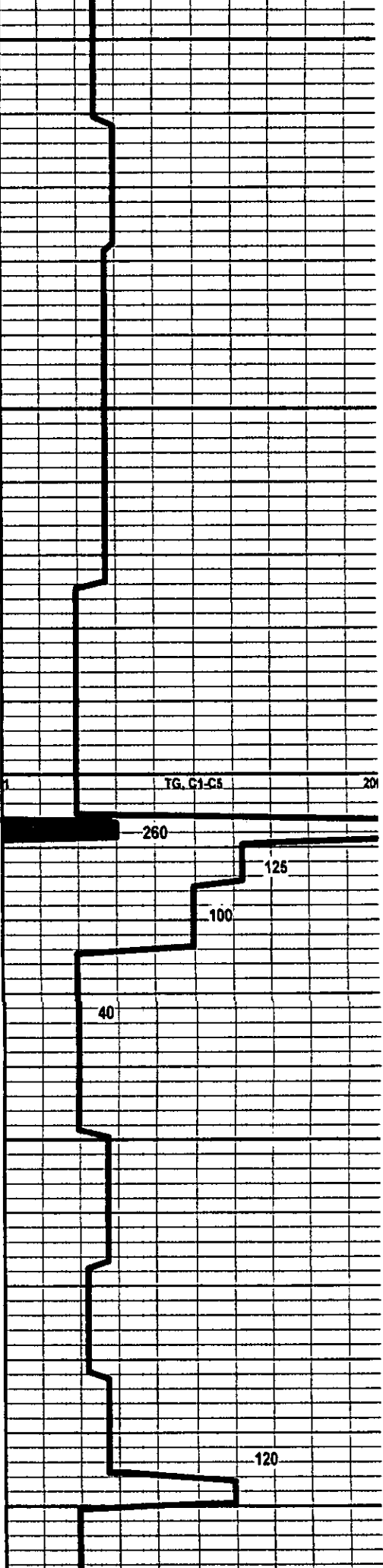
SHALE: Blk firm fissile waxy occasional gygn to
 green waxy occasional interbed with
LIMESTONE: Pred as above poor vis porosity no
 show

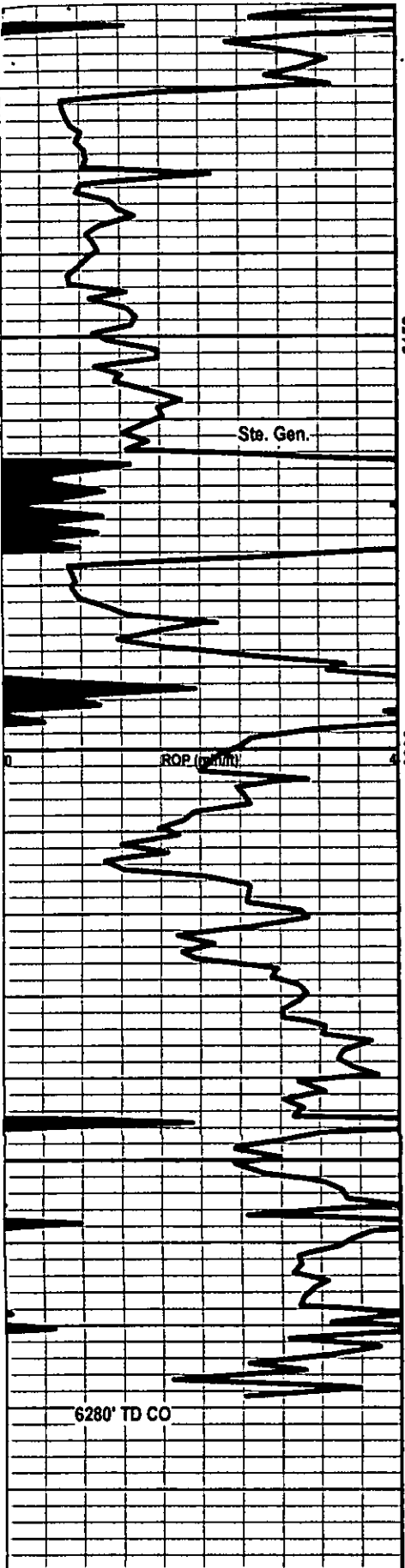
● **SS:** Med to dk brn v frm to sl fri vfu w srted sbmd
 grs sil cmt sl calc v dull brn hydrc flor(most SS)
 exc fast strmg cut abt v dk brn mtx o stn with
 ● hvy dk brn live oil tr solid blk oil resd gd intgran
 & vug por with LS: Med to dk mot brn f xln dns
 ● to tr vug and intxn por arg v sny dk brn mtx oil
 stn v dull brn hydrc flor exc strmg cut tr live oil

