

1 LOCATION OF WATER WELL: County: <u>Douglas</u>		Fraction <u>NW</u> $\frac{1}{4}$ <u>NE</u> $\frac{1}{4}$ <u>SE</u> $\frac{1}{4}$		Section Number <u>2</u>	Township Number <u>T 13</u> <u>S</u>	Range Number <u>R 19</u> <u>E/W</u>					
Distance and direction from nearest town or city street address of well if located within city?											
2 WATER WELL OWNER: <u>Kansas Geological Survey</u> RR#, St. Address, Box # : <u>1930 Constant Avenue</u> City, State, ZIP Code : <u>Lawrence, KS 66045</u> Board of Agriculture, Division of Water Resources Application Number:											
3 LOCATE WELL'S LOCATION WITH AN "X" IN SECTION BOX:		4 DEPTH OF COMPLETED WELL: <u>293</u> ft. ELEVATION: <u>922</u>									
		Depth(s) Groundwater Encountered 1. ft. 2. ft. 3. ft. WELL'S STATIC WATER LEVEL : <u>86.75</u> ft. below land surface measured on mo/day/yr . . . <u>5/10/85</u> Pump test data: Well water was ft. after hours pumping gpm Est. Yield gpm: Well water was ft. after hours pumping gpm Bore Hole Diameter . . . <u>10</u> in. to . . . <u>31.5</u> ft., and . . . <u>6 3/4</u> in. to . . . <u>263</u> ft. WELL WATER TO BE USED AS: 5 Public water supply 8 Air conditioning 11 Injection well <u>4 3/4-2</u> 1 Domestic 3 Feedlot 6 Oil field water supply 9 Dewatering 12 Other (Specify below) 2 Irrigation 4 Industrial 7 Lawn and garden only 10 Observation well <u>Research</u> Was a chemical/bacteriological sample submitted to Department? Yes. No. <u>XX</u> ; If yes, mo/day/yr sample was submitted Water Well Disinfected? Yes No <u>XX</u>									
5 TYPE OF BLANK CASING USED: 1 Steel 3 RMP (SR) 5 Wrought iron 8 Concrete tile CASING JOINTS: Glued <u>XX</u> Clamped 2 PVC 4 ABS 6 Asbestos-Cement 9 Other (specify below) Welded Blank casing diameter . . . <u>8</u> in. to . . . <u>31.5</u> ft., Dia . . . in. to . . . ft., Dia . . . in. to . . . ft. Casing height above land surface . . . <u>1.61</u> in., weight lbs./ft. Wall thickness or gauge No. <u>Schd. 40</u> TYPE OF SCREEN OR PERFORATION MATERIAL: 7 PVC 10 Asbestos-cement 1 Steel 3 Stainless steel 5 Fiberglass 8 RMP (SR) 11 Other (specify) 2 Brass 4 Galvanized steel 6 Concrete tile 9 ABS 12 None used (open hole) SCREEN OR PERFORATION OPENINGS ARE: 5 Gauzed wrapped 8 Saw cut 11 None (open hole) 1 Continuous slot 3 Mill slot 6 Wire wrapped 9 Drilled holes 2 Louvered shutter 4 Key punched 7 Torch cut 10 Other (specify) SCREEN-PERFORATED INTERVALS: From ft. to ft., From ft. to ft. GRAVEL PACK INTERVALS: From ft. to ft., From ft. to ft. From ft. to ft., From ft. to ft.											
6 GROUT MATERIAL: 1 Neat cement 2 Cement grout 3 Bentonite 4 Other Grout Intervals: From . . . <u>0</u> ft. to . . . <u>31.5</u> ft., From ft. to ft., From ft. to ft. What is the nearest source of possible contamination: 1 Septic tank 4 Lateral lines 7 Pit privy 10 Livestock pens 14 Abandoned water well 2 Sewer lines 5 Cess pool 8 Sewage lagoon 11 Fuel storage 15 Oil well/Gas well 3 Watertight sewer lines 6 Seepage pit 9 Feedyard 12 Fertilizer storage 16 Other (specify below) 13 Insecticide storage Direction from well? How many feet? <u>20 feet East</u>											
FROM		TO		LITHOLOGIC LOG		FROM		TO		LITHOLOGIC LOG	
				PLEASE SEE ATTACHED PAGE							
7 CONTRACTOR'S OR LANDOWNER'S CERTIFICATION: This water well was (1) constructed, (2) reconstructed, or (3) plugged under my jurisdiction and was completed on (mo/day/year) <u>5/10/85</u> and this record is true to the best of my knowledge and belief. Kansas Water Well Contractor's License No. This Water Well Record was completed on (mo/day/yr) <u>6-5-85</u> under the business name of <u>Kan. Geol. Survey</u> by (signature) <u>Thomas J. Cain</u> INSTRUCTIONS: Use typewriter or ball point pen, PLEASE PRESS FIRMLY and PRINT clearly. Please fill in blanks, underline or circle the correct answers. Send top three copies to Kansas Department of Health and Environment, Division of Environment, Environmental Geology Section, Topeka, KS 66620. Send one to WATER WELL OWNER and retain one for your records.											

Log for Well 13_E-19_S-2 DAB

FROM	TO	LITHOLOGIC LOG	
0	1 01	Topsoil	Lawrence Shale
1	4	Weathered shale-light brown to gray weathered shale	
4	104 19	Lite to dark clayey to silty shale with harder calcaneous zones scattered throughout	
104	110 20	Limestone-light gray to light tan	Haskell Limestone
110	127 23	Sandstone tan silty	Vinland Shale
127	135 19	Shale gray-with coal at approx. 133' (upper sibley)	Tonganoxie Sandstone
135	158 23	Sandstone	
158	165 19	Shale	
165	171 23	Sandstone-light tan-silty medium grained	
171	172 27	Coal	
172	181 19	Shale	
181	268.5 23	Sandstone light gray medium grained	
268.5	279.5 20	Limestone-South Bend	South Bend Limestone
279.5	291.5 19	Shale-Rocklake	Rocklake Shale
291.5	293 20	Limestone-Stoner	Stoner Limestone

This hole was cored from 31.5' to 26.5'. Drill cuttings were collected from 0 to 31.5' and from 265 to 293'. The hole will be used as a test and calibration pit for a Geophysical logger and for testing various hydrogeologic hardware. The cores will be analyzed for their hydrologic and geologic properties.

RECEIVED

JUN 07 1985

**BUREAU OF OIL FIELD &
ENVIRONMENTAL GEOLOGY**

Tom McClain
Kansas Geological Survey
6/5/85

March 28, 1985

Mr. Ron Cook
Kansas University Facilities Operations
CAMPUS

Dear Ron:

I'm enclosing a copy of one of your maps showing the location of the test hole we would like to drill just south of Foley Hall on West Campus. As noted on the map, the test hole is 80 feet south and 21 feet west of the southeast corner of Foley Hall. It is 25 feet west of the gravel road that goes to the nursery and 16 feet north of an outlet culvert for a drain for our parking lot at Foley. It's about 4 feet east of a chain link fence that runs north-south in that area.

