

FILE NO _____
DRAWING NO 4
SCALE 1" = 1,000'
MINIMUM DEGREE OF
ACCURACY 1:2500'
PROVEN SOURCE OF
ELEVATION U.S.G.S. BM
P-145 @ McDONALD AIRFIELD

I THE UNDERSIGNED HEREBY CERTIFY THAT
THIS PLAT IS CORRECT TO THE BEST OF MY
KNOWLEDGE AND BELIEF AND SHOWS ALL THE
INFORMATION REQUIRED BY LAW AND THE REGU
LATIONS ISSUED AND PRESCRIBED BY THE DEPART
MENT OF MINES
(SIGNED) Samuel D. W.
RPE _____ ILS 837-SU

KENNETH L. BURKETT
SURVEYOR
LICENSE NO. 1337
STATE OF
WEST VIRGINIA
LAND SURVEYING
PLACE SEAL HERE

THIS PLAT DENOTES LOCATION OF
WELL ON UNITED STATES
TOPOGRAPHIC MAPS
FORM NO. 6
1878

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION

DATE OCTOBER 12, 19 90
OPERATOR'S WELL NO W. W. McDONALD
API WELL NO LAND CO. CONSOLIDATION
47 045 01145
STATE COUNTY PERMIT
133001

WELL TYPE LIQUID INJECTION GAS X LIQUID INJECTION _____ WASTE DISPOSAL _____
DEPT. GAS PRODUCTION X STORAGE _____ DEEP _____ SHALLOW X
ELEVATION 2112.65' WATER SHED GUYANDOTTE RIVER
DISTRICT LOGAN COUNTY LOGAN
QUADRANGLE LOGAN, WV 7 1/2 MIN. +15' SW
OWNER BRUCE McDONALD HOLDING CO. ACREAGE _____
ROYALTY OWNER ASHLAND EXPLORATION INC. LEASE ACREAGE _____
LEASE NO 80431 & 80432
WORK DRILL X CONVERT _____ DRILL DEEPER _____ REDRILL _____ FRACTURE OR
STIMULATE X PLUG OFF OLD FORMATION _____ PERFORATE NEW
FORMATION _____ OTHER PHYSICAL CHANGE IN WELL (SPECIFY) _____
PLUG AND ABANDON _____ CLEAN OUT AND REPLUG _____
TARGET FORMATION DEVONIAN SHALE ESTIMATED DEPTH 6,290' KB
WELL OPERATOR ASHLAND EXPLORATION INC. DESIGNATED AGENT FORREST BURKETT
ADDRESS P.O. BOX 391 ADDRESS P.O. BOX 379
ASLAND, KY. 41114 BRENTON, WV. 24818

BENCHMARK SURVEYING INC.
P.O. BOX 400 LYBURN, WV 26632
304-752-6500

RECEIVED
Division of Energy

API # 47- 45-01145

State of West Virginia
DEPARTMENT OF ENERGY
Division of Oil and Gas

AUG 12 91

Well Operator's Report of Well Work

Farm name: McDONALD, BRUCE HOLDING Operator Well No.: C-2 S 133001

LOCATION: Elevation: 2112.65 Quadrangle: LOGAN

District: LOGAN County: LOGAN
Latitude: 4230 Feet South of 37 Deg. 47Min. 30 Sec.
Longitude 350 Feet West of 81 Deg. 55 Min. 0 Sec.

Company: ASHLAND EXPLORATION, INC.
P.O. BOX 391, A1-6
ASHLAND, KY 41114-0391

Agent: FORREST BURKETT

Inspector: TIM BENNETT
Permit Issued: 11/21/90
Well work Commenced: 5/3/91
Well work Completed: 7/18/91
Verbal Plugging
Permission granted on:
Rotary x Cable _____ Rig _____
Total Depth (feet) 6229
Fresh water depths (ft) 1345

Salt water depths (ft) 2235

Is coal being mined in area (Y/N)? N
Coal Depths (ft): Open Mine: 252-262
Open Mine" 1065-1070
Coal @ 1315-1319

Casing & Tubing Size	Used in Drilling	Left in Well	Cement Fill Up Cu. Ft.
16"	37'	37'	11.8
11 3/4"	1445'	1445'	356
8 5/8"	2722'	2722'	770
5 1/2"	6219'	6219'	652
1.9" @ 6092' w/ADL-1 Pkr @ 4205' KB			
1.9" @ 4036'			

OPEN FLOW DATA

Producing formation Devonian Shale Pay zone depth (ft) 4299-6150
Gas: Initial open flow 0/123 MCF/d Oil: Initial open flow _____ Bbl/c
Final open flow 504/931 MCF/d Final open flow _____ Bbl/c
Time of open flow between initial and final tests 3 Hours
Static rock Pressure 500 psig (surface pressure) after 72 Hours

Second producing formation Berea Big Lime Pay zone depth (ft) 4146-4156
Gas: Initial open flow 123 MCF/d Oil: Initial open flow _____ Bbl/c
Final open flow 427 MCF/d Final open flow _____ Bbl/c
Time of open flow between initial and final tests 3 Hours
Static rock Pressure 550 psig (surface pressure) after 72 Hours

NOTE: ON BACK OF THIS FORM PUT THE FOLLOWING: 1). DETAILS OF PERFORATED INTERVALS, FRACTURING OR STIMULATING, PHYSICAL CHANGE, ETC. 2). THE WELL LOG WHICH IS A SYSTEMATIC DETAILED GEOLOGICAL RECORD OF ALL FORMATIONS, INCLUDING COAL ENCOUNTERED BY THE WELLBORE.

