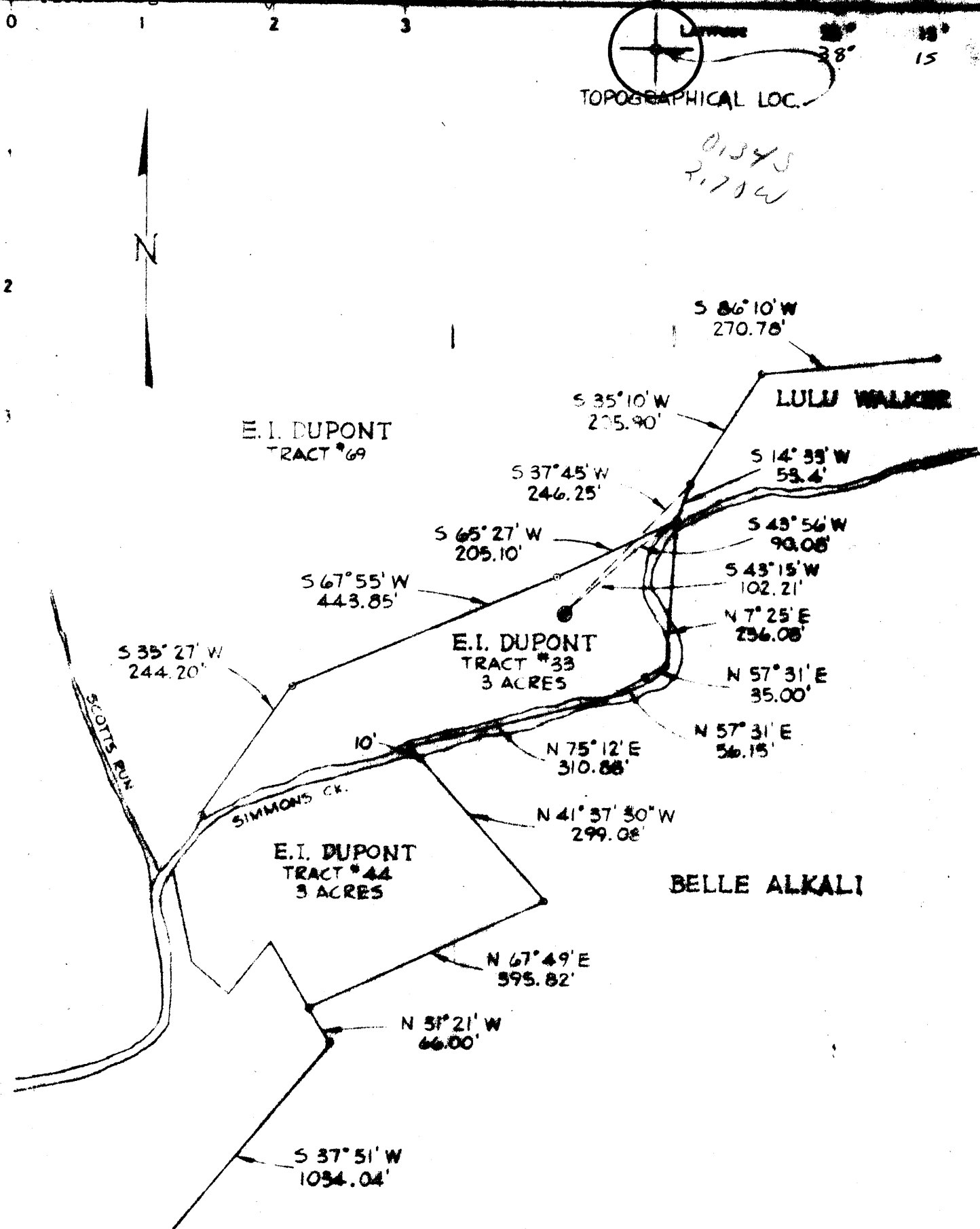


01345
21784



C.M. Sp. #1845798
N-453987

7.5 mi 0615 loc 15 mi
38° 15' .315 .315
81° 32' 30" .20 W 2.47 W

CERTIFICATE

I, the undersigned, hereby certify that this map is correct to the best of my knowledge and belief and shows all the information required by paragraph 4 of the rules and regulations of the oil and gas division of the mining laws of West Virginia.
Minimum degree of accuracy is one part in 100

* E.I. DUPONT MAP # 2312, SH. 1 & 2

Signed *L. B. ...*

- NEW LOCATION
- RECONITION
- DRILL DEEPER
- ABANDONMENT

OWNER: E.I. DUPONT DE NEMOURS / CO. INC.
 ADDRESS: 901 W. DUPONT AVE. BELLE, W.VA. 25015
 USE: INDUSTRIAL SITE
 AP # 539 LEASE NO _____
 WELL (FARM) NO 1 SERIAL NO _____
 ELEVATION (SPRINT LEVEL) 621.12'
 LAND ANGLE PEYTONA NE
 COUNTY KANAWHA DISTRICT Malden
 TYPE OF SURVEY ELEVATION U.S.G.S. BENCH MARK 1111 = 611.8'
 DATE 5-2-72 DRAWING NO _____
 SCALE 1" = 200'

STATE OF WEST VIRGINIA
 DEPARTMENT OF MINES
 OIL AND GAS DIVISION
 CHARLESTON
WELL LOCATION MAP
 FILE NO **KAN-2570**

♦ DENOTES LOCATION OF WELL ON UNITED STATES GOVERNMENT MAPS. SCALE 1" = 200'. LATITUDE AND LONGITUDE COORDINATES BEING REPRESENTED BY DOTTED LINES AS SHOWN.



Water Resources
Permit Number (3191) 38-15
2-1

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS WELLS DIVISION 2

Rotary
Spudder
Cable Tools
Storage Waste Disposal

Quadrangle PEYTONA
Permit No. KAN-2570

WELL RECORD

Company F. I. du Pont de Nemours & Co.
Address 901 W. Du Pont Ave., Belle, W. Va.
Farm Same (Industrial Site) Acres 539
Location (waters) Kanawha River
Well No. 1 Elev. 621.5
District Malden County Kanawha
The surface of tract is owned in fee by E. I. du Pont de Nemours & Company Address Belle, W. Va.
Mineral rights are owned by E. I. du Pont de Nemours & Company Address Belle, W. Va.
Drilling commenced August 8, 1966
Drilling completed August 19, 1966
Date Shoh/66 8/66 From 770' To 826'
With Perforating Gun

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			Kind of Packer
16			None
13 3/8		47'	
10 9-5/8		440'	Size of
5-1/2		1525'	Depth set
4 1/2			
3			Perf. top
2			Perf. bottom
Liners Used			Perf. top
			Perf. bottom

Open Flow /10ths Water in Inch
None /10ths Merc. in Inch
Volume None Cu. Ft.
Rock Pressure 290 lbs. One hrs.
Oil None bbls., 1st 24 hrs.
WELL ACIDIZED (DETAILS) Mud acid from 770' to 818',
WELL FRACTURED (DETAILS) Fractured with water, 20/40 sand, rubber balls, and water flushed.

Attach copy of cementing record. See Attachment
CASING CEMENTED SIZE No. FL 8/22/66 Date
Amount of cement used (bags)
Name of Service Co. Dowell, Div. of Dow Chemical
COAL WAS ENCOUNTERED AT None FEET INCHES
FEET INCHES FEET INCHES
FEET INCHES FEET INCHES

RESULT AFTER TREATMENT (Initial open Flow or bbls.) None
ROCK PRESSURE AFTER TREATMENT No HOURS
Fresh Water No Feet Salt Water No Feet
Producing Sand No Depth

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
All logs for this well are measured from 8.0 feet above ground surface. Ground surface elevation, 621.12.'							
Debris, Wood		Soft	0	39			
Sandstone and Shale		Hard	39	150			
Sandstone		Hard	150	625			
Shale	Grey	Hard	625	760			
Sandstone		Hard	760	965			
Limestone and Shale		Hard	965	1035			

RECEIVED
MAY 11 1972
OIL & GAS DIVISION
DEPT. OF MINES

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth Found	Remarks
limestone		Hard	1035	1205			
shale and sand	Red	Hard	1205	1240			
shale		Hard	1240	1525			
<p><i>HAW-2570</i></p> <p>RECEIVED MAY 11 1972 OIL & GAS DIVISION DEPT. OF MINES</p> <p><u>WELL CEMENTING SUMMARY</u></p> <p>August 8, 1966 - Cemented 13-3/8" steel casing from 47' to the surface, using 50 bags of cement.</p> <p>August 12, 1966- Cemented 9-5/8" steel casing from 440' to the surface, using 254 bags of cement.</p> <p>August 20, 1966- Cemented 5-1/2" steel casing from 1525' to the Surface, using 419 bags of cement.</p> <p>✓ WELL WAS DRILLED WITHOUT A PERMIT NUMBER FROM DEPARTMENT OF MINES (OIL & GAS) (Assigned Permit Number 5-12-72)</p>							

Date _____, 19____

APPROVED E. I. DU PONT DE NEMOURS & CO., Owner

By *[Signature]* (Title)

5/15/72 CEN



DEPARTMENT OF MINES

Oil and Gas Division

OIL AND GAS WELL PERMIT APPLICATION

TO THE DEPARTMENT OF MINES, Charleston, W. Va.

DATE May 12, 1972

Surface Owner: E. I. DuPont de Nemours & Co. Company: E. I. DuPont de Nemours & Company

Address: Belle, W.Va. 25015 Address: Belle, W.Va. 25015

Mineral Owner: Same Farm: Industrial Site Acres: 539

Address: Location (waters): Kanawha River

Coal Owner: Well No: 1 Elevation: 621.5'

Address: District: Malden Loudon County: Kanawha

Coal Operator: Quadrangle: Peytona

Address:

THIS WELL WAS DRILLED WITHOUT A PERMIT FROM DEPARTMENT OF MINES (Oil & Gas) Water Resour Permit Number: 3191

GENTLEMEN:

The undersigned well operator is entitled to drill upon the above named farm or tract of land for oil and gas and the right to drill title thereto, (or as the case may be) under grant or lease dated 1961 by

made to and recorded on the day of 19 in County, Book Page

NEW WELL DRILL DEEPER REDRILL FRACTURE OR STIMULATE OIL AND GAS WELL ORIGINALLY DRILLED BEFORE JUNE 5, 1961

The enclosed plat was prepared by a registered engineer or licensed land surveyor and coal owners and/or operators have been notified as of the above date.

The above named coal owners and/or operator are hereby notified that any objection they wish to make, or are required to make by Section 3 of the Code, must be received by, or filed with the Department of Mines, within ten (10) days.

Copies of this notice and the enclosed plat were mailed by registered mail, or delivered to the above named coal operators or coal owners at their above shown respective address day before, or on the same day with the mailing or delivery of this copy to the Department of Mines at Charleston, West Virginia.