The test hole we anticipate will be about 250 feet deep and will consist of about an 8-inch casing extending 12 inches above the land surface. This would be surrounded by a concrete pad approximately 18 inches square to cement the surface casing in place. This surface casing will extend to approximately 50 feet below the land surface and will be cemented in. Below that the hole would be uncased. We would like to use this hole for calibration of a geophysical logger and would like the hole in this location in order to have access to it in any weather.

I would anticipate infrequent (several times a year) use of the site in order to back a van up next to the well and run a probe up and down the well to take some readings. Hopefully this will not interfere with any future plans on this part of campus. Please let me know if there are any conflicts with Facilities Operations. We would like to start drilling about April 8 and should finish in 2-3 weeks.

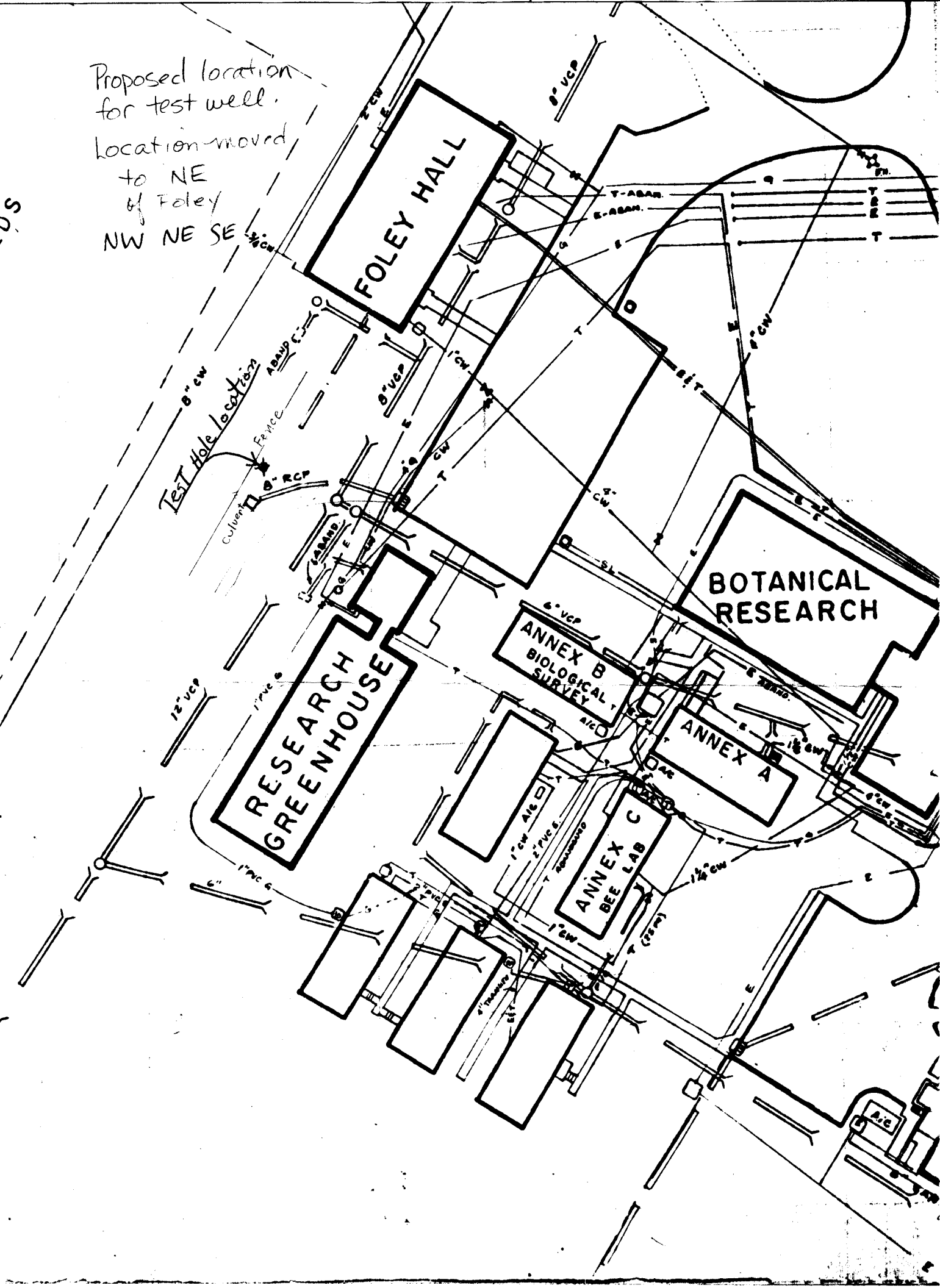
Sincerely,

Thomas J. McClain
Research Associate
Geohydrology Section

TJM:kl

Encl.

Proposed location
for test well.
location moved
to NE
of Foley
NW NE SE





THE UNIVERSITY OF KANSAS

Site and Landscape Planning
Sudler House
P.O. Box 2008, Lawrence, Kansas 66045
(913) 864-4636

April 4, 1985

TO: Jim Canole

FROM: Greg Wade *glw*

SUBJECT: Test Well North of Foley Hall - *922' SL*

Attached is a location map showing the site for a test well to be drilled north of Foley Hall. Your memo to me, dated April 2, in regard to this subject included correspondence and a location map from Tom McClain which identified a proposed location for this well south of Foley Hall. As you can see from the attachments, possible permanent building sites are identified south of Foley Hall and therefore a new site was sought. Ron Cook and I met with Tom McClain on site yesterday and established the site north of Foley Hall as a good one for the test well. Availability of electrical service was part of the criteria which resulted in the chosen site. One small tree is to be removed to accommodate this well. I have asked Facilities Operations' landscape crew to accomplish this work as soon as possible, due to the fact that the test well drilling could begin as early as the first of next week.