For: ASHLAND EXPLORATION, INC.

By: James L. Stephens James L. Stephens, Engr. Te
Date: August 7, 1991

AUG 16 1991

<u>FORMATION OR ROCK TYPE</u>	<u>TOP</u>	<u>BASE</u>
Breathitt	0	1911
Lee Formatoon	1911	2621
Pennington Formation	2621	3286
U. Maxton 3094-3108		
L. Maxton 3205-3286		
Little Lime	3286	3336
Big Lime	3336	3569
Borden Formation	3569	4110
Sunbury Shale	4110	4137
Berea	4137	4160
Devonian Shale	4160	6214
Onondaga LS	6214	TD

LTD 6230
 DTD 6229

WELL TREATMENT

Perf Rhinestreet 20H/5932-6150. N₂ frac using 500 gal 8% inh Fe acid, 803,000 SCF N₂ @ 85,529 SCF/min. BD @ 3273#, ATP 4222#, MTP 4331#, ISIP 3447# & 15 min 2327#.

Perf Huron 23H/5260-5633. N₂ frac using 500 gal 8% inh Fe acid, 804,000 SCF N₂ @ 100,000 SCF/min. BD @ 3067#, ATP 4248#, MTP 4375#, ISIP 3158# & 15 min. 1031#.

Perf Chagrin 20H/4299-4610. N₂ frac using 500 gal 8% inh Fe acid, 804,000 SCF N₂ @ 108,349 SCF/min. BD @ 2880#, ATP 3970#, MTP 4107#, ISIP 2875# & 15 min 1126#.

Perf Berea 20H/4146-4156. 75 Q foam frac using 350 gal 15% inh Fe acid, 70,000 20/40 sand, 470,000 SCF N₂ @ 12,000 SCF/min. BD @ 1250#, ATP 1140# @ 25 BPM foam rate, MTP 1260#, ISIP 900# 7 TF 277 bbls.

Perf Big Lime 20H/3475-3555 - Acidize using 4000 gal 16% inh Fe acid w/18 Lo dense perf balls. BD @ 0#, ATP 0# @ 6 bpm, MTP 1400#, w/ball action, ISIP 0#.

225 / 11

NOV 05 90

Permitting Gas Section

045-1145 Issued 11/21/90

Expired 11/21/92

Page 1 of 1

STATE OF WEST VIRGINIA DEPARTMENT OF ENERGY, DIVISION OF OIL AND GAS WELL WORK PERMIT APPLICATION

- 1) Well Operator: Ashland Exploration, Inc. 2750 (2) 442 Bruce. McDonald Holding Co.
2) Operator's Well Number: C-2, Serial No. 133001 3) Elevation: 2112.65
4) Well type: (a) Oil / or Gas X/
(b) If Gas: Production X/ Underground Storage / Deep / Shallow X/
5) Proposed Target Formation(s): Devonian Shale 441
6) Proposed Total Depth: 6290'KB feet
7) Approximate fresh water strata depths: -
8) Approximate salt water depths: -
9) Approximate coal seam depths: Coalburg-268'-Mined Out No. 2 Gas-1333'-Mined Out
10) Does land contain coal seams tributary to active mine? Yes / No X/
11) Proposed Well Work:
12)

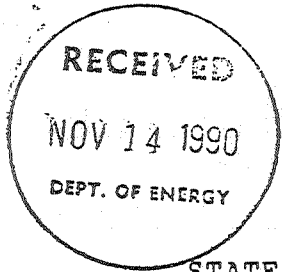
CASING AND TUBING PROGRAM

Table with 7 columns: TYPE, SPECIFICATIONS (Size, Grade, Weight per ft.), FOOTAGE INTERVALS (For drilling, Left in well), CEMENT (Fill-up). Rows include Conductor, Fresh Water, Coal, Intermediate, Production, Tubing, and Liners.