Very truly yours,

(Sign Name) E. I. DuPont de Nemours & Co., Inc. Well Operator

901 West DuPont Avenue

Address of Street

Well Operator Belle

City or Town

West Virginia 25015

State

SECTION 3 ... If no objections are filed or found by the Department of mines, within said period of ten days from the receipt of notice and plat by the department of mines; to said proposed location; the department shall forthwith issue to the well operator a permit reciting the filing of such plat, that no objections have been made by the coal operators or found thereto by the department and that the same is approved and the well operator authorized to proceed.

WASTE DISPOSAL WELL

KAN-2570

PERMIT NUMBER

THIS IS AN ESTIMATE ONLY
ACTUAL INFORMATION WILL BE SUBMITTED ON OG-10 UPON COMPLETION

PROPOSED WORK ORDER TO DRILL DEEPEN FRACTURE-STIMULATE
DRILLING CONTRACTOR: (If Known) NAME RESPONSIBLE AGENT: NAME
ADDRESS ADDRESS
TELEPHONE TELEPHONE
ESTIMATED DEPTH OF COMPLETED WELL: ROTARY CABLE TOOLS
PROPOSED GEOLOGICAL FORMATION: STOI, SI VOL
TYPE OF WELL: OIL DISPOSAL
GAS RECYCLING WATER/FLOOD OTHER
TENTATIVE CASING PROGRAM:

E. I. DU PONT DE NEMOURS AND CO.
BELLE PLANT

ATTACHMENT TO FORM OG-10

RECEIVED

MAY 11 1972

OIL & GAS DIVISION
DEPT. OF MINES

WELL CEMENTING SUMMARY

APPROXIMATE FRESH WATER CEMENTING FEET
APPROXIMATE COAL DEPTHS
August 8, 1966 - Cemented 13-3/8" steel casing from 47' to the surface, using 50 bags of cement.

August 12, 1966 - Cemented 9-5/8" steel casing from 440' to the surface, using 254 bags of cement.

August 20, 1966 - Cemented 5-1/2" steel casing from 1525' to the surface, using 419 bags of cement.

FRACTURE STIMULATE
OIL AND/OR GAS WELLS DRILLED BEFORE JUNE 1, 1972, FIVE (5) COPIES OF PERFORMANCE LOGS AND ORIGINAL RECORDS
OIL AND/OR GAS WELLS DRILLED ON AND/OR AFTER JUNE 1, 1972, FIVE (5) COPIES OF PERFORMANCE LOGS AND ORIGINAL RECORDS
Required logs to be filed with file (OG) copy of completion log and release log to be filed with file (OG) copy of completion log

*added to
Original OG-10*

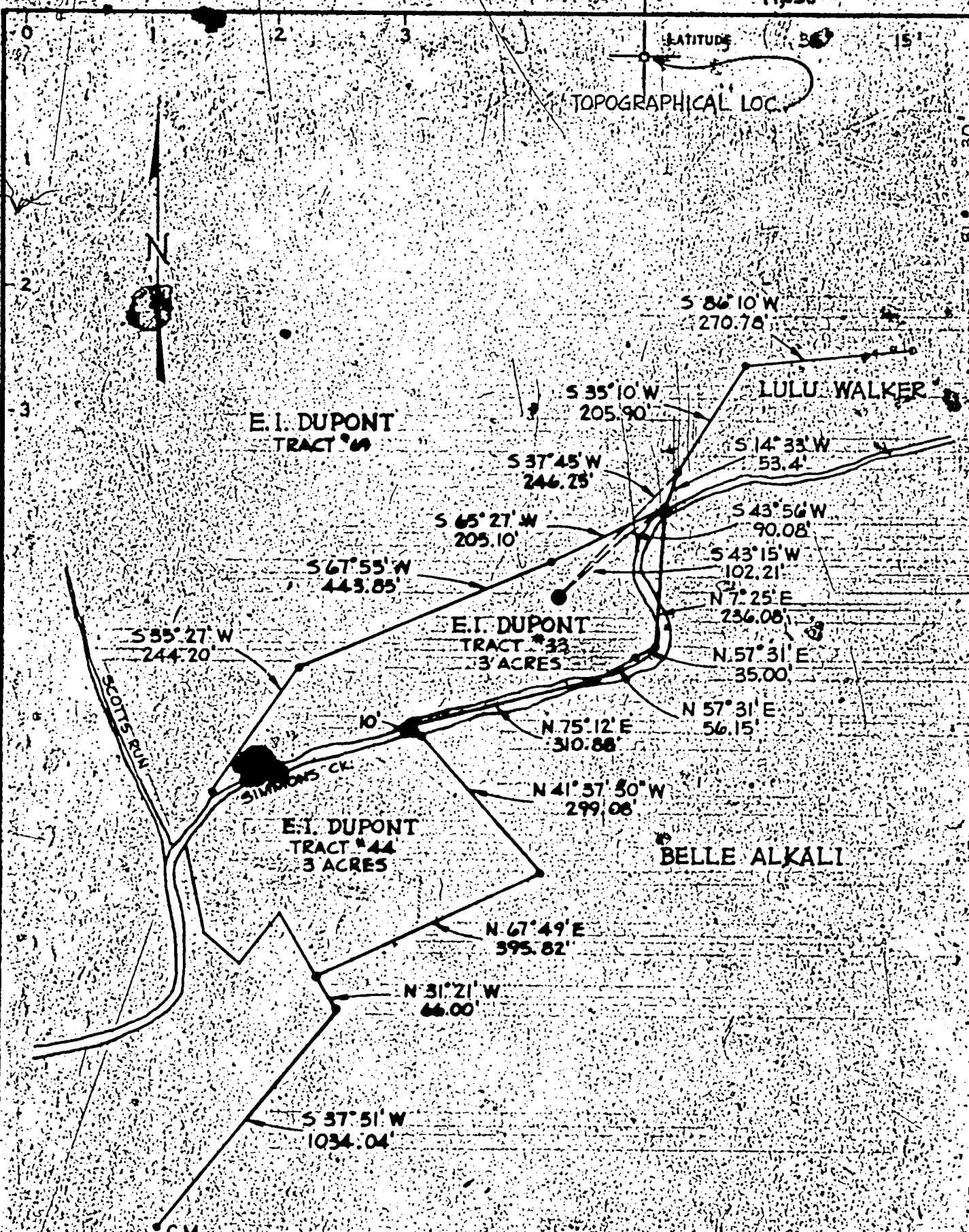
The following information is complete for the completion of the well.
The undersigned, Agent for the well operator, hereby certifies that the well location is as shown on the map attached hereto and that the well is being drilled at this location.
The undersigned, Agent for the well operator, hereby certifies that the well is being drilled at this location.
For completion of the well, the well operator shall file with the Department of Mines a copy of the completion log and release log.

14,050 5/15/72 CEN

LATITUDE 36 15'

TOPOGRAPHICAL LOC.

LONGITUDE 81 30'



CERTIFICATE

I, the undersigned, hereby certify that this map is correct to the best of my knowledge and belief and shows all the information required by paragraph 6 of the rules and regulations of the oil and gas section of the mining laws of West Virginia.

Minimum degree of accuracy in one part in 100

* E.I. DUPONT MAP # 2312, SH. 1 & 2

Signed *L. B. Heinside WV2195*

- NEW LOCATION
- RECONDITION
- DRILL DEEPER
- ABANDONMENT

COMPANY E.I. DUPONT DE NEMOURS & CO., INC.	
ADDRESS 901 W. DUPONT AVE. BELLE, W.VA. 25015	
FARM INDUSTRIAL SITE	
MAP # *	ACRES 539
WELL (FARM) NO. 1	SERIAL NO.
ELEVATION (SPIRIT LEVEL) 621.12'	
QUADRANGLE PEYTONA	
COUNTY KANAWHA	DISTRICT Malden
POINT OF PROVEN ELEVATION U.S.G.S. BENCH MARK 11JJ = 611.00'	
FILE NO.	DRAWING NO.
DATE 1-31-72	SCALE 1" = 200'

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS DIVISION
CHARLESTON
WELL LOCATION MAP
FILE NO KAN-2570
<p>• DENOTES LOCATION OF WELL ON UNITED STATES TOPOGRAPHIC MAPS. SCALE 1" = 20' OR 300'. LATITUDE AND LONGITUDE LINES BEING REPRESENTED BY BORDER LINES AS SHOWN.</p> <p>• DENOTES ONE INCH SPACES ON BORDER LINE OF ORIGINAL TRACING.</p>



87-281/3
8.7.1.1

DIXON	
HEINZMAN	
LOUNT	
FERRY	
PLEN	
ROG	
ST	3
	4

State of West Virginia

Department of Mines

Charleston 5

WILBUR F. EIGENBROD
DIRECTOR

EMER C. WORKMAN
DEPUTY DIRECTOR

November 18, 1964

RECEIVED

AUG 9 1976

OIL & GAS DIVISION
DEPT. OF MINES

Mr. R. S. Wangelin, - Manager
E. I. du Pont de Nemours & Company
P. O. Box 635
Belle, West Virginia

Dear Mr. Wangelin:

This is in answer to your letter of October 23, 1964, regarding the drilling of a waste disposal well on your Belle property in accordance with State regulations.

Article 4, Chapter 22, of the Code of West Virginia, does not authorize me to issue permits for the drilling of waste disposal wells or facilities.

It is your responsibility to see that all mineral, oil, gas and salt brine horizons are protected whenever this type of well would be drilled.

Very truly yours,

W. F. Eigenbrod
W. F. Eigenbrod

WFE/js

cc: Mr. Bern Wright
Mr. Gunner Wamock



ESTABLISHED 1802
INCORPORATED

E. I. DU PONT DE NEMOURS & COMPANY

BELLE, WEST VIRGINIA 25015

BIOCHEMICALS DEPARTMENT
BELLE PLANT, 901 W. DUPONT AVENUE,

August 4, 1976

RECEIVED
AUG 9 1976
OIL & GAS DIVISION
DEPT. OF MINES

Mr. Robert L. Dodd, Deputy Director
Oil and Gas Division
Department of Mines, State of West Virginia
1615 Washington Street, East
Charleston, West Virginia 25305

Dear Mr. Dodd:

Our No. 1 Deep Well (API No. 47-039-KAN2570) was plugged on March 24, 1976 in accordance with prior agreement (Letter, G. A. Koenig to R. L. Dodd, 10/21/74).

A six-inch diameter pipe was mounted on top of the plugged well and a nameplate was attached with appropriate information. The pipe was filled with concrete.

Copies of OG-8 "Affidavit of Plugging and Filling Well" and OG-10 "Well History," are enclosed in compliance with regulations and to complete your file.

The Permit Number 3191 is that of a permit issued by the Division of Water Resources, Department of Natural Resources. The Oil and Gas Division did not issue a permit. A letter (copy attached) of November 18, 1964, W. F. Eigenbrod to R. S. Wangelin, indicates State Regulations at that time did not authorize the Department of Mines to issue such a permit.

Record of the construction of the well was sent to your office on May 9, 1972 (Letter, J. P. Quarles to R. L. Dodd) including Form OG-10 "Well History" and a plat of the well location.