LIMESTONE: Med to light brown mottled
 omgrbn to brown occasional dark mottled
 brown blomicr fine crystalline chalky clean to
 argillaceous fossils carbonaceous tight no show

LIMESTONE: Med to light brown mottled
 omgrbn to brown occasional dark mottled
 brown blomicr fine crystalline chalky clean to
 argillaceous fossils carbonaceous tight no show
 interbed with **SHALE:** Dk gray black gygn firm
 sbfis to blocky waxy carbonaceous

● **SS(4% spl):** Med brn hd to fri ip m/fl w to mod
 srted sbmd to md grs occ fl & vw srted ca cmt clin
 ● to arg glauc tt to tr intgran por dull spec goldbrn
 hydrc flor(all ss) exc strmg cut brn o stn & live oil
 sl odor





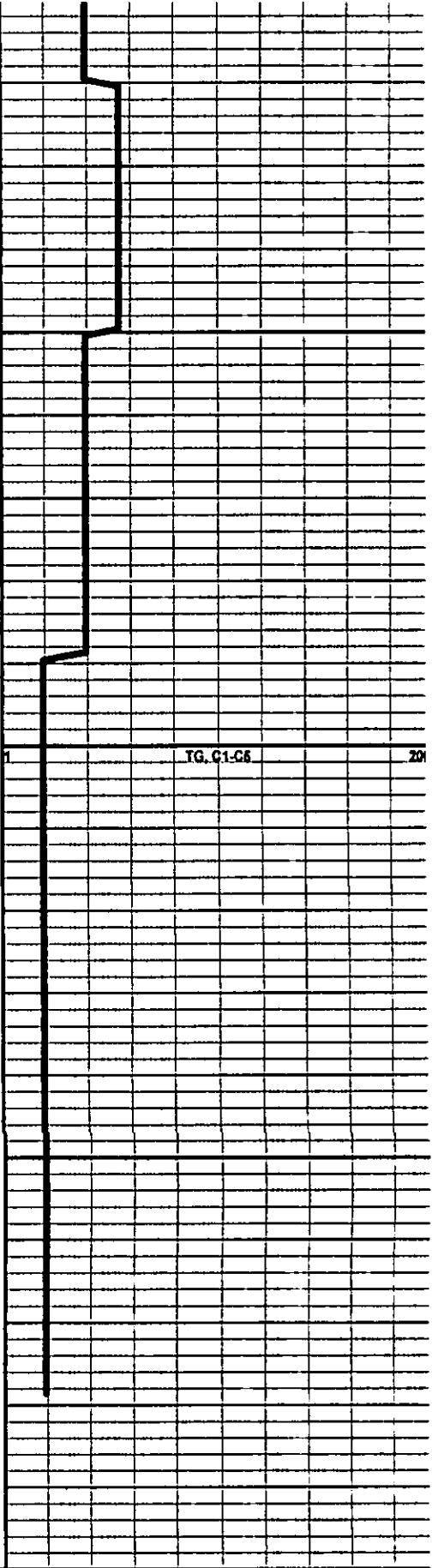
SH: Red to brn gy to gygn lt gn mar varic ip frm
 mica intbd with LS: Brn gy gygn micr crpxln hd
 dns foss lp cln sndy tt no show

SH: Red to brn gy to gygn lt gn mar varic ip frm
 fis to blk y wxy

LS: Med to dk mot brn to gy f xin hd dns sndy
 arg tt no show with SH: Red to brn gy to gygn lt
 gn mar varic ip frm fis to blk y wxy and SH: Blk
 frm sbfis wxy carb