PACKERS : Kind _____ Sizes _____ Depths set _____

Dep # 32 For Division of Oil and Gas Use Only

506019 Fee(s) paid: Well Work Permit Reclamation Fund WPCP Plat WW-9 WW-2B Bond Agent (Type)



- 1) Date: November 12, 1990 (Revision)
- 2) Operator's well number Serial #133001
W.W. McDonald Land Co. Consolidation #C-2
- 3) API Well No: 47 - 045 - 1145
State - County - Permit

STATE OF WEST VIRGINIA
DEPARTMENT OF ENERGY, DIVISION OF OIL AND GAS

NOTICE AND APPLICATION FOR A WELL WORK PERMIT

4) Surface Owner(s) to be served:
 (a) Name Bruce McDonald Holding Co.
 Address P. O. Box 1706
Logan, WV 25601
 (b) Name _____
 Address _____
 (c) Name _____
 Address _____

5) (a) Coal Operator:
 Name Elkay Mining Company
 Address P. O. Box 459
Lyburn, WV 24632
 (b) Coal Owner(s) with Declaration
 Name Bruce McDonald Holding Co.
 Address P. O. Box 1706
Logan, WV 25601
 Name _____
 Address _____

6) Inspector Tim Bennett
 Address Route 2, Box 61-B
Chapmanville, WV 25503
 Telephone (304)-855-7705

(c) Coal Lessee with Declaration
 Name Elkay Mining Company
 Address P. O. Box 459
Lyburn, WV 24632

TO THE PERSON(S) NAMED ABOVE TAKE NOTICE THAT:

_____ Included is the lease or leases or other continuing contract or contracts by which I hold the right to extract oil and gas OR

X Included is the information required by Chapter 22B, Article 1, Section 8(d) of the Code of West Virginia (see page 2)

I certify that as required under Chapter 22B of the West Virginia Code I have served copies of this notice and application, a location plat, and accompanying documents pages 1 through 2 on the above named parties, by:

- _____ Personal Service (Affidavit attached)
- X Certified Mail (Postmarked postal receipt attached)
- _____ Publication (Notice of Publication attached)

I have read and understand Chapter 22B and 38 CSR 11-18, and I agree to the terms and conditions of any permit issued under this application.

I certify under penalty of law that I have personally examined and am familiar with the information submitted on this application form and all attachments, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that the information is true, accurate, and complete.

I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Well Operator Ashland Exploration, Inc.
 By: J. T. Mellinger
 Its: Vice President
 Address P. O. Box 391
Ashland, KY 41114
 Telephone 606-329-5450