Very truly yours,

G. L. Lamb
Environmental Coordinator

GLL:wjt
Attachment

CC: Mr. John Hall
Division of Water Resources
West Virginia Department of Natural Resources
1201 Greenbrier Street
Charleston, West Virginia 25311



GEOLOGICAL AND ECONOMIC SURVEY
P. O. BOX 879
MORGANTOWN

ROBERT B. ERWIN, DIRECTOR
AND STATE GEOLOGIST

WHITE HALL
WEST VIRGINIA UNIVERSITY
PHONE 304-292-6331

September 7, 1976

RECEIVED

SEP 9 1976

Mr. John E. Northeimer, Geologist
Industrial Waste Section, Permits Branch
Department of Natural Resources
Charleston, WV 25305

OIL & GAS DIVISION
DEPT. OF MINES

Dear Mr. Northeimer:

We have reviewed application W-133 submitted by E. I. duPont to continue operation of their deep disposal well at Belle, West Virginia. The disposal intervals are the same as permitted under previous agreements, and pressures should be maintained below the 0.8 psi/ft. gradient previously permitted.

Because we were not present at the March 31, 1976 meeting between duPont, Water Resources Division, Department of Mines Oil and Gas Division, and the Oil and Gas Conservation Commission, we are not familiar with the monitoring procedure agreed on. Therefore, we have no basis for any opinion.

Sincerely,

Robert B. Erwin

RBE/DGP:CBG

cc: Robert L. Dodd



GEOLOGICAL AND ECONOMIC SURVEY

P. O. BOX 879
MORGANTOWN
26505

ROBERT B. ERWIN, DIRECTOR
AND STATE GEOLOGIST

MINERAL INDUSTRIES BUILDING
WEST VIRGINIA UNIVERSITY
PHONE 304-296-4461

July 12, 1972

RECEIVED

JUL 14 1972

Mr. John A. Davies, Engineer
Industrial Waste Section
Water Resources Division
Department of Natural Resources
Charleston, W. Va. 25305

OIL & GAS DIVISION
DEPT. OF MINES

Dear Mr. Davies:

We have reviewed the industrial waste disposal well permit application No. W-98 submitted by DuPont to operate their No. 2 well at Balls, West Virginia. We feel that final action on this permit application will require more information than we presently have on hand.

We are particularly interested in DuPont's plan for future operation of the shallower No. 1 disposal well at Balls. It is our understanding that they plan to phase the No. 1 well out of active operation and put it on a standby basis for use as a back up system for the No. 2 well. However, the present permit application does not document this intention.

Another point that requires careful consideration is the advisability of using the Devonian Hamilton and Marcellus shales for long term disposal without provisions to monitor the possible upward migration of the waste waters along natural fractures.

Since we feel that there are a number of points that should be discussed and clarified with DuPont regarding permit application W-98, before we can make a final recommendation, we suggest that they be granted permission to continue temporary operation of the No. 2 well under the conditions specified in permit application W-98 for a period not to exceed 90 days. During this 90 day period we would like to have a joint meeting with DuPont and all of the state regulatory agencies involved to clarify our questions regarding the well and discuss our current philosophy regarding subsurface injection of industrial liquid waste.

Sincerely,

ORIGINAL SIGNED BY

R. B. Erwin

Robert B. Erwin, Director
and State Geologist

RBE/vf

CC: Robert L. Dodd



Water Resources
Permit Number (3191) 38-1-100

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS WELLS DIVISION 2

Rotary
Spudder
Cable Tools
Storage
Waste Disposal (KIND)

Quadrangle PEYTONA

WELL RECORD

Permit No. KAN-2570

Company E. I. du Pont de Nemours & Co.
Address 901 W. Du Pont Ave., Belle, W. Va.
Farm Same (Industrial Site) Acres 539
Location (waters) Kanawha River
Well No. 1 Elev. 621.5
District ~~Halden~~ ~~Louden~~ County Kanawha
The surface of tract is owned in fee by E. I. du Pont de Nemours & Company Address Belle, W. Va.
Mineral rights are owned by E. I. du Pont de Nemours & Company Address Belle, W. Va.
Drilling commenced August 8, 1966
Drilling completed August 19, 1966
Date Sho 8/66 & 9/69 From 770' To 826'
With Perforating Gun

Casing and Tubing	Used in Drilling	Left in Well	Packers
Size			Kind of Packer
16			None
13 3/8		47'	Size of
10 9-5/8		440"	Depth set
5-1/2		1525'	
			Perf. top
			Perf. bottom
			Perf. top
			Perf. bottom

Open Flow None /10ths Water in _____ Inch
/10ths Merc. in _____ Inch
Volume None Cu. Ft.
Rock Pressure 290 lbs One hrs.
Oil None bbls. 1st 24 hrs.

Attach copy of cementing record. See Attachment
CASING CEMENTED _____ SIZE _____ No. Fl. 8/22/66 Date
Amount of cement used (bags) _____
Name of Service Co. Dowell, Div. of Dow Chemical

WELL ACIDIZED (DETAILS) Mud acid from 770' to 818',
WELL FRACTURED (DETAILS) Fractured with water, 20/40 sand, rubber balls, and water flushed.

COAL WAS ENCOUNTERED AT None FEET INCHES
FEET INCHES FEET INCHES
FEET INCHES FEET INCHES

RESULT AFTER TREATMENT (Initial open Flow or bbls.) None
ROCK PRESSURE AFTER TREATMENT No HOURS
Fresh Water No Feet
Producing Sand No

Salt Water No Feet
Depth _____

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth	Remarks
All logs for this well are measured from 8.0 feet above ground surface. Ground surface elevation, 621.12.'							
Debris, Wood		Soft	0	39			
Sandstone and Shale		Hard	39	150			
Sandstone		Hard	150	625			
Shale	Grey	Hard	625	760			
Sandstone		Hard	760	965			Perforated 770-826'
Limestone and Shale		Hard	965	1035			

RECEIVED
MAY 11 1972
OIL & GAS DIVISION
DEPT. OF MINES

Formation	Color	Hard or Soft	Top	Bottom	Oil, Gas or Water	Depth Found	Remarks
Limestone		Hard	1035	1205			
Shale and Sand	Red	Hard	1205	1240			
Shale		Hard	1240	1525			

MAN-2570

RECEIVED
MAY 11 1972
OIL & GAS DIVISION
DEPT. OF MINES

WELL CEMENTING SUMMARY

- August 8, 1966 - Cemented 13-3/8" steel casing from 47' to the surface, using 50 bags of cement.
- August 12, 1966 - Cemented 9-5/8" steel casing from 440' to the surface, using 254 bags of cement.
- August 20, 1966 - Cemented 5-1/2" steel casing from 1525' to the surface, using 419 bags of cement.

WELL WAS DRILLED WITHOUT A PERMIT NUMBER FROM DEPARTMENT OF MINES (OIL & GAS)
(Assigned Permit Number 5-12-72)

Date _____, 19__

APPROVED E. I. DU PONT DE NEMOURS & CO., Owner

[Signature]
(Title)

STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
OIL AND GAS WELLS DIVISION

RECEIVED
AUG 9 1976
OIL & GAS DIVISION
DEPT. OF MINES

AFFIDAVIT OF PLUGGING AND FILLING WELL

AFFIDAVIT SHOULD BE MADE IN TRIPPLICATE. ONE COPY MAILED TO THE DEPARTMENT, ONE COPY TO BE RETAINED BY THE WELL OPERATOR AND THE THIRD COPY (AND EXTRA COPIES IF REQUIRED) SHOULD BE MAILED TO EACH COAL OPERATOR AT THEIR RESPECTIVE ADDRESSES.

COAL OPERATOR OR OWNER
E. I. Du Pont de Nemours & Co.
901 W. Du Pont Avenue
Belle, W. Va. 25015

NAME OF WELL OPERATOR
E. I. Du Pont de Nemours & Co.
901 W. Du Pont Avenue
Belle, W. Va. 25015

LEASE OR PROPERTY OWNER
ADDRESS

WELL AND LOCATION
Malden District
Kanawha County
Well No. API 47-039-Kan. 2570

STATE INSPECTOR SUPERVISING PLUGGING: None

AFFIDAVIT

STATE OF WEST VIRGINIA,
County of Kanawha

Jack Grogg and Larry Phares

being first duly sworn according to law depose and say that they are experienced in the work of plugging and filling oil and gas wells and were employed by E. I. DuPont de Nemours & Co. well operator, and participated in the work of plugging and filling the above well, that said work was commenced on the 24th day of March, 1976, and that the well was plugged and filled in the following manner:

BAND OR ZONE RECORD FORMATION	FILLING MATERIAL	PLUGS USED SIZE & KIND	CASING	
			CSG PULLED	CSG LEFT IN
750 foot level		Baker - 5 1/2 inch wire line casing bridge plug		
750 foot to surface	14.4 lbs/gal. cement			
COAL SEAMS	DESCRIPTION OF MONUMENT			
(NAME)				
(NAME)				
(NAME)				
(NAME)				

and that the work of plugging and filling said well was completed on the 24th day of March, 1976.

And further deponents saith not.

Sworn to and subscribed before me this 13 day of May, 1976.

Jack Grogg
Larry Phares
Notary Public

My commission expires:

June 5, 1980

Notary Public
Permit No. Kan-2570

FIGURE 1
LEAK TEST RESULTS
DUPONT NO 2 WELL

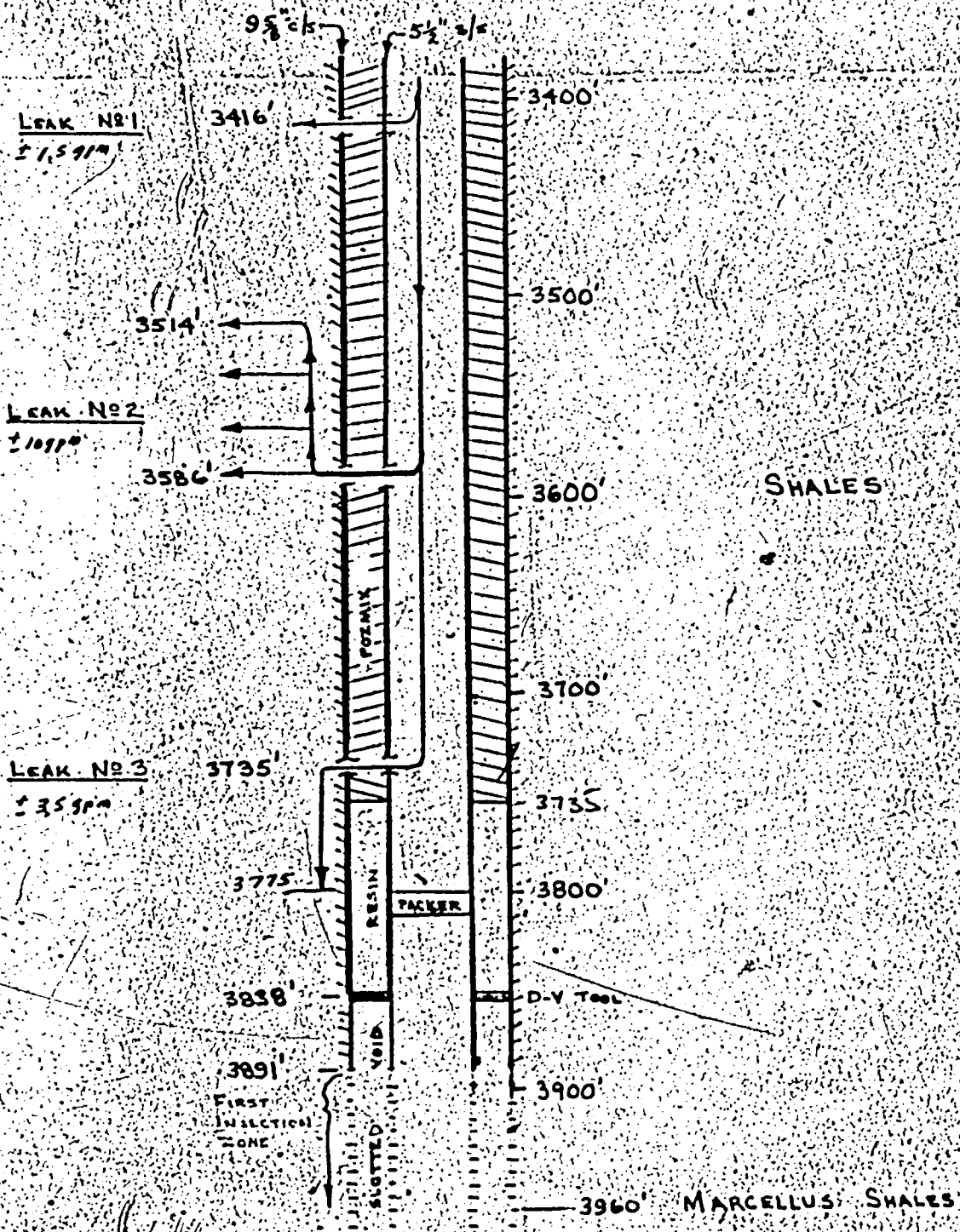
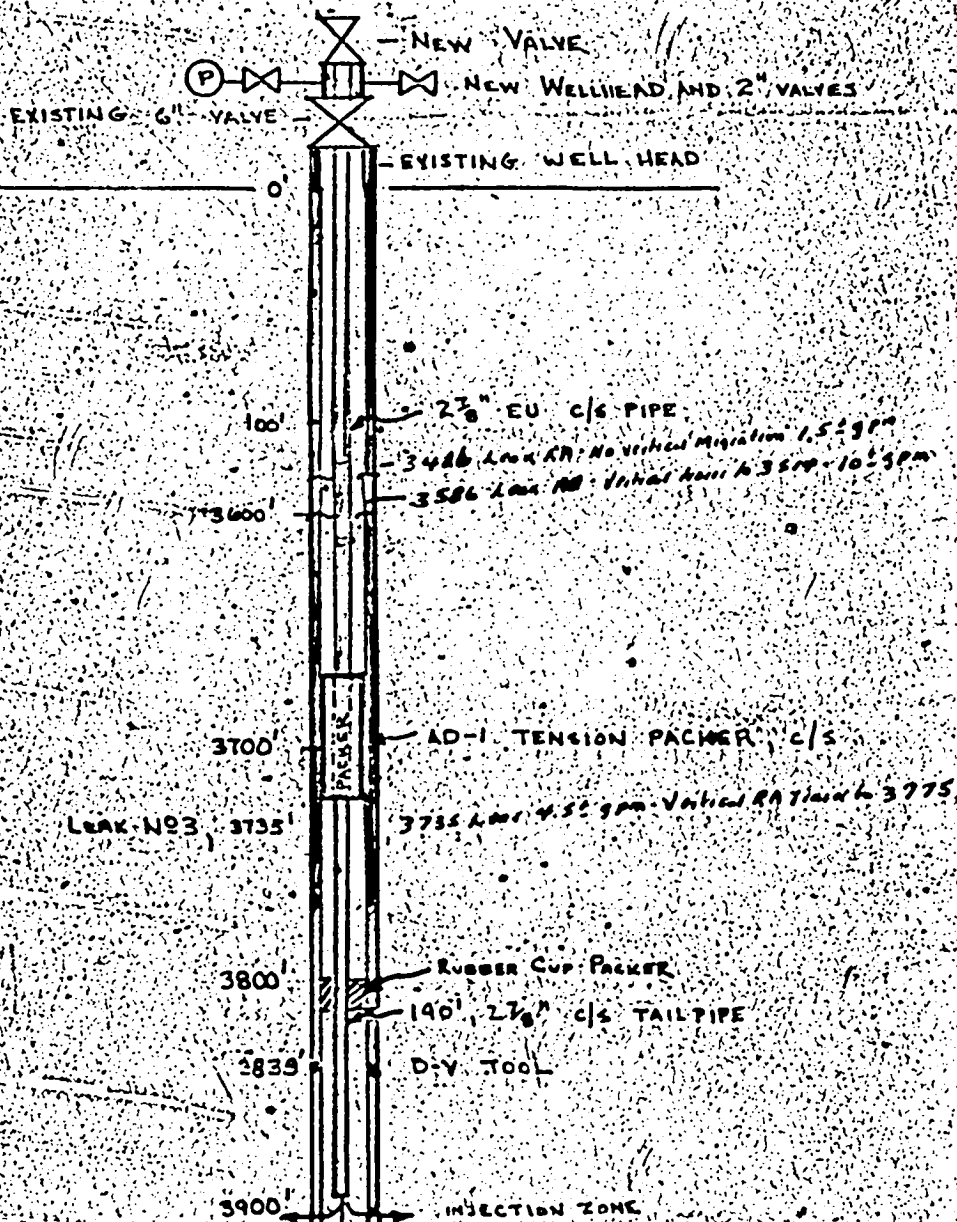


FIGURE 2
 TEMPORARY FACILITIES
 DUPONT NO 2 WELL





RECEIVED

JUL 1 0 1975

OIL & GAS DIVISION
DEPT. OF MINES

GEOLOGICAL AND ECONOMIC SURVEY

P. O. BOX 879
MORGANTOWN
26505

ROBERT B. ERWIN, DIRECTOR
AND STATE GEOLOGIST

WHITE HALL
WEST VIRGINIA UNIVERSITY
PHONE 304-292-6331

July 9, 1975

Mr. Robert L. Dodd, Deputy Director
Oil and Gas Division, Dept. of Mines
1204 Kanawha Blvd. E.
Charleston, WV 25305

Dear Bob:

I have examined the mechanical logs for four wells west of the Belle disposal well (permits 2030, 2213, 2080, 2085) and a fifth (2481) south of that well. In most of these zones a porous section with reported H_2S can be correlated approximately 125 feet above the top of the Newburg. This porous zone is 10 to 20 feet thick, and occurs in the lower half of a thick (75-80 foot) brown dolomite, but "floats" within a 25 to 30 foot interval of this dolomite. By examining sample descriptions for a nearby well (Kan 662) and several to the north (149, 205) and west (166) it can be determined that the lithology of this section is a gray to brown dolomite that break up into fine sand size when drilled, with minor anhydrite. The general lithologies for this interval and rocks between the H_2S zone and the Newburg are shown on the log for Kanawha 2030. A sandy zone is also shown 30 to 40 feet below the H_2S zone. This sandy interval was found in each of the sample description, usually 75 to 85 feet above the Newburg. It does not appear to have much porosity.

I also looked at the logs for the DuPont disposal well and again the zone was present and could be correlated. However, although porosities in the zone in that well range from 5 to 7 1/2 percent, this is higher than in any of the other wells. So if this is the best well in the area in which to attempt a completion apparently it was still not good enough. According to the drill stem test data the interval from 4975 to 5055 was tested, but was not used, therefore, DuPont is already aware of the zone, has tested it, and apparently rejected it. I'm afraid your suggestion to drill an offset to the same zone would not be agreeable to them.

I have enclosed a sketch showing the stratigraphic positions of the Oriskany, Newburg, and H_2S zone as reported in drillers' logs. There is no geographic significance to the cross section. Data were entered from OG-10 forms in order of permit numbers, but all are nearby. The brown to gray dolomite in question is marked on the included log copies, and the H_2S zone within it is also indicated. These logs indicate that the potential of this zone nowhere approaches that of the Newburg. These logs, plus the fact that the zone has previously been tested without success, and the dangers of disposing in a zone with poison gas, all suggest that the zone is unfavorable for disposal on this property.

Mr. Robert L. Dodd

Page 2

July 9, 1975

Yours truly,

Doug

Douglas G. Patchen, Head
Oil and Gas Section



STATE OF WEST VIRGINIA
DEPARTMENT OF NATURAL RESOURCES
CHARLESTON 25305

IRAS. LATIMER, Jr.
Director

May 26, 1972

Mr. D. B. Berlien
E. I. duPont de Nemours & Company
P. O. Box 635
Belle, West Virginia 25015

Dear Mr. Berlien:

Thank you for transmittal of the well record and location map for the two disposal wells at the duPont, Belle Plant.

Your memorandum requesting approval of a modification of Permit No. 3326 for the No. 2 Well has been considered but a review of the present permit and application file prompts the following comments:

1. The permit package is highly fragmented and, from the data given in the application, the actual injection zone or zones cannot be determined. Nine strata are listed in the application as possible injection zones but the final choices need to be on record.
2. The file record of meetings and correspondence pertaining to the No. 2 Well spans a period of time from 4-19-67, the date of issue of Permit No. 3326, through June 26, 1969. A review of these records does not clarify the present situation for Well No. 2.
3. An updated Well Diagram, SK-16095 is in the file. There is no way to relate this diagram to the current status of the well.

RECEIVED

JUN 5 1972

OIL & GAS DIVISION
DEPT. OF MINES

May 26, 1972

Mr. D. B. Berlien, duPont, Belle Plant

4. Application No. W-4, dated 2-3-67, lists an average flow for injection at 260 gallons per minute. The maximum well head pressure is given as 900 psi. Recent DWD-1 Forms submitted on the operation of the No. 2 Well show well head pressures around 1100 psi, which is in violation of your permit. However, the existing State policy is to limit the bottom-hole pressure of an industrial waste injection well to 0.8 psi per foot of depth. This would provide for a maximum well head pressure in excess of 900 psi but, since the specific gravity of the injection fluid is not given in the application No. W-4 we cannot make a precise calculation. But, this reason alone should be sufficient justification for duPont to request a new permit for the No. 2 Well.
5. A modification of Permit No. 3326 was granted as recently as October 14, 1971 to cover the injection of BENLATE and sodium styrene sulfonate wastes.

Based on the above comments, it is the opinion of this Agency that it would be to the benefit of duPont as well as Division of Water Resources that a new application be prepared to cover the No. 2 Well as the situation exists today.

Very truly yours,

WATER RESOURCES DIVISION


Edgar H. Henry
Chief

ENH:JAD/nl

cc: Dr. R. B. Erwin
✓ Mr. R. L. Dodd
Mr. D. C. Thomas



STATE OF WEST VIRGINIA
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RESOURCES
CHARLESTON 25305

WATER POLLUTION CONTROL PERMIT

Permit No. 3191

Date: January 7, 1966

Subject: Industrial Wastes Disposal

Location: Belle
(City)

Kanawha
(County)

Kanawha River
(Drainage Basin)

To whom it may concern:

This is to certify that E. I. du Pont de Nemours and Company, P. O. Box 635, Belle, West Virginia,

is hereby granted a Water Pollution Control Permit to substantially add to its existing disposal system. Said addition consists of facilities for the subsurface disposal of industrial wastes as defined and described in Permit Application W-1, Preliminary Report and other attachments.