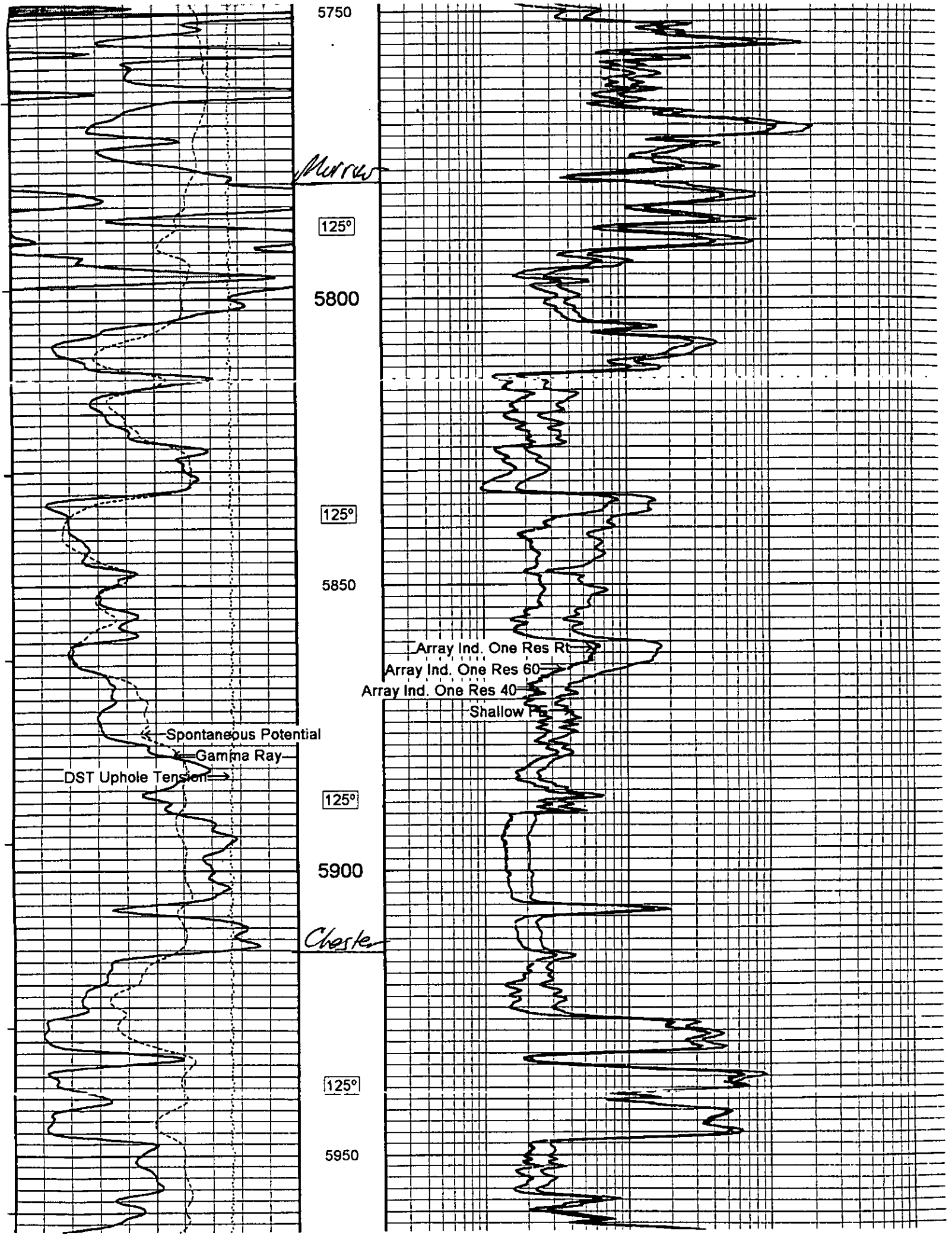
LS: Lt to med gy brn lt gygn micr f xin dns v sly
 to sndy arg no show occ intbd with SH: aa