Subscribed and sworn before me this 12 day of November, 1990

Hella C. Barber Notary Public
 My commission expires September 9, 1991

Schlumberger

LOG NO. DENSITY / TEMPERATURE / GR

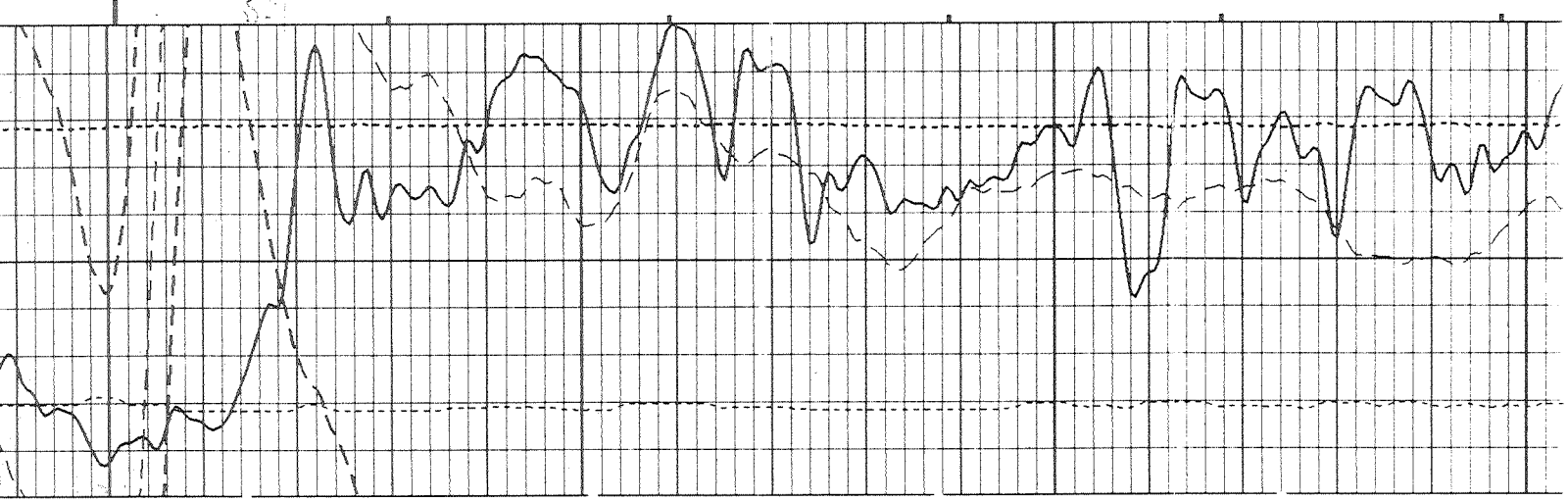
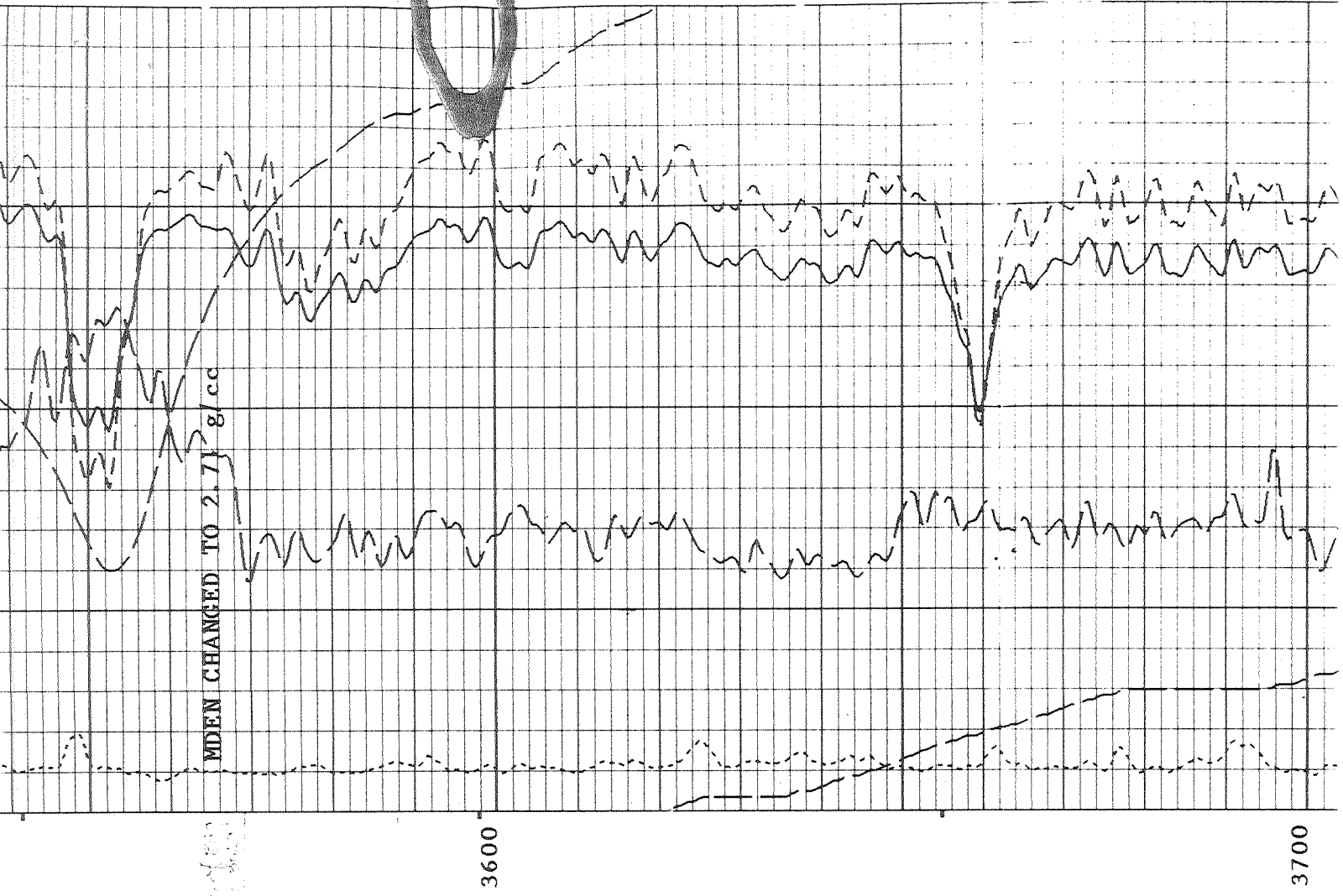
COMPANY ASHLAND EXPLORATION, INC.
WELL McDONALD LAND C-2
FIELD LOGAN DISTRICT
COUNTY LOGAN **STATE** WEST VIRGINIA