This permit is subject to the following terms and conditions: The information submitted on and with Permit Application No. W-1 dated the 2nd day of November 1965 are all hereby made terms and conditions of this permit with like effect as if such permit application information were set forth herein.

The quality of the surface and ground waters are to be maintained at satisfactory levels and installation and operation of the proposed facility, including adjacent monitoring wells, are not to cause any of the following conditions to exist either the surface or ground waters of the State:

- (a) Distinctly visible floating or settleable solids, suspended solids, foam or oily slicks of unreasonable kind or quantity;

- (b) Objectionable bottom deposits or sludge banks;
- (c) Objectionable odors in the vicinity of the waters;
- (d) Objectionable taste and/or odor in municipal water supplies;
- (e) Concentrations of materials poisonous to man, animal or fish life;
- (f) Dissolved oxygen concentration to be less than 3.0 parts per million at the point of maximum oxygen depletion;
- (g) Objectionable color;
- (h) Objectionable bacterial concentrations;
- (i) Requiring an unreasonable degree of treatment for the production of potable water by modern water treatment processes as commonly employed.

The above-described activity is to be extended, modified, added to, made, enlarged, acquired, constructed or installed, and operated, used and maintained strictly in accordance with the terms and conditions of this permit; with the plans and specifications submitted with Permit Application No. V-1, dated the 2nd day of November, 1965; with the plan of maintenance and method of operation thereof submitted with such application; and with any present or future rules and regulations duly adopted by the State Water Resources Board.

Failure to comply with the terms and conditions of this permit, with the plans and specifications submitted with Permit Application No. V-1, dated the 2nd day of November, 1965, with the plan of maintenance and method of operation thereof submitted with such application, shall constitute grounds for the revocation or suspension of this permit and for the invocation of all the enforcement procedures set forth in Article 5A, Chapter 20 of the Code of West Virginia.

This permit is issued in accordance with the provisions of Article 5A, Chapter 20 of the Code of West Virginia and is transferable under the terms of Section 7 of said article.

By *Thomas Wright*
Chief

BV: ENH/nl
cc: Public Relations Division



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
CHARLESTON

November 18, 1964

C
O
P
Y

Mr. R. S. Wangelin, Manager
E. L. du Font de Nemours & Company
P. O. Box 635
Belle, West Virginia

Dear Mr. Wangelin:

This is in answer to your letter of October 23, 1964, regarding the drilling of a waste disposal well on your Belle property in accordance with State regulations.

Article 4, Chapter 22, of the Code of West Virginia, does not authorize me to issue permits for the drilling of waste disposal wells or facilities.

It is your responsibility to see that all mineral, oil, gas and salt brine horizons are protected whenever this type of well would be drilled.

Very truly yours,

W. F. Eigenbrod

WFE/js

cc: Mr. Bern Wright
Mr. Gummer Wamsok



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
BELLE, WEST VIRGINIA

CC: Mr. Bern Wright, Chief
Water Resources Division
State Dept. of Natural Resources
1709-A Washington St., East
Charleston, West Virginia 25305

INDUSTRIAL AND BIOCHEMICALS DEPARTMENT
BELLE WORKS, P. O. BOX 635

October 23, 1964

Mr. W. F. Eigenbrod, Director
Department of Mines
State Capitol Building
Charleston, West Virginia 25305

Dear Mr. Eigenbrod:

This letter is to confirm the meeting held in your office on October 15, 1964, to discuss the obtaining of a State permit for underground disposal of waste salt brine.

We are considering a proposal to inject 50 gpm of a 19% brine solution into the salt sands formation at our Belle, West Virginia, plant. The brine would be a sodium chloride solution containing approximately eight gallons per day of organic material (aniline). The projected depth of the injection well would be 1,200 feet and design in accordance with State regulations governing drilling of such wells and protection of potable water supplies.

Operating experience at Du Pont locations in Texas and Louisiana where industrial waste disposal wells have been in operation for as long as twelve years indicate indefinite life for such facilities. Care is taken to operate at pressures below the minimum fracturing pressure for the injection depth.

We request that you forward to us the necessary instructions and forms for formally requesting a permit to install a deep well and disposing of the subject waste salt brine in that well.

Very truly yours,

R. S. WANGELIN
MANAGER

Per: *A. C. Hyde*
A. C. Hyde
Area Engineer
Technical Department

RECEIVED

OCT 27 1964

W. VA. DEPT. OF MINES

ACH/mjt



E. I. DU PONT DE NEMOURS & COMPANY
INCORPORATED
BELLE, WEST VIRGINIA

RECEIVED

NOV 2 - 1964

W. VA. DEPT. OF MINES

October 30, 1964

INDUSTRIAL AND BIOCHEMICALS DEPARTMENT
BELLE WORKS, P. O. BOX 635

Mr. Wilbur F. Eigenbrod, Director
Department of Mines
State Capitol Building
Charleston, West Virginia

Dear Mr. Eigenbrod:

In answer to your letter request of October 28, 1964, we are listing below the various characteristics of aniline that may be of interest to you.

1. The chemical formula is C_6H_7N . It is an amine derivative of benzene.

2. The physical properties are:

Molecular Weight	93.12
Boiling Point	184.4°C
Melting Point	-6.2°C
Flash Point	168°F (Closed Cup)
Autoignition Temperature	1000°F
Density	1.02 at 20/4°C
Solubility in Water	3.4% at 20°C

3. It has an ICC poison rating of "B". It has an LD₅₀ toxicity rating for rats between 50-500 mg/kg. It is considered to be lethal to humans in ingested dosages between 15-30 gms. As low as 0.25 gms can cause poisoning.


From: A. C. Hyde

Mr. Wilbur F. Eigenbrod
Page 2
October 30, 1964

Please advise if additional information is required.

Yours very truly,

R. S. WANGELIN
MANAGER


Per: A. G. Hyde
Area Engineer
Technical Department

ACH:jer



STATE OF WEST VIRGINIA
DEPARTMENT OF MINES
CHARLESTON

October 28, 1964

C
O
P
Y

Mr. R. S. Wangelin, Manager
Industrial and Biochemicals Department
E. I. du Pont de Nemours & Company
P. O. Box 635
Belle, West Virginia

Dear Mr. Wangelin:

Will you kindly forward me
the chemical breakdown of the organic material
(aniline) and its effects on human or animal life.

Kindest personal regards.

Very truly yours,

W. F. Eigenbrod

WFE/js

Handwritten notes:
10/28/64
WFE
js



E. I. DU PONT DE NEMOURS & COMPANY

INCORPORATED

BELLE, WEST VIRGINIA 25015

BIOCHEMICALS DEPARTMENT

BELLE PLANT, 801 W. DUPONT AVENUE

RECEIVED

OCT 22 1974

OIL & GAS DIVISION
DEPT. OF MINES

October 21, 1974

Mr. Robert L. Dodd, Deputy Director
State of West Virginia Department of Mines
Oil and Gas Division
1204 Kanawha Blvd., East
Charleston, West Virginia 25305

Dear Mr. Dodd:

Confirming our telephone conversation of October 18, 1974, which concerned the plugging of our deep well (KAN-2570), I understand the following procedure is satisfactory to you:

- 1) Setting a bridge plug at the 750 feet depth to block off the lower part of the casing.
- 2) Filling the portion of the well from the 750 feet depth to the surface with cement.

Please contact me if you have any questions or comments on this subject.

Very truly yours,

Gary Koenig

G. A. Koenig
Engineer
Technical Department

GAK:bsm



State of West Virginia

Department of Mines
Oil and Gas Division
Charleston 25305

Robert L. Dodd
Deputy Director

John Ashcraft
Director

September 23, 1974

MR. W. E. STAFFORD
E. I. duPont de Nemours & Company
901 West Dupont Avenue
Belle, West Virginia 25015

Dear Mr. Stafford:

This is in response to our telephone conversation regarding your intent to plug your industrial waste disposal well #1, Oil and Gas Division Permit Number KAN-2570.

Our records do not indicate that the bottom hole from TD of 1525' to perforations (from 826' to 770') was plugged. It does show all pipe was cemented to the surface.

Assuming the lower hole is cased and cemented, the lower hole from 1525' to 760' could be filled with bentonite mud - using sufficient amounts of lost circulation material to retain the bentonite mud in the pipe through the perforations. A permanent bridge plug should be set above the perforations - about 750' - with the hole filled with cement from 750' to the surface.

If you have any further questions or if we can be of additional help, do not hesitate to let us know.

Very truly yours,

Robert L. Dodd
Oil and Gas Division

RLD/ff

E. I. DU PONT DE NEMOURS AND CO.
BELLE PLANT

ATTACHMENT TO FORM OG-10

WELL CEMENTING SUMMARY

August 8, 1966 - Cemented 13-3/8" steel casing from 47' to the surface, using 50 bags of cement.

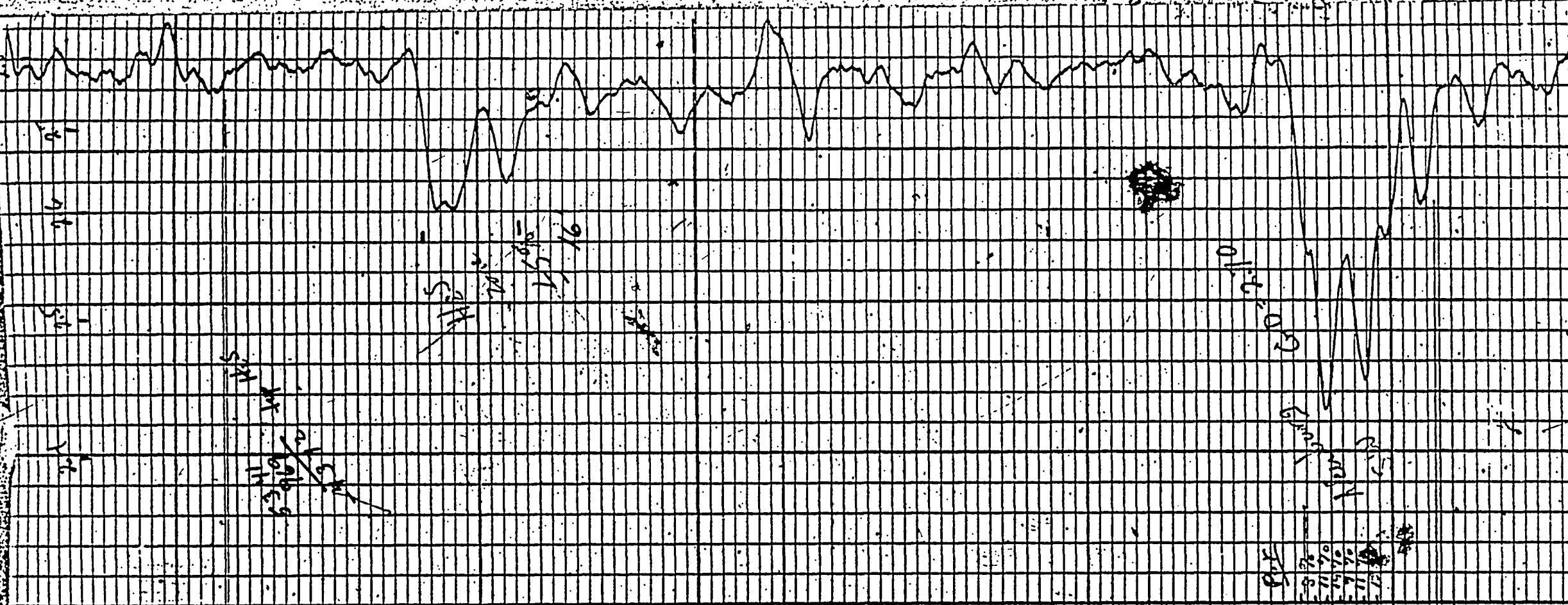
August 12, 1966 - Cemented 9-5/8" steel casing from 440' to the surface, using 254 bags of cement.