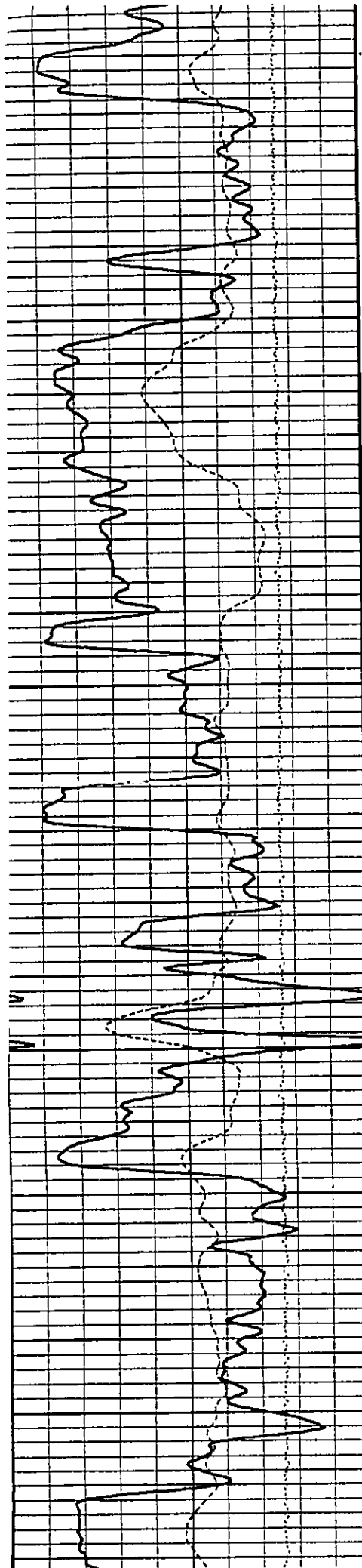
LS: Lt mot brn bf micr f xin dns cln foss tt no
 flor no stn or cut