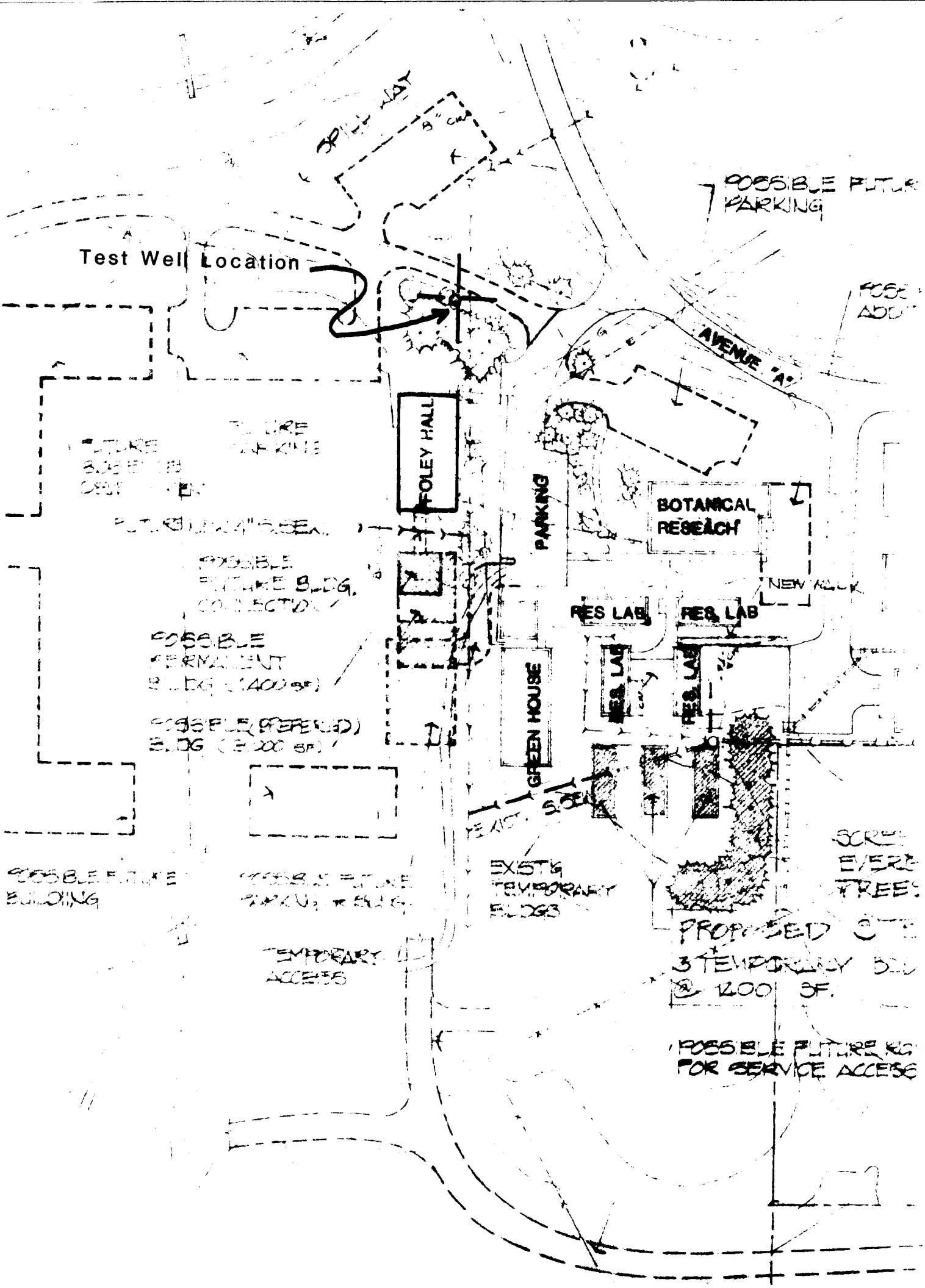
GLW/dz

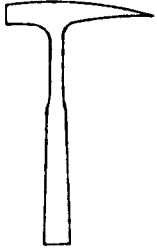
Encl.

cc: Allen Wiechert
Ron Cook
Tom McClain ✓
Dick Bivens

922.81 Footpounds #3

~904 - Footpound 1+2





KANSAS GEOLOGICAL SURVEY

1930 Constant Avenue, Campus West
The University of Kansas
Lawrence, Kansas 66044-3896
913-864-5672

June 5, 1985

Greg Wade
Facilities Operations
Campus

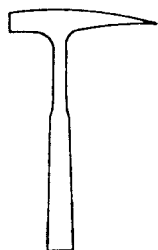
Dear Greg:

We have finished the test hole just north of Foley Hall on west campus. I am enclosing a log for your information. I appreciate your help with the location of the utilities and if there is ever anything I can do for you please let me know.

Sincerely,

Tom McClain

Enclosure



KANSAS GEOLOGICAL SURVEY

1930 Constant Avenue, Campus West
The University of Kansas
Lawrence, Kansas 66044-3896
913-864-5672

June 6, 1985

Ron Cook
Facilities Operations
Campus

Dear Ron:

We finally finished the test hole north of Foley Hall on west campus. You have probably noticed the white pvc casing and the concrete slab in place. We got fairly good rock samples down to 293' while we were drilling the hole and it makes a perfect test hole to calibrate our geophysical logger. I am enclosing a log which summarizes the particulars of the hole and if you need more detailed information please let me know. We plan to take some of the cores that we got from the drilling process and analyze them in the lab for porosity and permeability. I appreciate your help with the location of the well and if there is ever anything I can do for you please let me know.

Sincerely,

Tom McClain

Enclosure

Depth	recovered
31.5-42	~6'
43-52	●
52-59-62	● 1'
53-63	8'
63.5-69.6	— ?
70.5-77.5	— ?
76.5-83.0	— ?
83-89.4	— ?
89.4-102	— ?
101-106.7	5'
106.7-115	9'
116-123.6	8'
121-129	— ?
127-132	~6'
131-140	6.8'
138-147	8'
147-156.2	9.3'
154-162	7'
162-168	0'
168-176	5.3'
174-182	~8'
182.5-194.3	8'
192.3-201.5	5'
201.5-210.5	5'

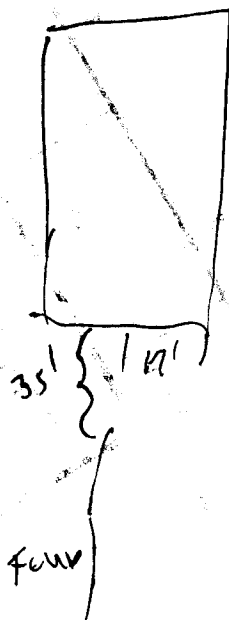
Depth	
205-215?	— ?
215-?	○
218-225	2.8'
225-231.5	3'
234-243.5	8.75'
243.5-252.5	2.8'
252-255.5	1'
247-255.5	2'
255-260	3.5'
260-265	○
265-293	cuttings only

80' S
 21' W of Bldg } SE corner
 25' W of road
 16' N of Culvert

Fence = 35' W of marsh center

Marsh to outlet drain = 35'

N. end of fence to marsh 50'



Depth	Interval	Stratigraphic Unit	Notes
0	3	Topsoil	10" rotary hole
3	19	Weathered shale light brown - sandy	To 32 1/2 feet
19	24	gray shale - only specimen mud pit	set surface
24	25	gray limestone - Hard drilling	Casing 7 1/2"
25	25 1/4	smoother at 25 1/4	PVC
25	32	grayish shale & limestone harder drilling	
32		smoother drilling at 32'	