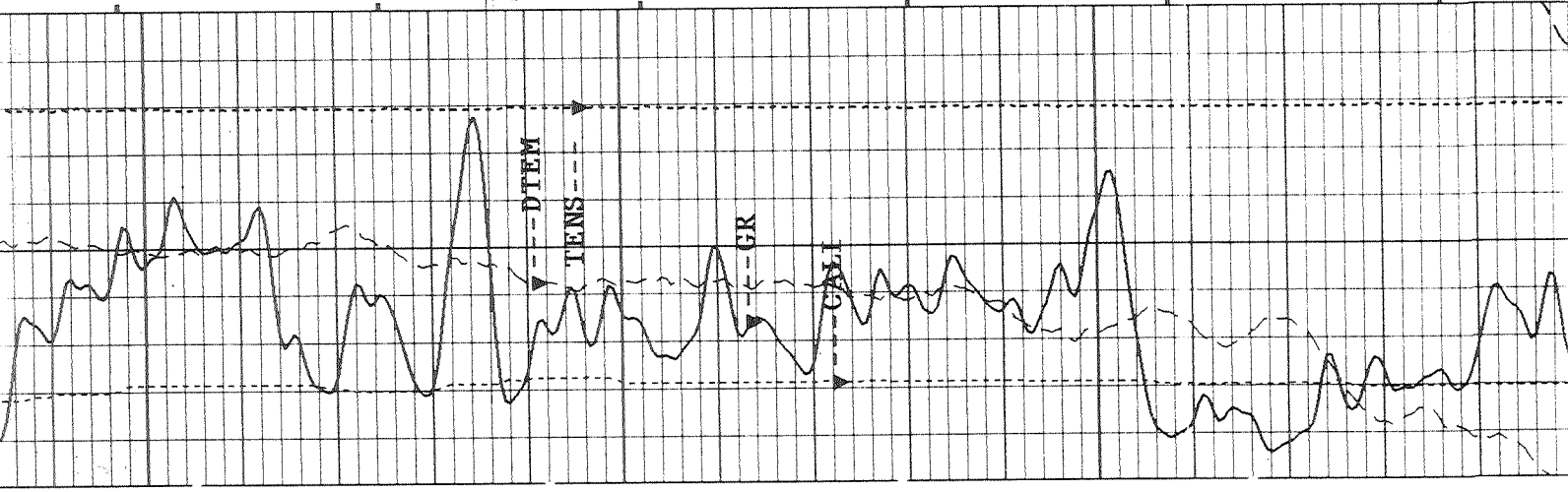
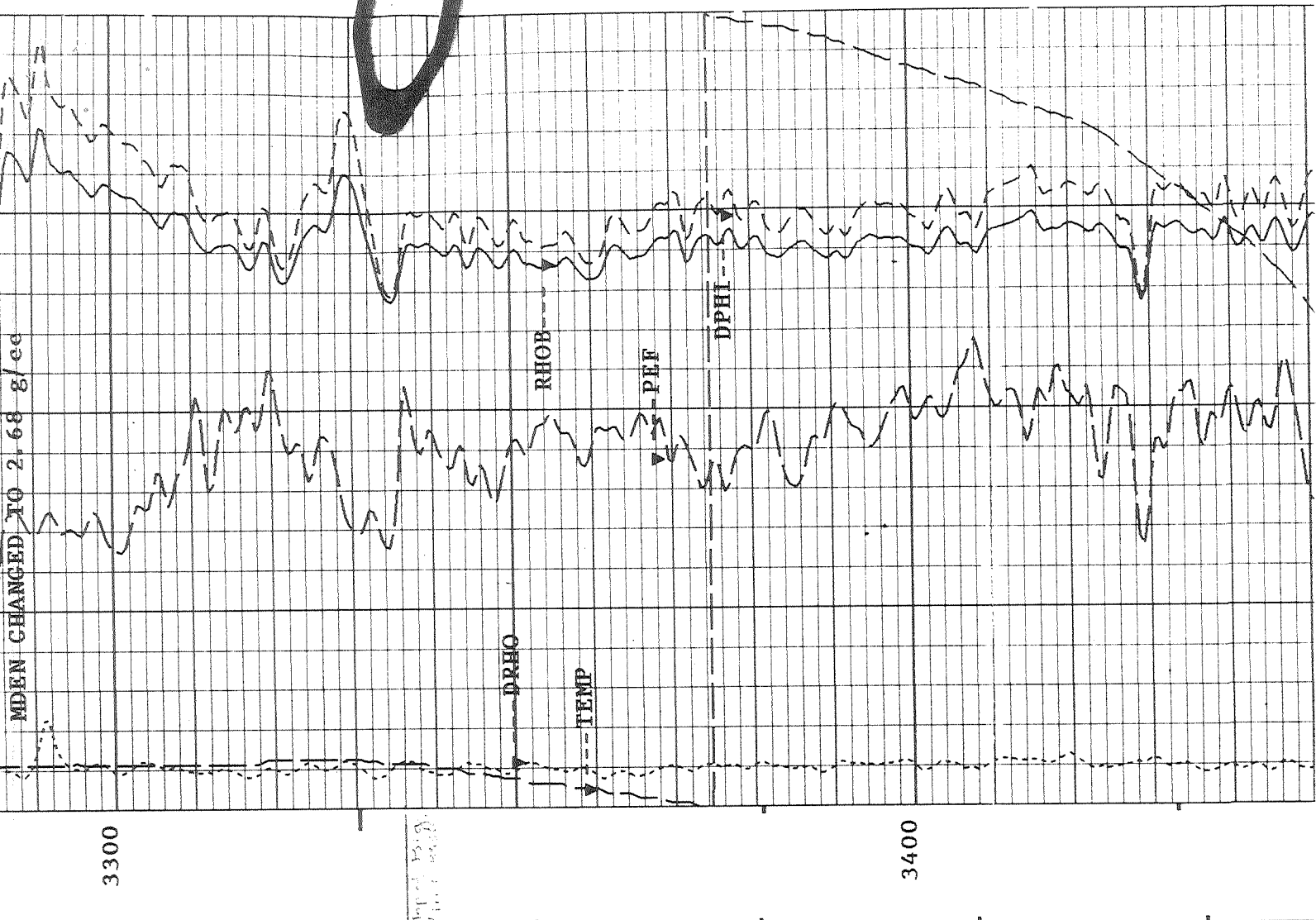
LOCATION
 4230' SOUTH OF 37° 47' 30"
 350' WEST OF 81° 55' 00"
Other Services:
 LDT
 DIL
 TEMP
API SERIAL NO. 47-045-01145
SECT. --- **TWP.** --- **RANGE** ---