TG. C1-C6

20





126°

6000

126°

6050

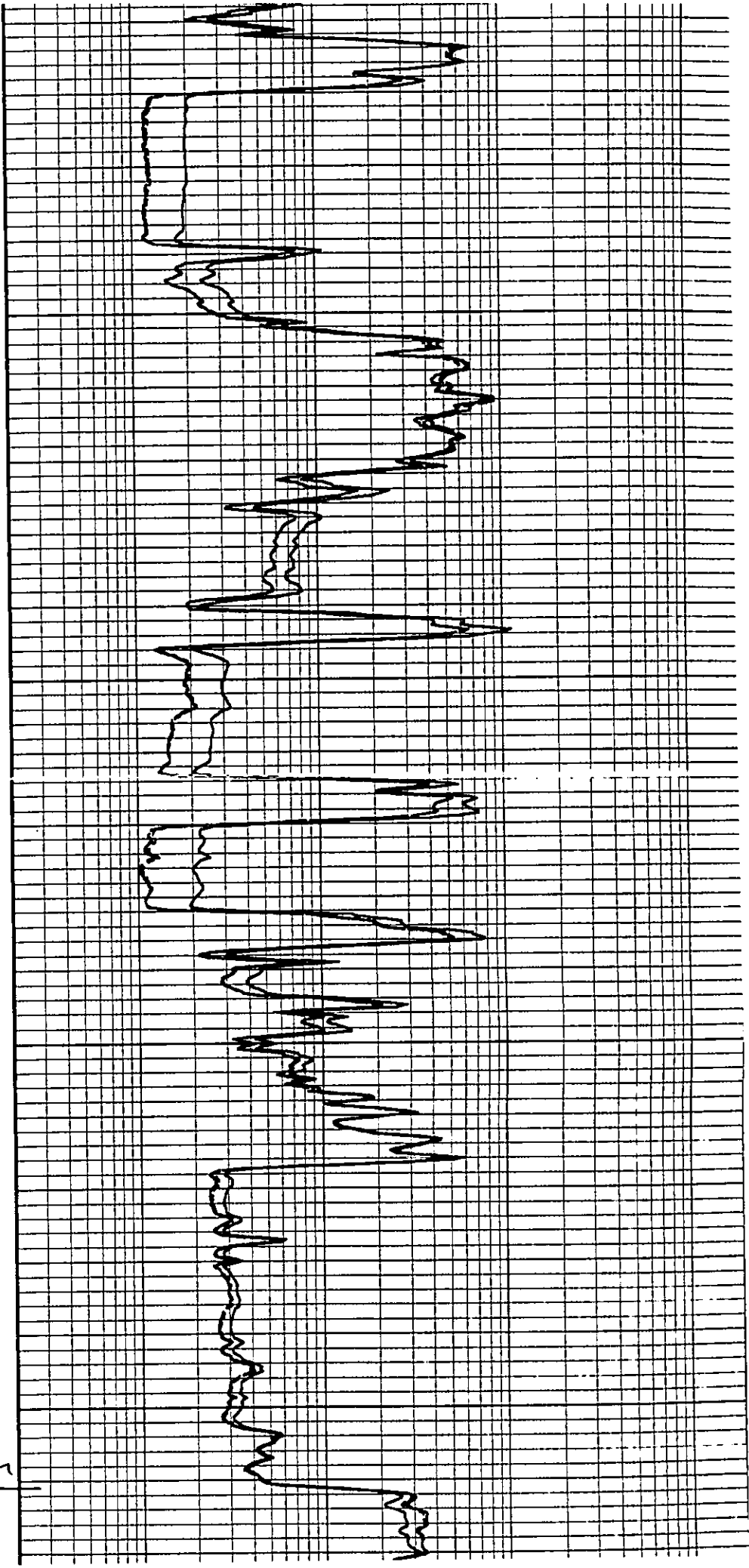
127°

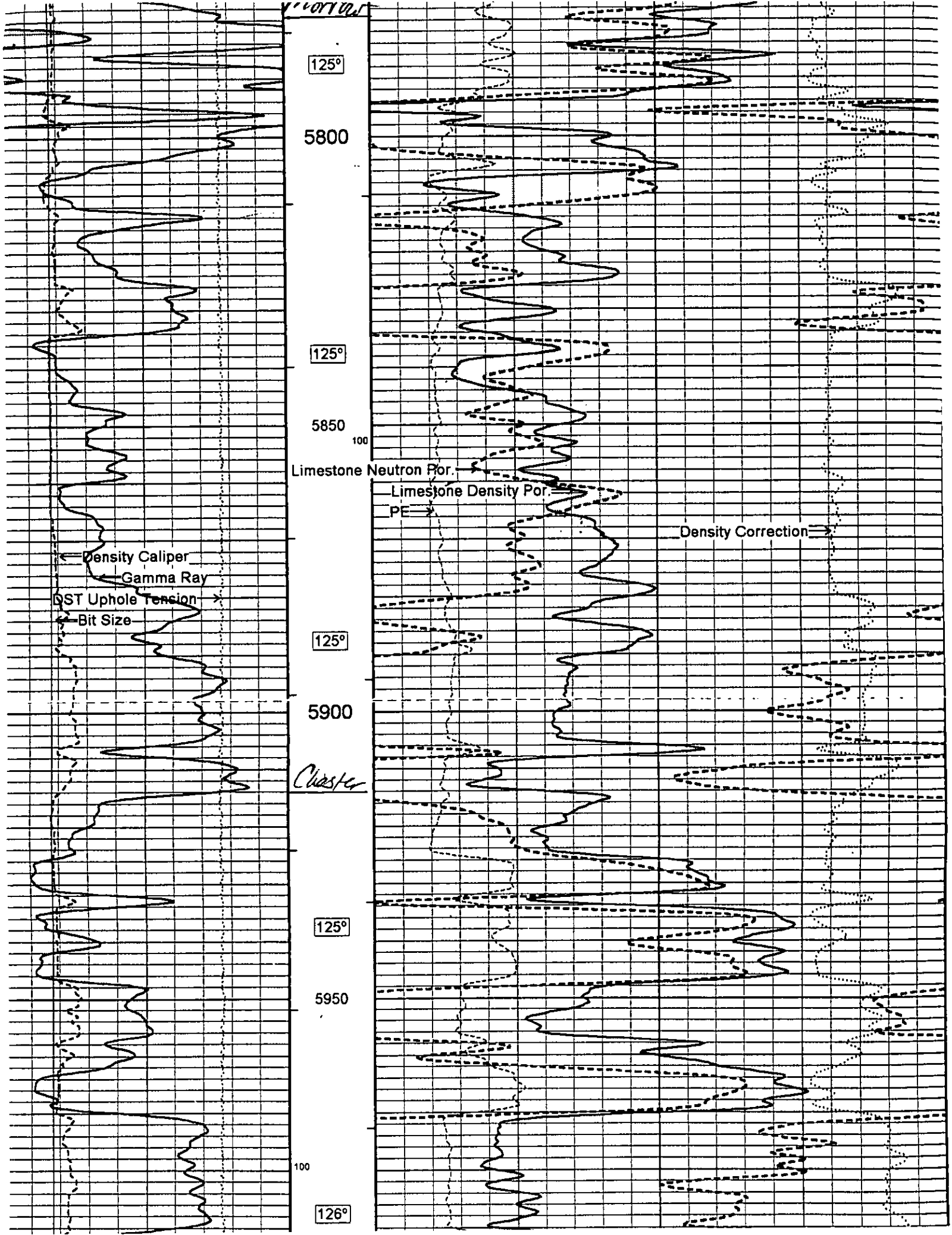
6100

128°

6150

St. Gen





125°

5800

125°

5850

Limestone Neutron Por.

Limestone Density Por.