135-19E-02 DAB el ~ 928

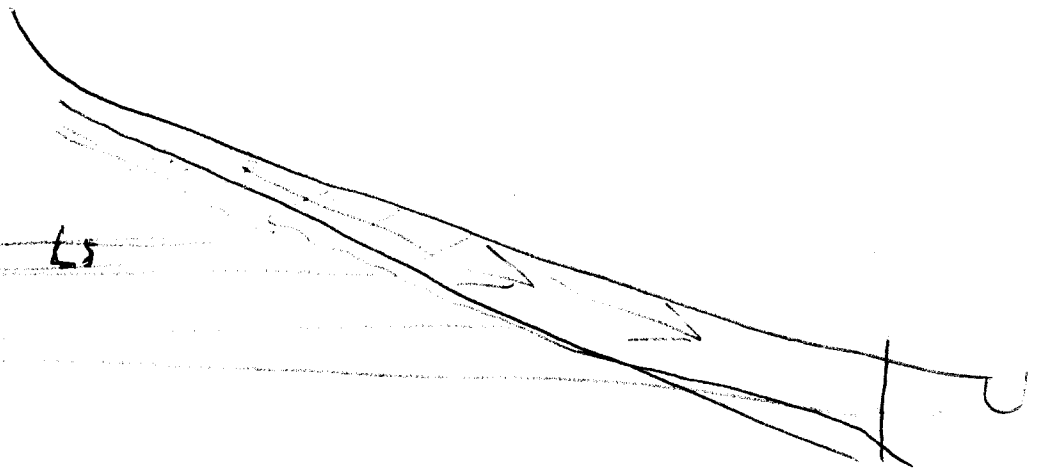
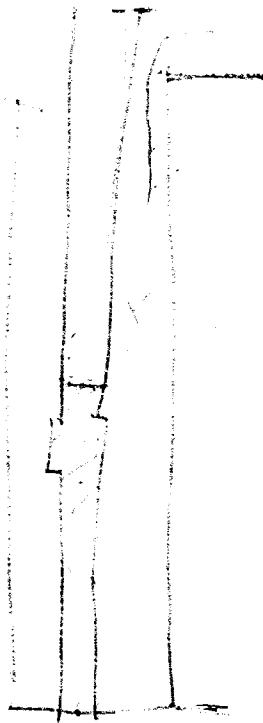
April 12, 85 (~~At~~ *ap* *pl* *oc* *leous*)

18.9 ft from MP: depth of hole at 9:30 am

To be drilled down to 33 ft

≤ 31.5' from MP: depth of hole after it ^{was} drilled out. Finished at 10:30 am

Core barrel ready to be put in



April 12, 85

12:16 at 32½' using water with cement grout
contamination Engine 1700 max power 2½ gear
Rotation 140 RPM

12:20 at 33½'

12:29 at 34½'

12:43 at 36'

12:49 36.5' but something hard for < 30 sec.

12:53 at 37'

1:01 at 38'

1:10 at 39'

1:19 at 40'

1:27 at 41'

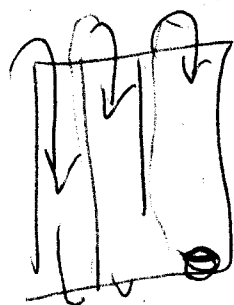
1:37 at 42'

(Met watch)

(1:12 my watch) turned very dark (shaky)

stop for core retrieval
~ 42 inches length of core → recovered ~ 3' foot of core
depth of hole from MP = 35 ft.

Met went in again
with the core barrel.
recovered something
Now the depth of hole = 38' ft
Core not reaching to acid at all.



Measured to 38

Reamed to 37½" with 6¾" Miller

3:4 } 57"
4:11

Corrug Bagen at 38'

stopped

Depth 43½'

15 April 85 P. A. Macfarlane

began setting up at 9:30 AM
depth of hole @ 43' below top of casing
started drilling @ 10:00 AM

10:05 - 10:15 corrd 1.5' to 44.5

10:15 - 10:35 47 to ~~47.5~~ 47.5

hard layer @ ~~47~~ 47' (brief)

hard layer @ 48.5' smoothed out @ 48.4 | progress
57' W

hard layer @ 49.5' smoothed out @ 49.2

11:28 — corrd to 50

11:24 — corrd to 51

11:30 corrd to 52 → quit

51.75 m pulled up to get core
reamed from 38 to 52

began coring using large barrel

1:24 began coring corrd @ 1' per 4 min for 4 min

2:25 finish short coring corrd 7 ft in 50 minutes

core recovery on the first try is zero

April 15 R. Miller

going down w/ large barrel to try & recover core

3:25 began from 52' ~~go down~~ (5') (5')

3:27 — began coring (hard - rattling)

3:32 — 1' coring (6') — smoother @ (6')

3:39 — rattling — stop — pull

61' ~~51'~~
62' ~~52'~~

13
48
10
53
57
15
13
15
15
10
50
265
9
56

4:20 Apr. 15 85

- get core that small cover already cored (can see marks)
gray - F sandy silty shale
tape goes down to 49' (~~was~~ core barrel was down 62')
- get 1' of core from 52' - 62' (prob. from very top)

4:22 - go down w/ barrel & CABLE to try
for core (3 times w/ no luck)

4:42 Try again w/ spring catcher on large barrel
struck @ 55' (no drilling)
(core pull up? see if some core
(BOX not full yet))

April 16, 85 (A. Sophocleous)

start ~ 8:30 am.

Depth of hole ~ 54 ft.

Mel Talked to Hunter from the
Corps of Engineers & got some
suggestions.

Mel could not get the core out
of the hole with the large covers yesterday.
He will try again with some Hunter tricks
this morning.

Steel ball missing from top of cover that's
why may be water goes inside the core barrel & washes
the core out. By calling around they found
extra balls. Joe is going to get some at ~ 9:30 am

" " " ~ 63 ft after core was extracted
~ 11:00 Core from 53' to 63' recovered (~ 80%)

2 Boxes marked 53' to 63' - (Box 1 + Box 2)
4" core

11:00 started coring (small barrel) - at 63 1/2'
8 min to 65 1/2' ~ 4 min/ft
65 1/2' - 66 1/2' 3 1/2 min
66 1/2' - 67 1/2' 5 min

Im chain
4-16-85

~~69-69 2/3~~ - 1'

69-69 2/3' - 14 minutes - stopped drilling at 70 1/2'

To clean Barrel -

Reamed To 70 1/2 feet with Roller
started 4" Barrel at 70 1/2'

72-73' 14 1/2 min

73-74' 14 min

74-75' 18 min

75-76'

76-77'

76-77 1/2' 9 min

} 45 min (4')

Stopped drilling @ 4:38 drilled 7' on Big Barrel

4-17-85
12 April 85

P. B. MacFarlane

began @ 8:00 AM small barrel. pick up some
core pieces of core

began coring @ 76.5' below mp

cored 5 ft by 8:45 AM finished coring 9:15 AM

83.6 below mp attached to this coring

reamed to 83.0 ft. 11:00 AM

began coring @ 12:00 with big barrel. completed @ 12:40 PM

hor coring from the big barrel tried again for some core

completed big core @ 2:10 depth to mp is 89.4.

used small barrel for next coring beginning @ 89.4

Finished coring 4:10 PM with short barrel.
estimated depth from top 15102 ft.

~~15102~~

3 ft sub
10 ft small core barrel

88

w/ Joe Anderson
Ron Johnson
+ Don B.

88
10
3 ft
182

April 18, 1985 Pam Chaffee

Start reaming the hole at 9:22 am

Reamed to 93 ft 9:38 am

add a stem

Start reaming 9:41 am

noisy drilling at 100.3 ft

Stop reaming at 101.6 feet ~10:00 am

put sm core barrel in (12 ft)

1st stem (15 ft)
2nd stem (15 ft)
3rd stem (15 ft)
4th stem (15 ft)
5 stem (15 ft)
6 stem (10 ft)

Total stem count
15 stem (151)
1 stem (10)

18 ft difference
in elevation this
hole vs. hole 5 of
Foley which we have
log for.