Permanent Datum GROUND LEVEL **Elev.** 2113.0 F **Elev.: K.B.2123.0 F**
Log Measured From KELLY BUSHING 10.0 F **above Perm. Datum** **D.F.2122.0 F**
Drilling Measured From KELLY BUSHING **G.L.2113.0 F**

Date	11-MAY-1991		
Run No.	ONE		
Depth Driller	6229.0 F		
Depth Logger (SchL)	6230.0 F		
Btm. Log Interval	6223.0 F		
Top Log Interval	2722.0 F		
Casing-Driller	8 5/8"	@2722.0 F	@
Casing-Logger	2722.0 F		
Bit Size	7 7/8"		
Type Fluid in Hole	AIR/GAS		
Dens.	Visc.	0.0 LB/G	
pH	Fid. Loss		
Source of Sample			
Rm @ Meas. Temp.	@		@
Rmf @ Meas. Temp.	@		@
Rmc @ Meas. Temp.	@		@
Source: Rmf	Rmc		
Rm @ BHT	@	123. DEGF	@
Circulation Ended	6:15 MAY 11		
Logger on Bottom	12:35 MAY 11		
Max. Rec. Temp.	123. DEGF		
Equip.	Location	8291	PAINTSVILLE, KY
Recorded By	WICHMANN		
Witnessed By	DREW WAGGENER		

The well name, location and borehole reference data were furnished by the customer.