August 20, 1966 - Cemented 5-1/2" steel casing from 1525' to the surface, using 419 bags of cement.

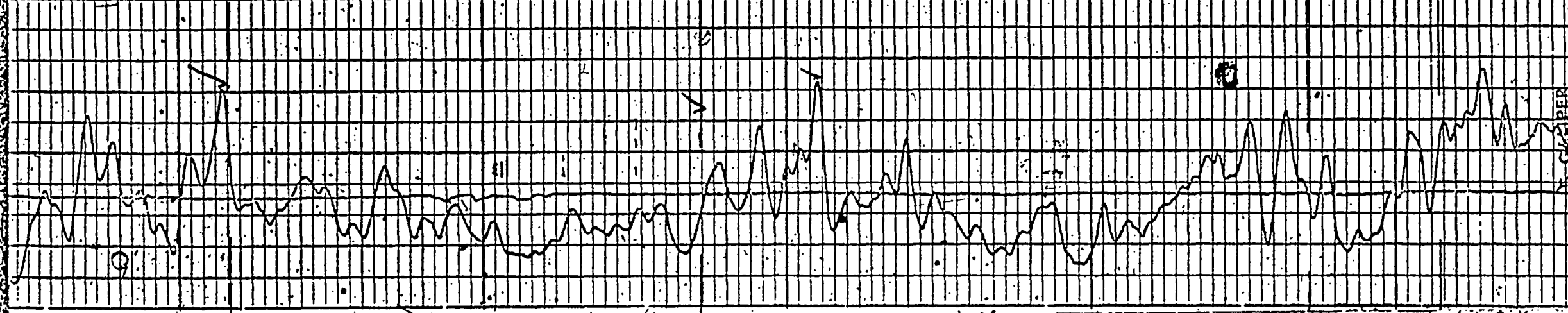
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MAY 15 1972