Start coring at 10
Footage Marker Depth
3 ~100
4 103
5 104
6 105

continued next page

10:42 am

Time

10:42

mud pressure 100 psi

10:55 color change in foam on

11:12 (dk gray-black) mud pit 102-103

11:40 mud pressure ~140 psi
foam on mud black to
pressure back down 100
fine black film on
top of water
pulled down chain loose

April 18, 1985 Pam Chaffee

7

Footage Marker	Depth (ft)	Time	Remarks
7	106	12:00 noon	mud pressure ~ 100 psi. ^{sm. amt} Black seum on top of water
7.7	106.7	12:17 pm	pull down chain loose again stop coring - pull stem

Recovered ~ 5 ft of shale & mud core. The core had to be removed from the small core barrel from the top end of the barrel (except the ^{very} bottom 3 inches of very hard (calc.?) shale); so explains the shape of the mud/shale ~~pieces~~ pieces w/ bits of wood.

PKC quit 1:45 pm

~~4 - 22 - 85~~
~~Start 11:13 -~~
~~Foot marker Depth~~
~~~ 7.07 106.7~~

From  
Mel's  
Notes

4-19-85  
Start at 106.7?  
1:56 4.2' on Kelly  
2:23 10' on Kelly  
10 1/2 "  
3:00 11' on Kelly  
3:28 11 1/2 "  
3:44 12' "  
4:13 12 1/2 " - pulled Barrel - full -

Drilled To ~ 116 - But did not pull all  
of core - recovered ~ 9' Some Haskell  
in Bottom

4-22-85

Started 11:13

| Foot marks | Depth   | Time  | Remarks                          |
|------------|---------|-------|----------------------------------|
| 7.7        | ~ 116   | 11:13 | Small Barrel in Haskell          |
| 8.7        | ~ 117   | 11:25 |                                  |
| 9.0        | ~ 117.3 | 11:32 | Drill penetr - Bottom of Haskell |
| 11.0       | ~ 119   | 11:38 |                                  |
| 12.0       | 120     | 11:40 | much chatter at 119 -            |
| 13.0       | 121     | 11:43 | Top of Sandstone?                |
| 14.0       | 122     | 11:45 | 5' smoother                      |
| 15.0       | 123     | 11:47 | no chatter                       |
| 15.3       | 123.6   | 11:48 | Fast drilling                    |

recovered ~ 8' core

T.M. Cain  
12:20 reamed ~~to~~ from 116 to 122 at 2:10 pm

15.3'

| Footmark        | Depth       | Time |                                         |
|-----------------|-------------|------|-----------------------------------------|
| 1.3             | 121         | 2:19 | Big Barrel - smooth<br>Drilling         |
| 2.0             | 2.3 --- 122 | 2:20 |                                         |
| 3.0             | 3.3 --- 123 | 2:25 |                                         |
| 4.0             | 4.3 --- 124 | 2:31 |                                         |
| 5.0             | 5.3 --- 125 | 2:35 |                                         |
| 6.0             | 6.3 --- 126 | 2:43 | 5.5 Drill chattering slightly           |
| 7.0             | 7.3 --- 127 | 2:52 | 5.8 " " " More                          |
| 8.0             | 8.3 --- 128 | 3:00 | 6.5 Drilling smoother 5.5-6.5 hard zone |
| 9.0             |             | 3:09 | 9.0 Drilling harder                     |
| <del>10.0</del> | 129         | 3:14 | stopped drilling to pull<br>core        |

|       |         |      |              |
|-------|---------|------|--------------|
| 6 1/2 | 127     | 3:48 | Small Barrel |
| 7     | 127 1/2 |      |              |

7 1/2

8

8 1/2

9

9 1/2

10

10 1/2

11

11 1/2

~ 11 3/4

132

3:56

4:00

4:07

4:14

4:28

} Break

Springy leak &amp; wet before

11 1/2 stops @ 4:20 = 11 3/4 to

work on leak. began again after

repair - small leak again ~ 4:26

Big leak @ 4:27 - pulled core

Jane  
Dennis  
&  
P.A.M.

got ~ 4' of core out of small Barrel - ~ 2 feet ~~stuck~~ stuck  
in Barrel - quit for day - Try to get shale out of  
Barrel tomorrow

4/23/85

Started large Barrel

| Footmark | Depth | Time  |                                |
|----------|-------|-------|--------------------------------|
| 1.4      | 131   | 12:53 |                                |
| 2.0      |       |       |                                |
| 3.0      |       |       |                                |
| 4.0      |       | 1:13  |                                |
| 5.0      |       | 1:27  |                                |
| 6.0      |       | 1:42  |                                |
| 7.0      |       | 1:56  | 7.5 harder zone Sandstone      |
| 8.0      |       | 2:08  | ↓ coming up in cuttings        |
| 9.0      |       | 2:21  |                                |
| 10.0     |       | 2:28  | 10.0 Harder                    |
| 10.5     | 140   | 2:33  | stopped drilling - pulled core |

pulled core - recovered ~ 6.8' lost ~ 2.2'  
good coal at bottom of core

3.5  
1.5  
1.4  
6.5

4-23

Started small barrel at

| Footmark | depth              | Time                                       |
|----------|--------------------|--------------------------------------------|
| 1        | <del>138</del> 138 | 3:13 pm - dropped 1' in 1 minute           |
| 2        | 139                | 3:14 p                                     |
| 3        | 140                | 3:15 ← Coed fast To 3' - probably          |
| 4        | 141                | 3:18 2' piece of Big core left in hole     |
| 5        | 142                | 3:23 from last Try                         |
| 6        | 143                | 3:26                                       |
| 7        | 144                | 3:30                                       |
| 8        | 145                | 3:33                                       |
| 9        | 146                | 3:38                                       |
| 10       | 147                | 3:44 - 3:48 Stopped drilling - pulled core |

Recovered 8' of core -  
 Reamed to 147 -  
 End of Day

4-24-85

9 x 15 = 135  
 1 x 10 = 145  
 1 x 15 = 15  
 160  
 (2' mark) - 13  
 147

| Foot Mark | depth | Time   |
|-----------|-------|--------|
| 2         | 147   | 10:48  |
| 3         | 148   | 10:55  |
| 4         | 149   | 11:01  |
| 5         | 150   | 11:07  |
| 6         | 151   | 11:14  |
| 7         | 152   | 11:22  |
| 8         | 153   | missed |
| 9         | 154   | 11:37  |
| 10        | 155   | 11:45  |

Big Barrel - hand drilling  
 drill chattering  
 in zones of 2 or  
 3 inches  
 question - may  
 sand?

4-24 (cont)

| Footmark | Depth | Time  |
|----------|-------|-------|
| 11       | 156   | 11:53 |
| 11½      | 156½  | 11:57 |

pulled core

Recovered ~9.3'

(Whole core)

| Foot | Small Panel Depth | Time |
|------|-------------------|------|
|------|-------------------|------|

Apr 24, 85

|       |                   |
|-------|-------------------|
| 12:55 | start from 154 ft |
| 12:57 | 155               |

(Sophocleous)

|   |      |       |
|---|------|-------|
| 5 | 155' | 12:57 |
|---|------|-------|

|   |     |       |
|---|-----|-------|
| 6 | 156 | 01:02 |
|---|-----|-------|

|   |     |       |
|---|-----|-------|
| 7 | 157 | 01:07 |
|---|-----|-------|

before reading 10 (~9.8) rig stopped waiting for Ron to return with drinks  