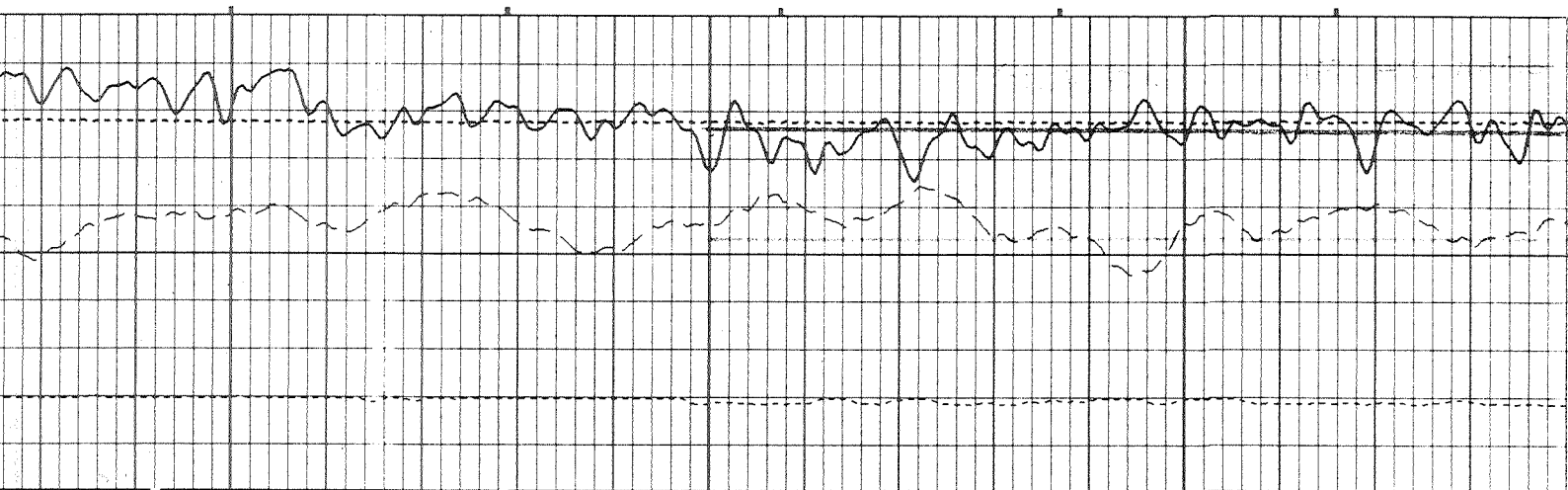


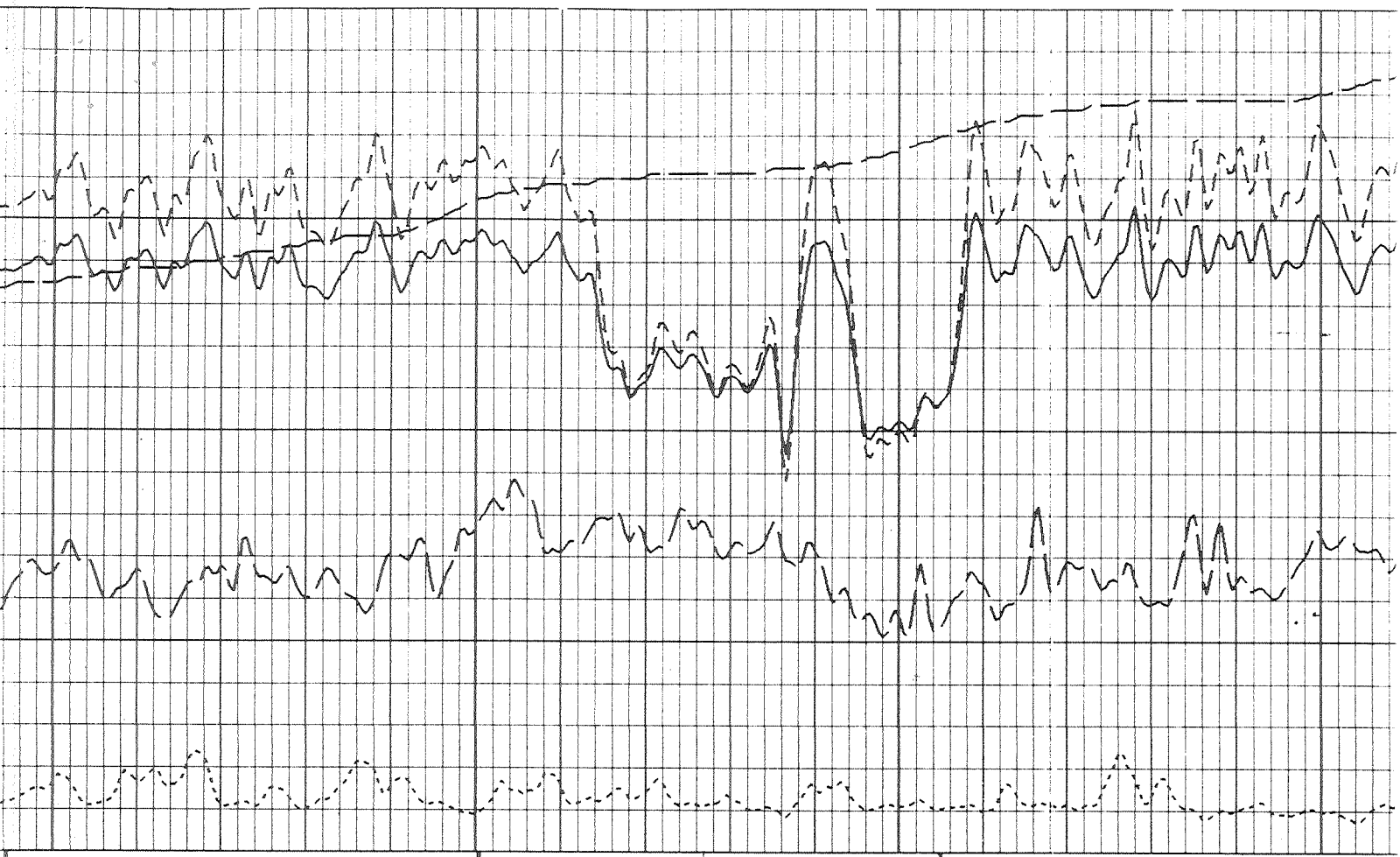




3900

4000





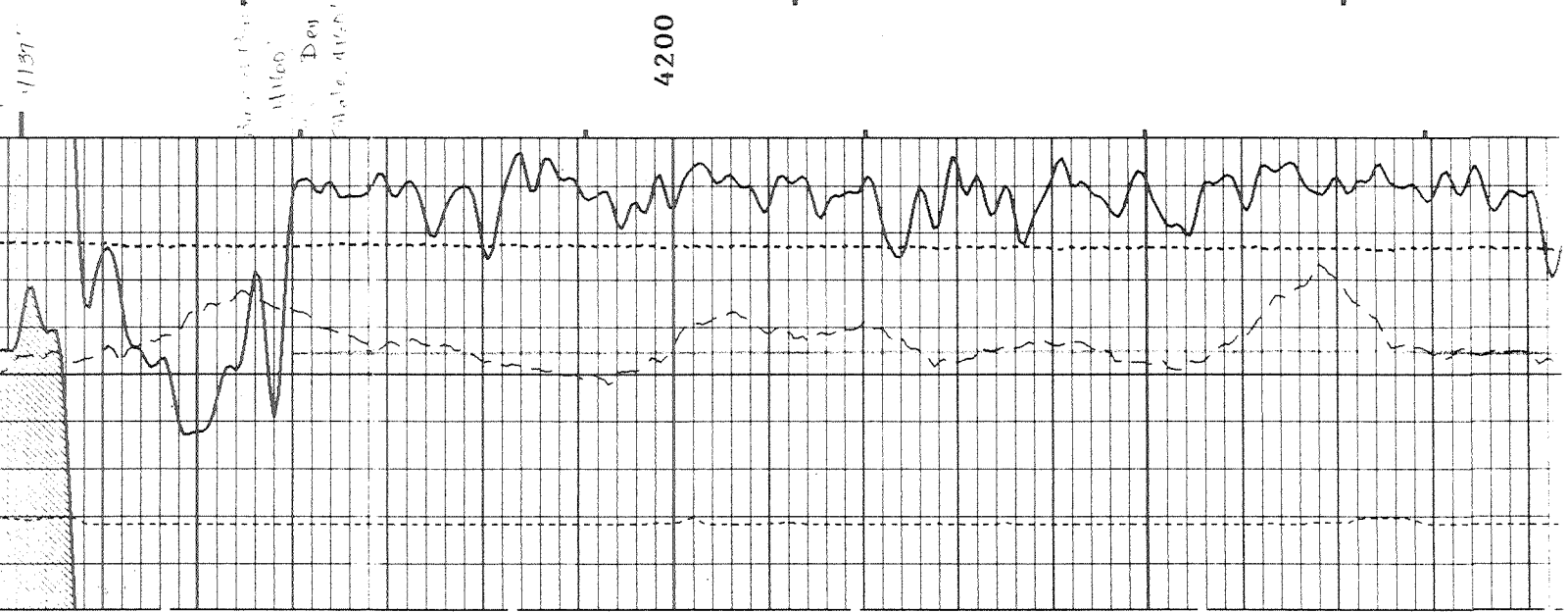