PE

Density Correction

Density Caliper
Gamma Ray
QST Uphole Tension
Bit Size

125°

5900

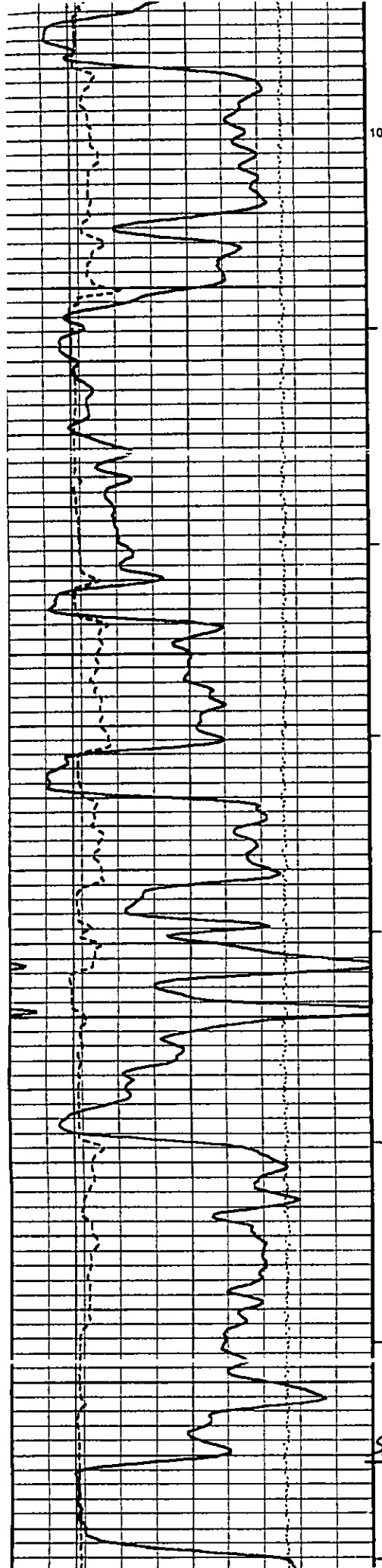
Cluster

125°

5950

100

126°



100

126°

6000

126°

6050