resume at 1:40. Took all stems out

2:00 pm depth check Ron could not measure it. He  
thinks we must be around 168 ft

Core recovery started. Difficulties in  
extracting core. Marinos attempted  
depth measurement. ~~He~~ came  
up with ~168 ft (2:25 pm)

Recovered about 7 ft. of core  $\Rightarrow 156 + 7 = 163'$

4:00 pm Hole reamed by Mel estimated approx depth 162 ft  
which agrees with our estimated 163 ft.

|   |      |      |
|---|------|------|
| 2 | 162' | 4:11 |
| 3 | 163' | 4:24 |
| 4 | 164  | 4:40 |

| Footmark | Depth | Time |
|----------|-------|------|
| 5'       | 165'  | 4:55 |
| 6        | 166'  | 5:10 |
| 7        | 167'  | 5:26 |
| 8        | 168   | 5:40 |

stop coring

5:44 pm cable broke

6:15 pm <sup>broke</sup> cable taken out of system

Pulled up Barrel no core - 162-168

4-25

fixed cable - went in with small barrel to  
try to get core from yesterday - started coring

at 162 - cored to 166 - plugged - pulled small barrel  
and cleared it out - decided to ream to 168' and  
start fresh - 11/14

|     |      |      |
|-----|------|------|
| 3'  | 168' | 1:13 |
| 4'  | 169  | 1:25 |
| 5'  | 170  | 1:36 |
| 6'  | 171  | 1:48 |
| 7'  | 172  | 2:02 |
| 8'  | 173  | 2:14 |
| 9'  | 174  | 2:30 |
| 10' | 175  | 2:48 |
| 11' | 176  | 3:06 |

} started coring with 13' barrel  
smooth to ~~2~~ 3 1/2' - noisy - harder & duller.  
hard and soft zones -

← { Coal pieces in cuttings @ ~ 172-172 1/2'  
Lower 5' 1/2' coal

- stopped coring

pulled barrel - recovered 5.3' core  
lower 5 1/2' coal at bottom of core

Put in small barrel - plugged - put at 4 pm for day

135  
17  
10  
162

4-26-85

Purton small Barrel down to 174' - barrel went  
down fast to ~ 175½ then slower - Small Barrel

| Foot | Depth | Time |                               |
|------|-------|------|-------------------------------|
| 7    | 174   | 8:50 | fast 1'                       |
| 8    | 175   | 8:51 | slower ~ 175½                 |
| 9    | 176   | 8:54 |                               |
| 10   | 177   | 9:00 |                               |
| 11   | 178   | 9:06 | drills quiet - still in shale |
| 12   | 179   | 9:11 | " "                           |
| 13   | 180   | 9:18 | " "                           |
| 14   | 181   | 9:24 | " "                           |
| 15   | 182   | 9:28 | " "                           |

Stopped @ 182 - pulled Barrel  
core slightly stuck - used water pressure -  
~ Top 2 feet of core (174-176) came out in order.  
176-182 Blew out and is not in good  
order except for ~ 181-182 which is probably  
good. Recovered about 6-7' core in pieces.  
Stopped - Drilling due to Rain -

MONDAY 4-29-85

9.45 - REAMING of HOLE BEGINS

Started  $\frac{1}{16}$  at one ft

10.10 - REAMING DOWN TO 10 FT. MARK

10.22 - Reamj DOWN TO 14 FT MARK

C. 10.30 - REAMED TO ALMOST 15 ft MARK (SHOULD BE at a depth of 182.5 ft)

10.36 - BEGIN TO PULL UP REAMBIT.

11.16 - READY TO BEGIN THE LARGE CORER TOUCHED BOTTOM

AT THE 2.2 ft MARK ( $\approx 182.5$  ft)

182.5

1.8

192.3

11.23 - 3.0 ft MARK

11.31 - 4.0 ft MARK

4.8 - INCREASING BUCKING FOR A WHILE

11.35 5.0 ft MARK

11.39 6.0 ft MARK

11.43 7.0 ft MARK

11.46 8.0 ft MARK

11.48 9.0 ft MARK - INCREASED BUCKING

11.50 11 ft MARK

11.52 12 ft MARK - PULL UP CORE

CORE CAME OUT VERY NICELY - A LITTLE OVER 8 ft of core, TOP 8 inches are shale + fine sand lenses. Lower part is sandstone (TONGONOXIE)

12.51 - RESUME COCKING, SMALL BORE,  $O_{\text{MARK}} = 192.3$  ft

12.55 - 2 ft MARK

12.57 - 3 ft MARK

1.00 - 4 ft MARK

1.02 - 5 ft MARK

1.06 - 7 ft MARK

James  
McIntosh

QUICK ROTATIONS

1.09 - 8 ft

1.12 - 9 ft MARK

1.13 - 9.2 ft - core retrieved

c. 5 feet of core was retrieved, - all sandstone / 0 mark = 192.3 ft  
9.2 mark = 201.5 ft

2.15 - START COREING → 4.2 ft MARK = 201.5 ft

2.16 - 5 ft MARK

→ SMALL CORE

2.22 - 7 ft MARK

2.25 - 8 ft MARK

8.5 - BUCKING for a 1/2 minute

2.28 - 9 ft MARK

2.30 - 10 ft MARK

2.32 - 11 ft MARK

2.35 - 12 ft MARK

2.38 13.2 ft MARK - CORE RETRIEVED

4.2 ft MARK = 201.5  
13.2 ft MARK = 210.5

c. 5 ft of core, + sandstone with MINOR ORGANIC STREAKS,  
from a 9.0 ft section (201.5 to 210.5 ft)

Finished for Day @ 210.5'

30 April

Started coring

at 10:37 AM Started @ ~ 21205

|        |            |                   |
|--------|------------|-------------------|
| Foot 1 | - 10:42 AM |                   |
| 2      | - 10:44 AM | Chattering at 1.8 |
| 3      | - 10:49 AM | slight chattering |
| 4      | - 10:53 AM | quiet             |
| 5      | - 10:58 AM | quiet             |
| 6      | - 11:03 AM | Some chatter      |
| 7      | - 11:09 AM | some chatter      |
| 8      | - 11:11 AM | some chatter      |
| 9.5    | - 11:13    | some chatter      |

cored to 215

started at 12:25

Foot 7.0 - 12:25  
10 - 12:31  
11 - 12:46

stopped temporarily at 11 ft clear bit  
12 - 1:05 because of slow  
progress

stopped coring and pulled out @ 219

5-2-85 - Thu  
 Ran down to 218 - put on Big Barrel -  
 started core @ 10-21

| Foot | Depth | Time  |                                 |
|------|-------|-------|---------------------------------|
| 8    | 218   | 10:21 | Drill chattering - no pull down |
| 9    | 219   | 10:24 | " ↓ pressure -                  |
| 10   | 220   | 10:26 | " only weight of                |
| 11   | 221   | 10:27 | " stem + Barrel                 |
| 12   | 222   | 10:30 | " on hit.                       |
| 13   | 223   | 10:32 | " very smooth                   |
| 14   | 224   | 10:34 | " drilling                      |
| 15   | 225   | 10:36 | "                               |

Pulled barrel - recovered 2.5' of poorly cemented  
 gray sandstone. - @ 1.2' of upper part of core already  
 cored by small barrel.

Several thin zones with plant remains (carbonized).  
 Bottom of core ~ 3-4 inches hanging out bottom of  
 core barrel.

put on small barrel - ran down to ~ 221 barrel stopped  
 on the 4' of last run - cored thru that foot < 1 min and started at  
 Foot Depth Time 3' mark

|   |                |       |
|---|----------------|-------|
| 3 | 225            | 11:29 |
| 4 | <del>220</del> | 11:32 |
| 5 |                | 11:35 |
| 6 |                | 11:39 |

Smooth Drilling

| Fath | Depth | Time  |
|------|-------|-------|
| 7    | 229   | 11:42 |
| 8    | 230   | 11:48 |
| 9    | 231   | 11:55 |
| 9½   | 231.5 | 11:59 |

Harbor @ 6½'

Stopped drilling @ 9½'

by 3:34 we succeed in plugging small barrel  
and finding a bad Thrausant bearing in a clutch.  
No core. Reamed to so we can start fresh  
Tomorrow.

234 ft

3

MAY 11 1985 (FRIDAY)

CORING - USING LG BORE

9.13 - START at 234 ft, about 1 ft above Zero MARK

0 MARK = 235

9.16 - 2 ft MARK

9.18 - 3 ft MARK

HARD zone  
23

9.25 4 ft MARK - The progress was very slow about 3.7 to 4.0

9.38 5 ft MARK Progress CONTINUED SLOW till 5 ft mark