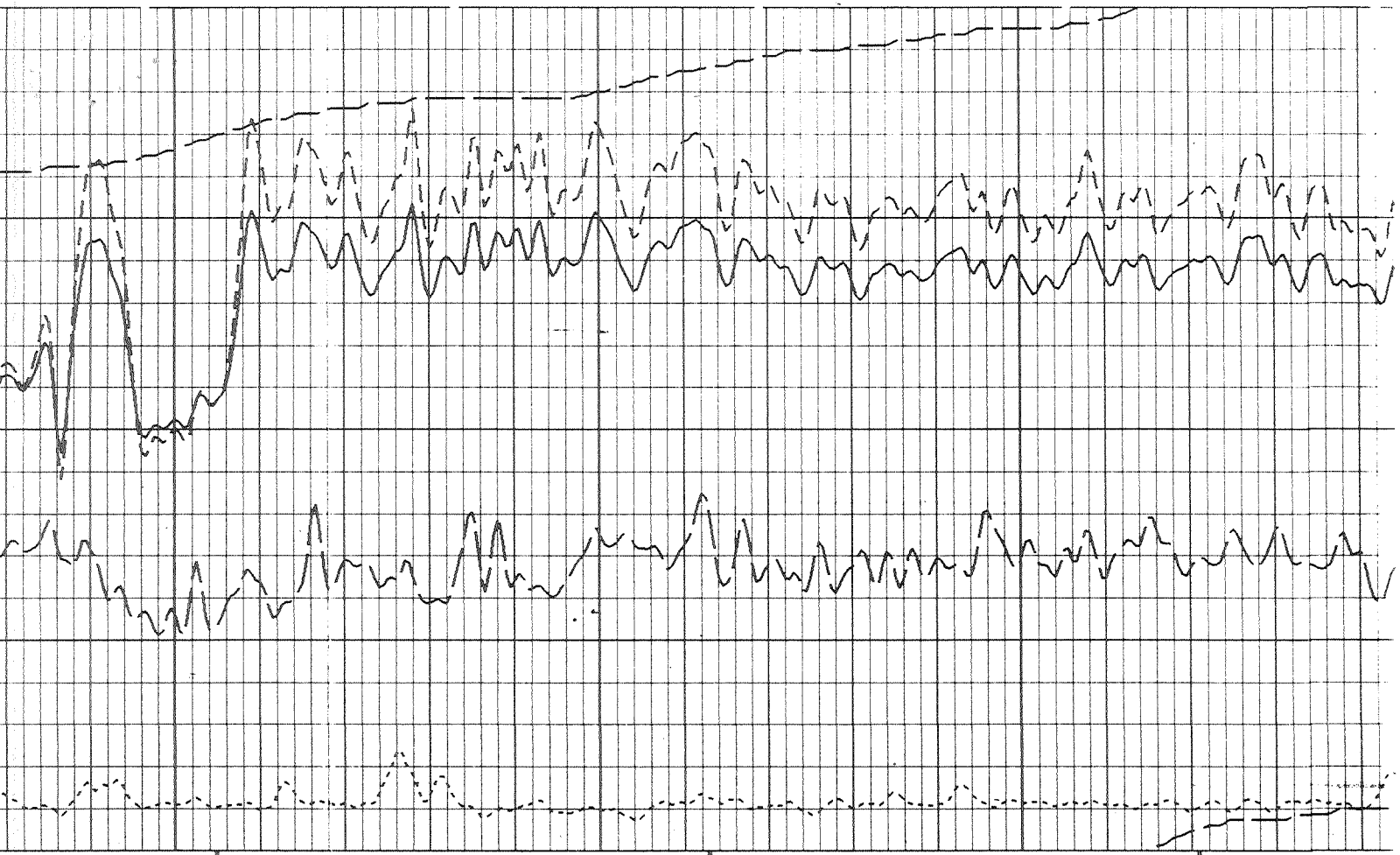
4100

W. 11/37

11/30
Day
4100

4200





1137

11160
11160
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