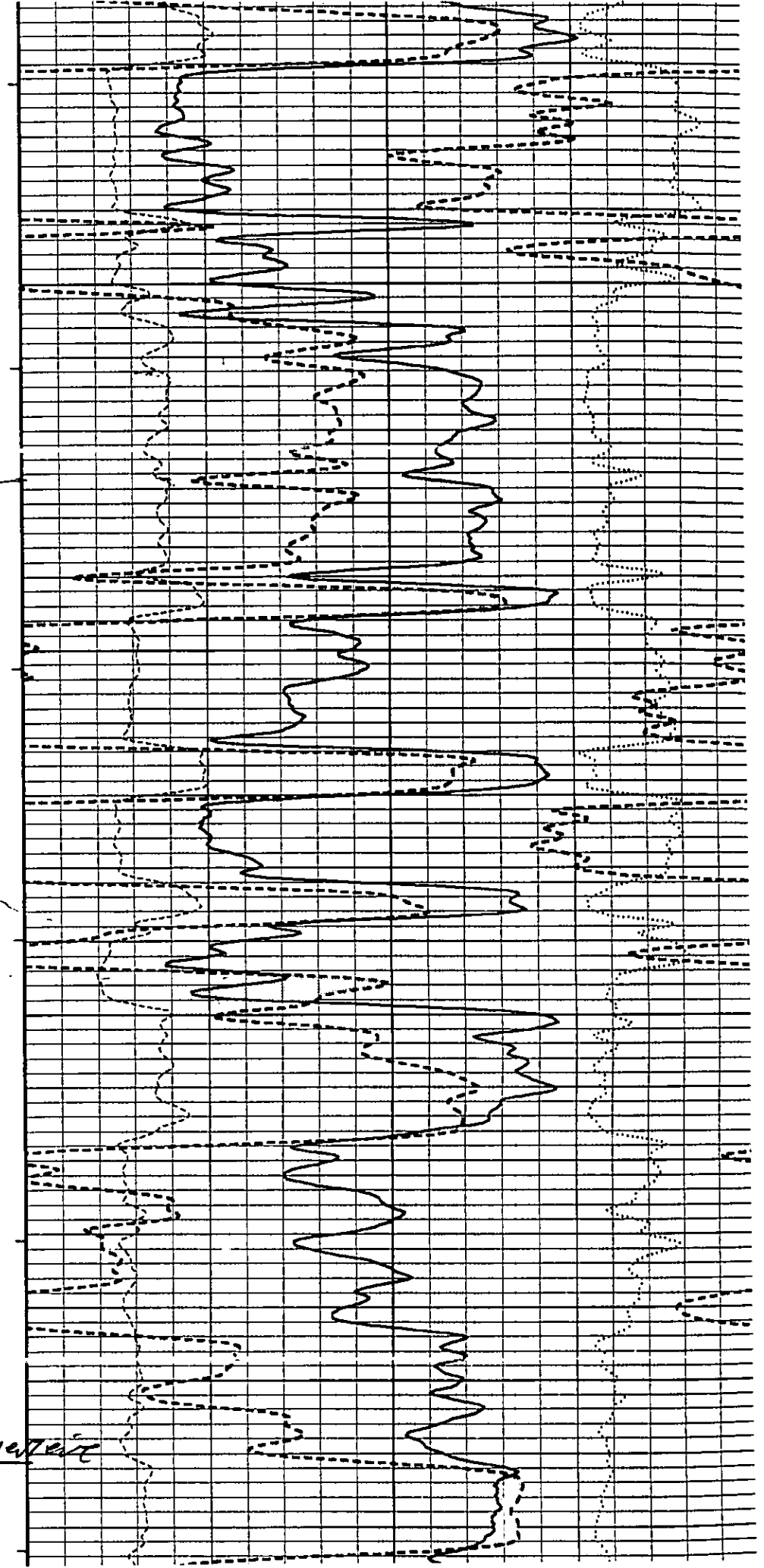
127°

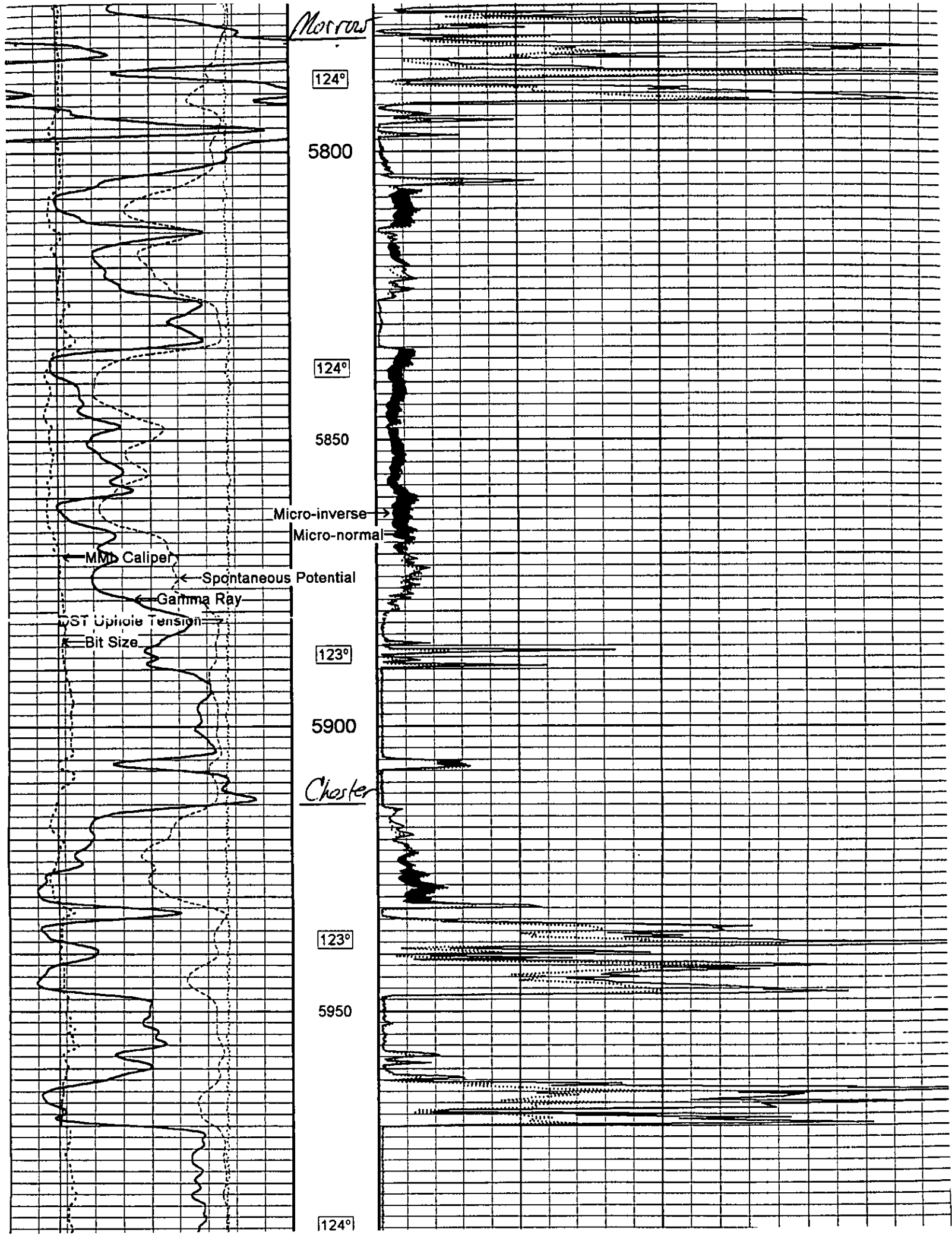
6100

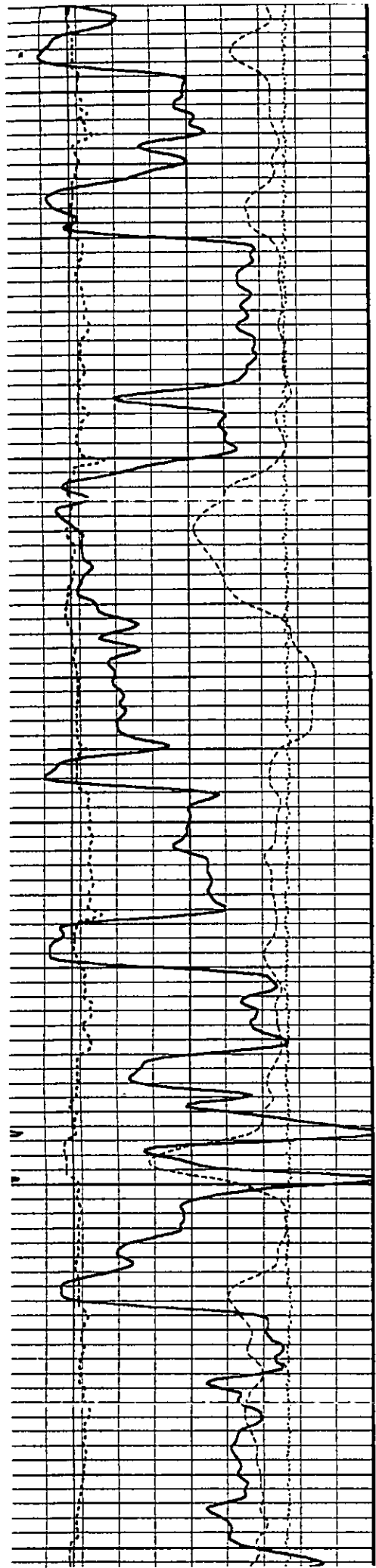
128°

6150

Se. benet







5950

124°

6000

124°

6050

125°

6100

125°

6150