9.41 6 ft MARK - BACK TO "RAPID" PROGRESS, esp. after 5.5 ft

9.42 7 ft MARK

9.43 8 ft

8.5 - BUCKING OF DRILL

9.44 - PULL UP CORE for 234 - 243.5 interval - 3 BOXES

POT IN

Core is SANDSTONE w/ shale and  
IN MIDDLE. shale INTERCLASTS  
ARE PRESENT IN S.S. some coal streaks

10.56 - 1.5 ft MARK = 243.5 - Resume coring - small bore

10.58 - 4 ft MARK

11.00 - 5 ft MARK

11.05 - 6 ft MARK

11.09 - 7 ft MARK

11.12 - 8 ft MARK

11.16 - 9 ft MARK

11.24 - 10 ft mark

11.29 - 10.5 ft mark - pull up core -

Labelled this  
"#1" in box

10.5  
1.5  
9.0 INTERVAL  
ca 2.8 ft CORE recovered

Core is all Sandstone,  
and Broken in 1-4 in  
Segments

INTERVAL CORED 243.5 - 252.5

Top of core recovered at 12:00 noon.

| Mark  | Depth | Time  |
|-------|-------|-------|
| 5     | 252'  | 12:45 |
| 6     | 253'  | 12:49 |
| 7     | 254'  | 12:58 |
| 8     | 255'  | 1:04  |
| 9/8.5 | 255.5 | 1:09  |

Mel is trying to go from 252 to 256' (5-9 markings)  
to see if he could recover more core  
of that partial recovery from 243.5 - 252.5

← felt crunchy  
stop to recover core

252  
253  
254  
255  
256

234  
810.5  
244.5  
18.5  
17.5  
10.0  
18.0  
1.5  
8.0  
8.5  
8.25  
16.0  
38.  
1032.5

12.47

~ 1<sup>50</sup> pm - Recovered only ~ 1 ft. of core. Most in small pieces. Longest is 2 1/2 in. Box label calls this "#2".

Broke bit

Core sh/ave been 246 - 255.5'

so return = 246 - 247 ???

Same  
Down

Material is gray ss w/ few small streaks or very thin layers of blk organics

Also cracked econo shoe <sup>badly</sup>, so stopped coring. <sup>or could have lost new bit!</sup>  
There is already a new " " ordered, so sh/ve here pm.

Ream hole to 247 - Begin putting stem back in ~ 2<sup>30</sup> pm

5 - 6 - 85

Big Barrel run down to 247' Start & Coring @ 10:14  
New Bit on Big Barrel

| Foot   | Depth   | Time  |
|--------|---------|-------|
| 7      | 247     | 10:14 |
| 8      | 248     | 10:15 |
| 9      | 249     | 10:17 |
| 10     | 250     | 10:18 |
| 11     | 251     | 10:19 |
| 12     | 252     | 10:21 |
| 13     | 253     | 10:24 |
| 14     | 254     | 10:26 |
| 15     | 255     | 10:27 |
| 15 1/2 | 255 1/2 | 10:28 |

Pulled Barrel up - lost most of core - 2' <sup>big</sup> pieces  
with small barrel core out of them. Cleaned big Barrel  
and put back in hole to see most try to recover lost core

15 x 15 = 225  
1 x 10 = 10  
1 x 15 = 15  
250  
+ 5 on tally 5  
255

| Foot | Depth | Time  |
|------|-------|-------|
| 5    | 255   | 11:35 |
| 6    | 256   | 11:37 |
| 7    | 257   | 11:44 |
| 8    | 258   | 11:56 |
| 9    | 259   | 12:00 |
| 10   | 260   | 12:05 |

Did not Ream

No pull down pressure - only  
wt. of stem + Barrel

pull down on

pulled up at 12:05 - forgot to put steel ball  
in top of Barrel - Core washed badly - recovered about  
3 1/2 feet - core on 3" diameter - Did not ream -  
put Big Barrel back in to core more -

| Foot | Depth | Time |
|------|-------|------|
| 5    | 260   | 1:10 |
| 6    | 261   | 1:12 |
| 7    | 262   | 1:15 |
| 8    | 263   | 1:18 |
| 9    | 264   | 1:21 |
| 10   | 265   | 1:25 |

pull down on - pull quiet

pull chatter at 263 1/2

stopped @ 265 - pulled Barrel - no core!!

Started drilling with  $4\frac{3}{4}$ " Bit at 265' -  
Took samples every foot - No core

265 - ss

266 ss

267 ss + coal

268 Ls

269 Ls

270 Ls - End of stem

271 Ls new stem 3:32 pm

272 Ls

273 Ls

↓ all Ls

281  $\frac{1}{4}$  - Drills quiet → Rock lab

285 stopped drilling (in shale) 9:41, 2m

5-7-85

~~285~~ started with  $4\frac{3}{4}$ " Bit at 286 - samples

6 286 10:38 sh only - No core

7 287 10:43 sh

8 288 10:49 sh

9 289 10:59 sh

10 290 11:07 sh

11 291 11:13 sh

12 292 11:17

13 293 11:29

Black shale

Not much pressure applied down  
very little cuttings

291  $\frac{1}{2}$  harder - chatter - lignite chips

hard drilling -  
chatter -

293 Bottom of hole

Drilled ~ 2' into Top of Tane Limestone -  
Stopped and pulled stem up a few feet.  
Flushed Hole with ~ — gallons of Fresh  
Water.

Then pulled all stem out and started logging.  
Porogama & caliper - look good - just  
for the Day -

5-8-85

afternoon logged hole - Ran SP-Res. -  
got decent logs - cleaned up site and  
made form for concrete pool. -

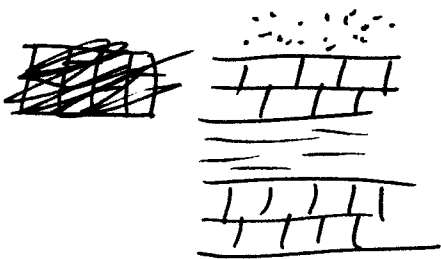
5-9-85 -

no logging - poured concrete for pool around  
well.

5-10-85

water level measured by Tuna  
86.75' below top of 8" casing

S Tanton Ls.



Tanganoxie

South Bend 1.5' - 5'

Rock lake 2' - 14' (av. 8) sh + ss, siltst.

Stoner 13' - 18'

### TEST HOLE KU FISH PONDS #3

Test Hole located approximately 50' N of Foley Hall on west campus, KU.

T13S - R19E - 02 DAB - EL. 922

#### TIME

4/10-/85

0-33'

4/10/85

Drilled with 10" rollerbit - samples collected - no cores  
- upper part of hole weathered Lawrence shale - lower -  
gray shale calcaeous - hard. Hole drilled to 33' and 8"  
pvc surface casing installed and grouted in place from  
top to bottom. (0-33'). Allowed to harden for 48 hrs.  
Cement came up inside the casing to 31.5'.

---

measured Tom: 2/27/85  
Depth of holes south of Foley

SW Hole with Bailer in it - 138'

Hole with 3" pvc & with T - 235'

Hole with 1 1/2" steel pipe - 7'

Hole with 1 1/4 galvanized pipe at an angle  
25'

Drill Crew

|                   | <u>DEPTH</u> | <u>TIME</u> |                                                                                                                                                                                               |
|-------------------|--------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4/12/85<br>M.A.S  | 0-31.5'      |             |                                                                                                                                                                                               |
|                   | 32.5'        | 12:16       |                                                                                                                                                                                               |
|                   | 33.5'        | 12:20       |                                                                                                                                                                                               |
|                   | 34.5'        | 12:29       |                                                                                                                                                                                               |
|                   | 36'          | 12:43       |                                                                                                                                                                                               |
|                   | 36.5'        | 12:49       | Hard zone at 36.5                                                                                                                                                                             |