OIL & GAS DIVISION
DEPT. OF MINES

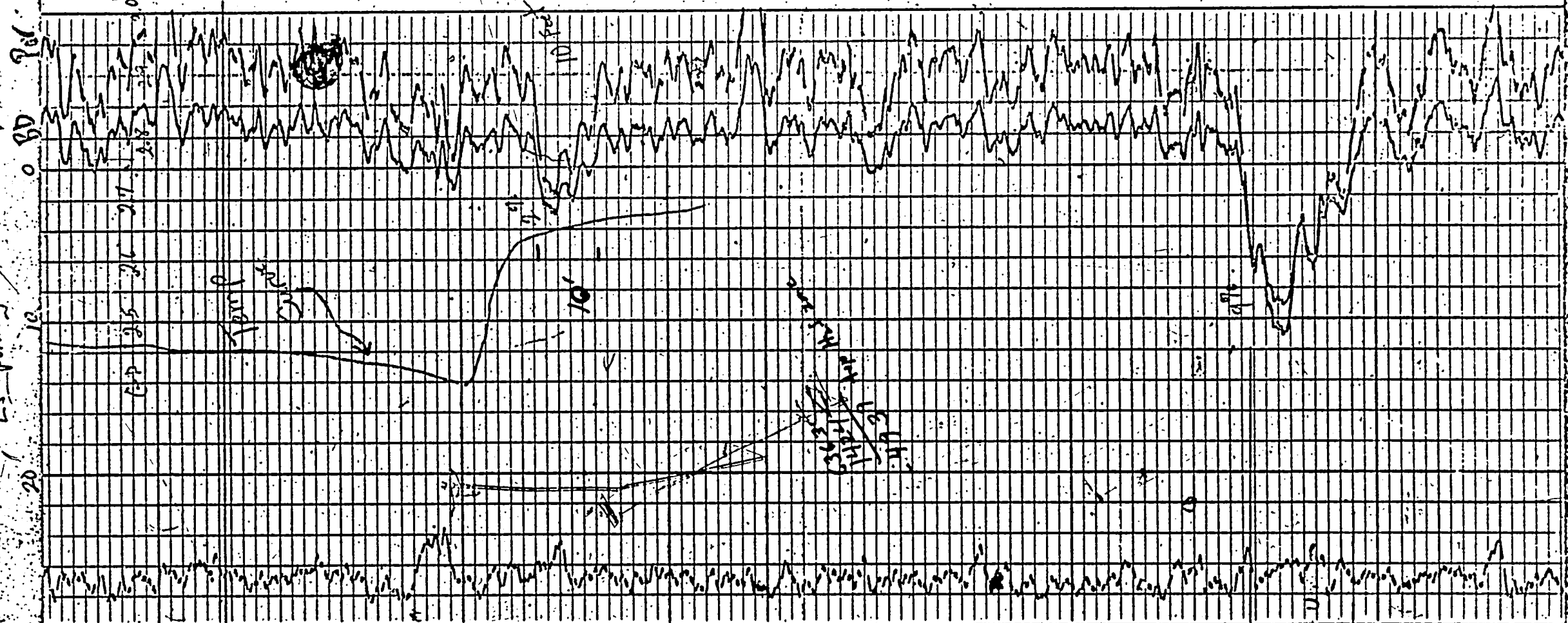


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Ls porosity



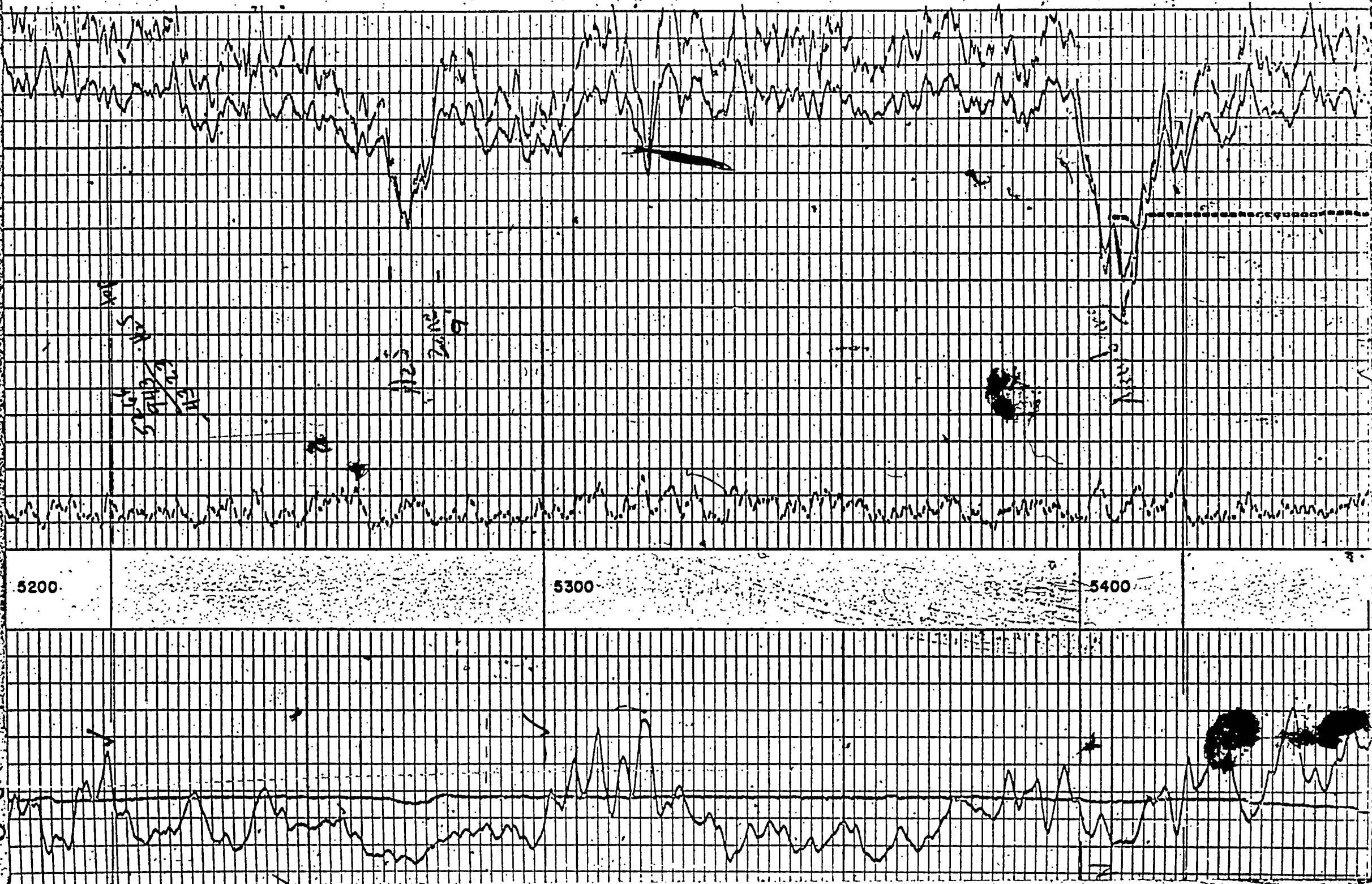
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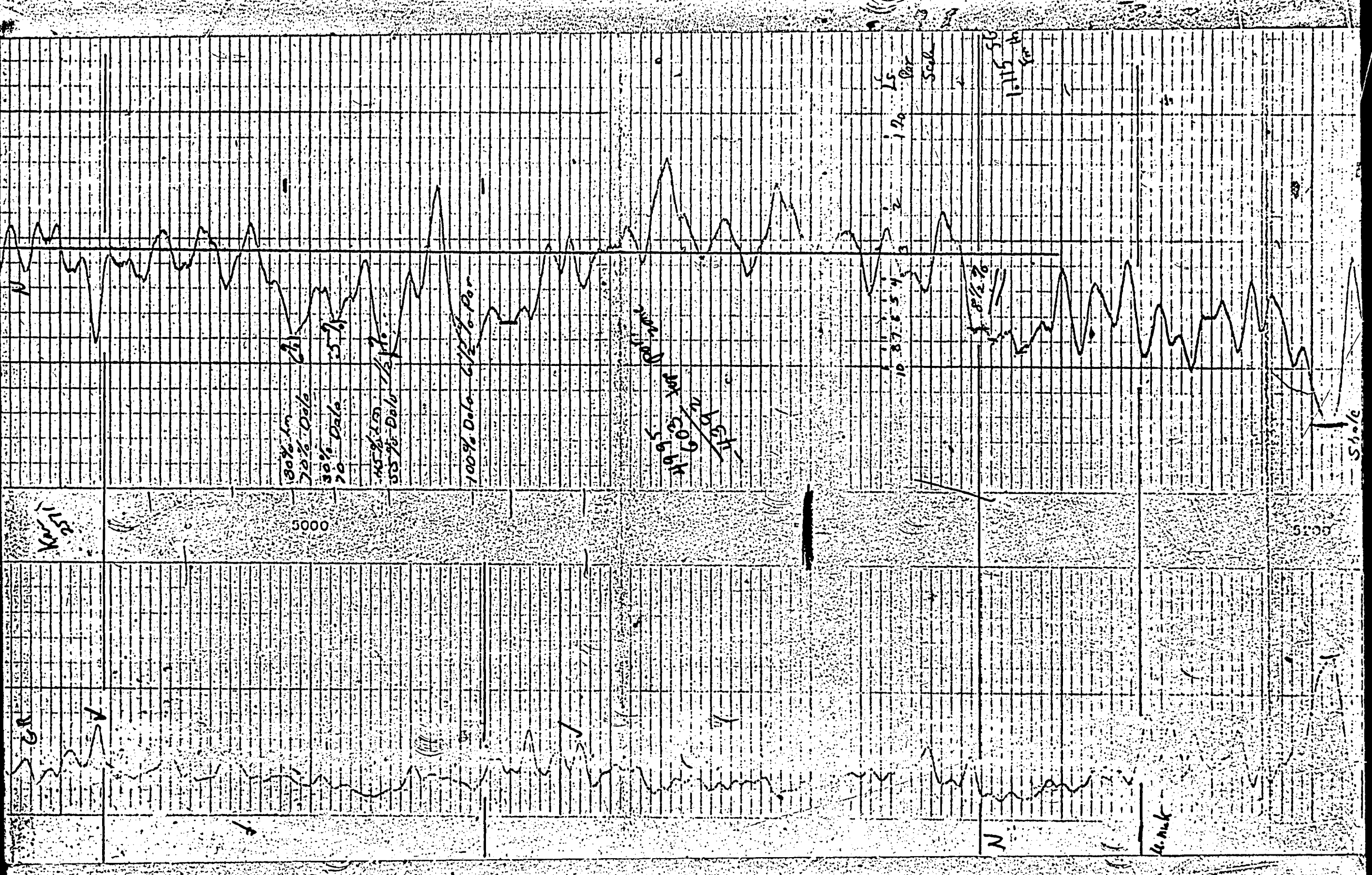
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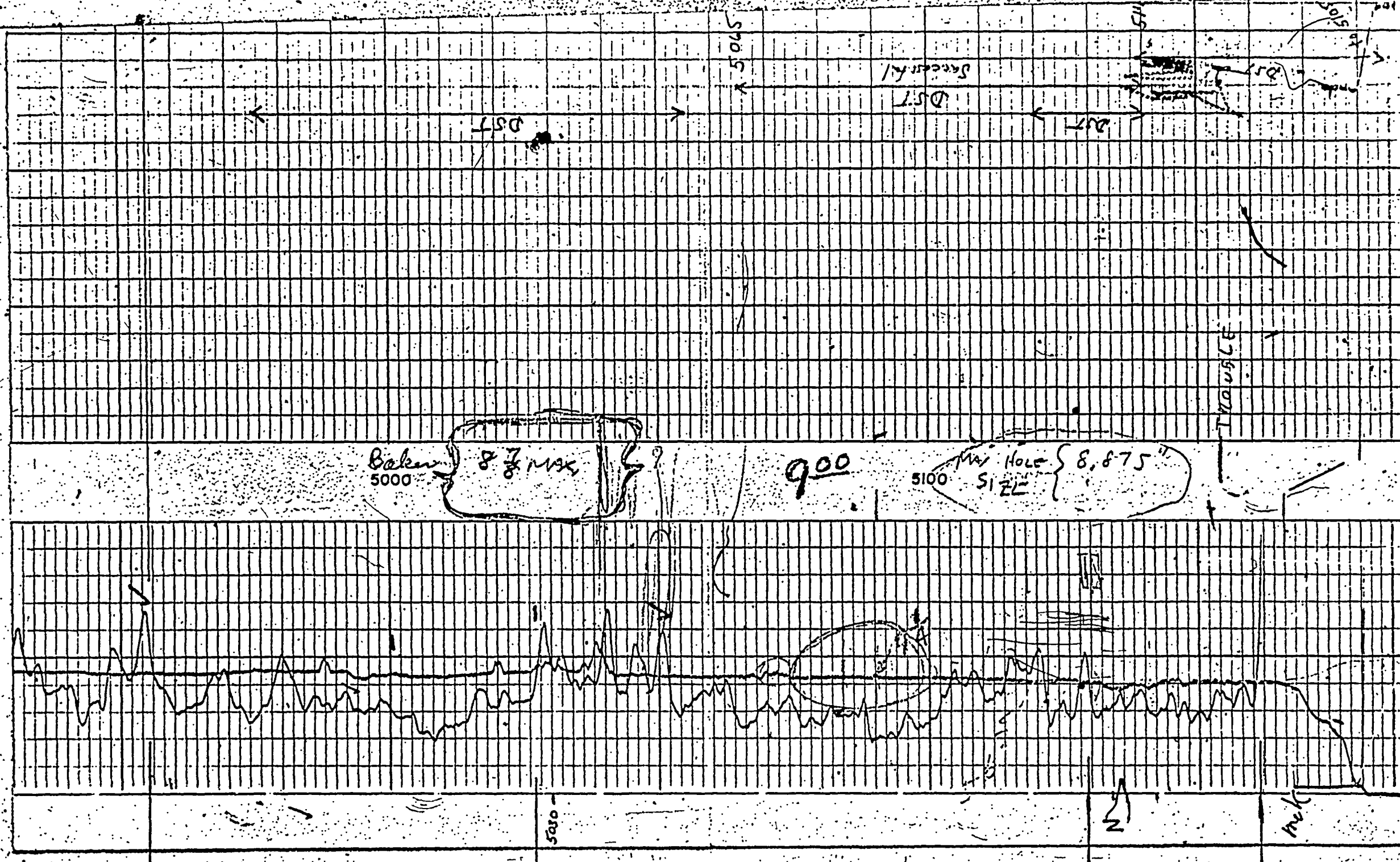
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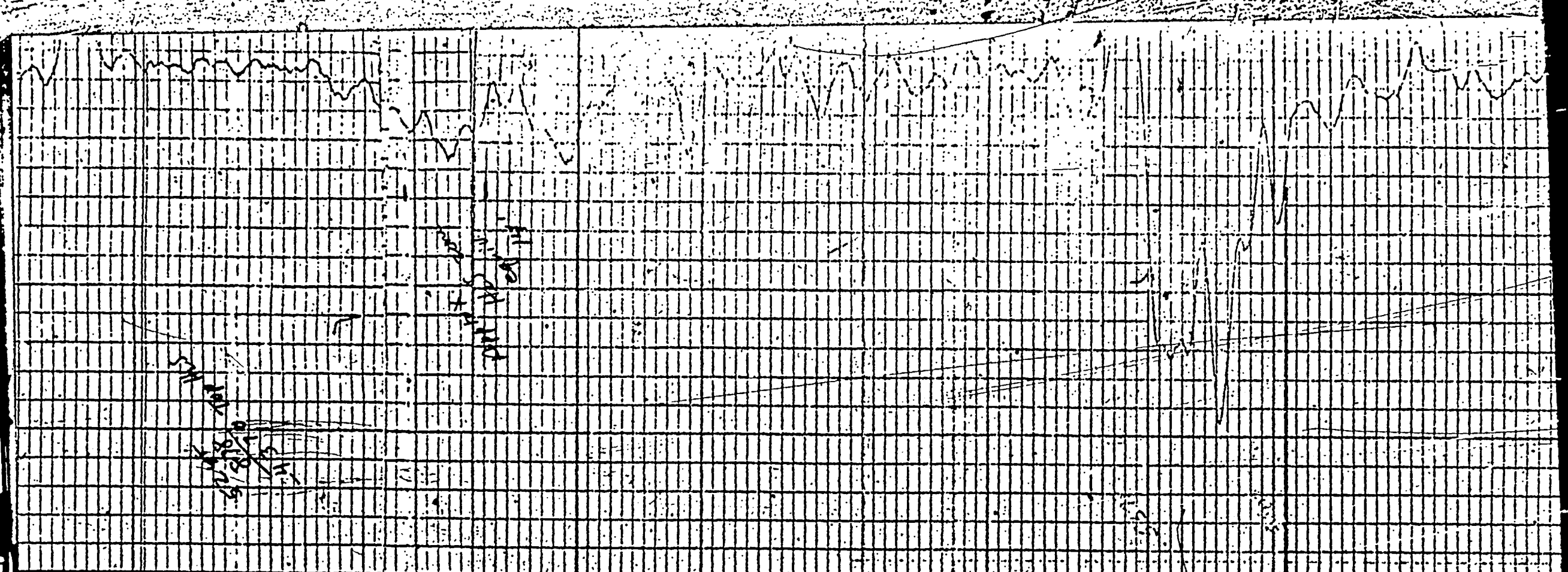
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Ka-2511





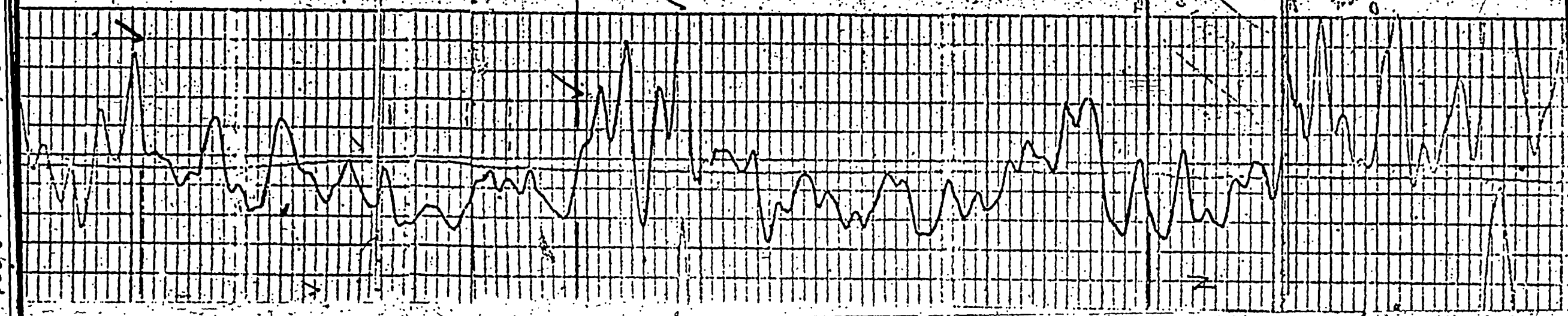
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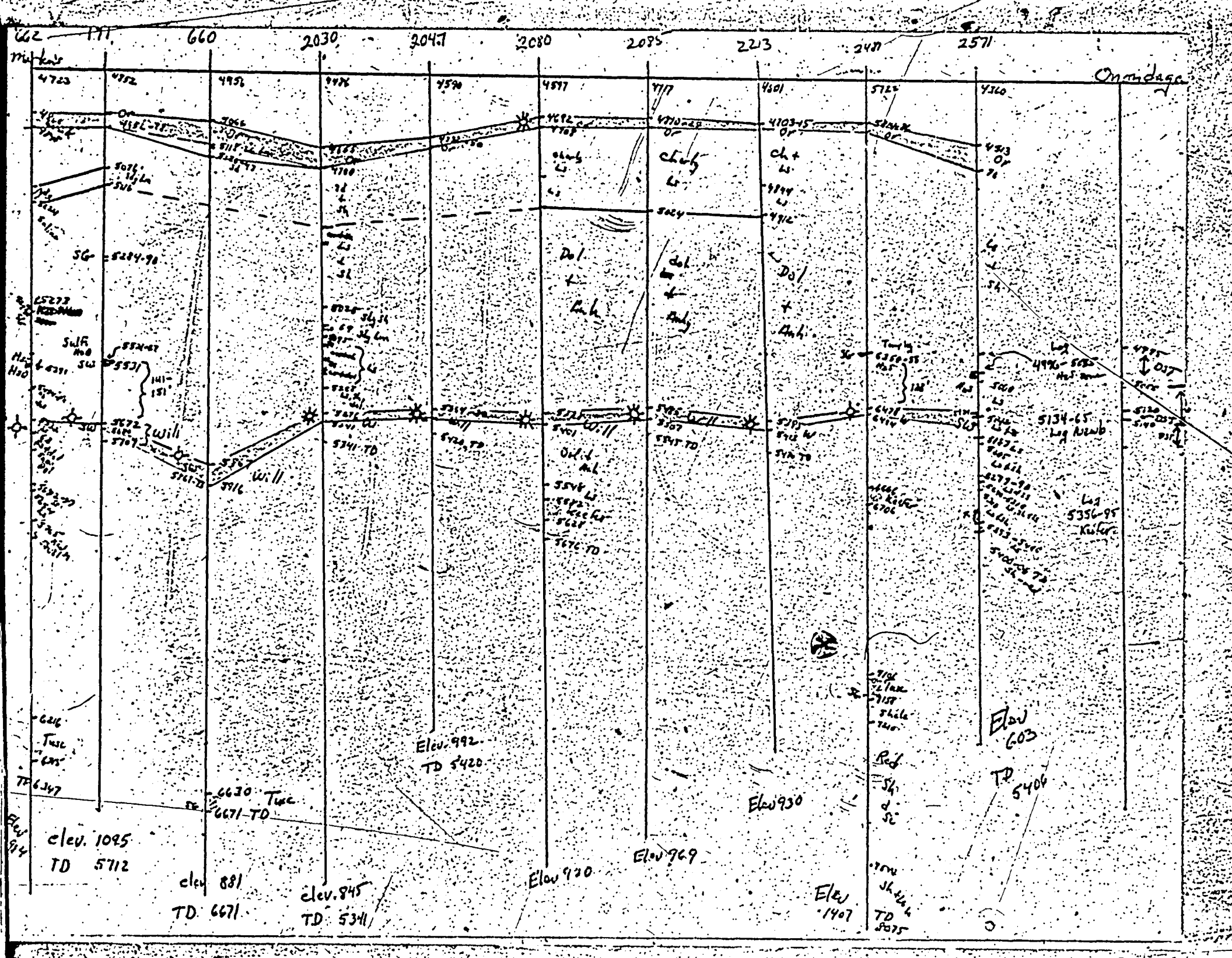
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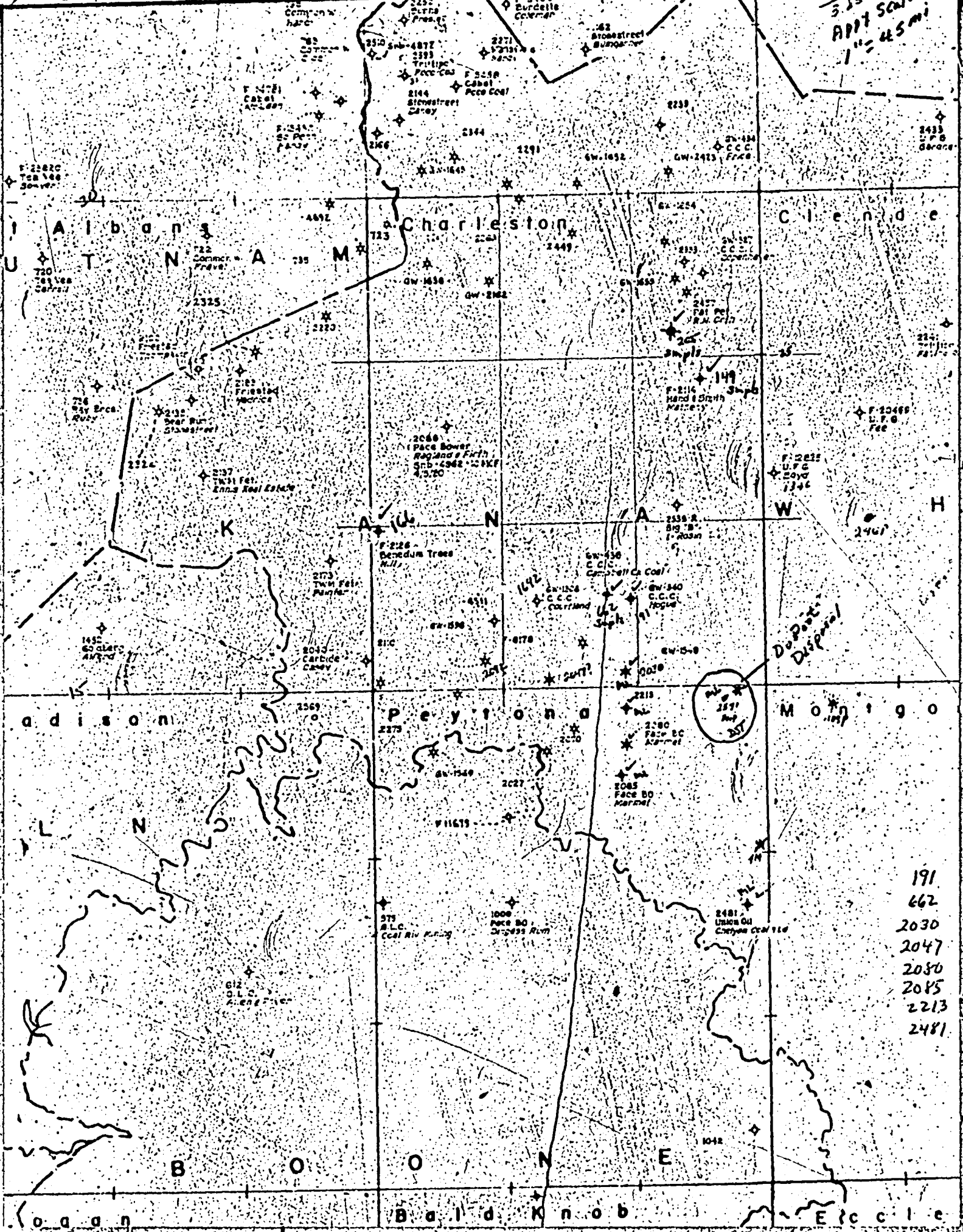
54

ECG
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10/15





3.55
APPX Scale
1" = 45 mi



- 191
- 662
- 2030
- 2047
- 2080
- 2085
- 2213
- 2481



ESTABLISHED 1802
INCORPORATED

E. I. DU PONT DE NEMOURS & COMPANY

BELLE, WEST VIRGINIA 25015

BIOCHEMICALS DEPARTMENT

BELLE PLANT, 901 W. DUPONT AVENUE

RECEIVED

AUG 4 1975

OIL & GAS DIVISION
DEPT. OF MINES

August 1, 1975

Mr. John Hall, Chief
Division of Water Resources
State Department of Natural Resources
1201 Greenbrier Street
Charleston, West Virginia 25311

Dear Mr. Hall:

As a part of our continuing program to insure the integrity of No. 2 disposal well at Du Pont's Belle, West Virginia Plant, the well was tested for possible leaks during the week of July 21, 1975. As a result, three leaks were located and a program to install interim remedial facilities is under way.

Test Method

A hydraulically inflated Lynes packer was set just above the uppermost injection zone and the annulus between the well casing and the drill pipe (to which the packer was attached) was pressurized.

Test Results

Leaks were indicated by decreasing rate of pressure loss as the packer was reset at progressively higher levels. The uppermost leak was located at approximately 3421' by pipe tally. A radioactive (RA) tracer log was then run to pinpoint leaks and determine direction of fluid migration. (Figure 1).

A total of three leaks were indicated and a maximum flow of 15 GPM under normal injection conditions was estimated. Leak No. 1 was at 3416' (by wire line measurement) and appears to be less than 1/10 of total fluid loss. This leaking fluid moves horizontally into the formation with no detectable vertical migration.

Leak No. 2 at 3586' accounts for about 2/3 of the total fluid loss. Migration of fluid is upward reaching a maximum detectable height of 3514'. The fluid disperses horizontally into the formation as it moves upward.

From: L. T. Snider

Mr. John Hall

-2-

August 1, 1975

Leak No. 3 at 3735' received the balance of the fluid loss. Migration of fluid is down to at least 3775'. Tracking to a lower level would involve setting the tension packer below the diverted velocity (D-V) tool at 3838'. This is a high risk procedure which could snag the packer and cause severe casing damage during packer recovery. The RA source remained coherent indicating the shales are not receptive to fluid in this interval.

Remedial Work.

The following system will be installed until method of permanent repair is firm and necessary materials are received (Fig. 2).

A Baker Oil Tool AD-1 carbon steel packer will be set at 3700' with a 190' tail pipe section. A packer with rubber cup seals will be set at approximately 3800' feet on the tail to force flow to the injecting zones.

The temporary casing will be 2-7/8" EU, J-55 tubing. Predicted minimum life of this tubing is five years.

A 5-1/2" x 2-7/8" wellhead with two 2" outlet valves and pressure gage will be installed on top of the existing wellhead and valve.

These facilities will provide good assurance of proper well operation until time and material for further improvements are available.

Sincerely,



L. T. Snider
Technical Superintendent

CC: Mr. Robert L. Dodd
Deputy Director
State Department of Mines
Oil and Gas Division
Charleston, West Virginia 25305

Mr. Doug Patchen
West Virginia Geological Survey
P. O. Box 879
Morgantown, West Virginia 26505

LTS:ers
Attachments: 2