|                   | 37'          | 12:53       |                                                                                                                                                                                               |
|                   | 38'          | 1:01        |                                                                                                                                                                                               |
|                   | 39'          | 1:10        | Mud turned very dark (shale?)                                                                                                                                                                 |
|                   | 40'          | 1:19        |                                                                                                                                                                                               |
|                   | 41'          | 1:27        |                                                                                                                                                                                               |
|                   | 42'          | 1:37        | Core recovery approximately 43" - measured depth of hole 35' - went back in and recovered approximately 3 more feet - measured depth = 38' - reamed to 37 1/2' with 6 3/4" roller bit.        |
|                   | 38'          | 3:41        |                                                                                                                                                                                               |
|                   | 43.5'        | 4:11        | Started coring at 38' with small barrel - stopped at 43 1/2. Retrieved about 57" of core.                                                                                                     |
| 4/15/85<br>P.A.M. | 43'          | 10:00       | Started at approximately 10 a.m. - small barrel                                                                                                                                               |
|                   | 44.5'        | 10:15       | Hard layer at 47                                                                                                                                                                              |
|                   | 47.5'        | 10:36       | Hard layer at 48-48.4                                                                                                                                                                         |
|                   | 50.0'        | 11:18       | Hard layer at 49.5-49.7                                                                                                                                                                       |
|                   | 51'          | 11:24       | Pulled barrel to retrieve core - recovery?                                                                                                                                                    |
|                   | 52'          | 11:30       | Reamed from 38' to 52' with 6 3/4" rollerbit.                                                                                                                                                 |
|                   | 52'          | 1:24        | Started coring with large barrel at 52'.                                                                                                                                                      |
|                   | 59'          | 2:25        | Pulled barrel - <u>NO CORE</u>                                                                                                                                                                |
|                   |              | 3:25 pm     | Went in with large barrel to try and recover core from last run. (52'-59')<br>Barrel dropped 5' then stopped.                                                                                 |
| R.Miller          | 60'          | 3:27 pm     | Began coring at 60'.                                                                                                                                                                          |
|                   | 61'          | 3:32 pm     | 1' cored, (6' on tower) - smoother                                                                                                                                                            |
|                   | 62'          | 3:39 pm     | rattling - stopped coring - pulled core got core already cored by small barrel - tape measured to 49' (barrel was down to 62') - <u>got 1' of core from 52' - 62'</u> probably from very top. |
|                   |              | 4:22 pm     | Went in with large barrel and cable to try to retrieve core - 3 times - no luck.                                                                                                              |
|                   |              | 4:42 pm     | Tried again with spring catcher on large barrel - stuck at 55' (no drilling).<br>Total recovery?                                                                                              |
| 4/16/85           |              |             | Measured hole 54'.                                                                                                                                                                            |

M.A.S. & T.J.M.

DEPTH

TIME

Ran in large barrel to 63' - recovered core from approximately 53 to 63' (recovered approximately 80%) - 2 boxes marked 53' to 63' - Boxes 1 of 2 and 2 of 2 (4" core).

63.5

11:09

Started coring with small barrel at 63 1/2.

65.5

11:17

66.5

11:21

67.5

11:26

67.5-69

-

69-69 2/3

14 minutes

Stopped to clean plugged barrel - core recovery? Reamed to 70.5 with 6 3/4 roller. Started 4" barrel at 70.5.

70.5-72

-

72-73

14.5 minutes

73-74

14 minutes

74-75

18 minutes

75-76

-

73' - 77' took 45 minutes to drill.

76-77

-

77-77.5

Stopped drilling on big barrel at 4:38. Total of 7' - recovered?

4/17

P.A.M.

76.5-81.5

45

81.5-83.6

30

83-89.4

8:00 a.m. started coring with small barrel began at 76.5' - cored to 83.6 by 9:15 recovered \_\_\_\_\_ Reamed to 83.0 with Roller by 11:00 - began coring with big barrel from 83.0' - completed at 12:40 (no recovery) tried again and recovered some core - \_\_\_\_\_? Depth of hole 89.4' - used small barrel to start coring at 89.4' - finished coring at 4:10 p.m. (small barrel) - estimated depth 102' recovered \_\_\_\_\_?

4/18

P.K.C.

Started reaming at 9:22 with 6 3/4 roller bit- went to 93' at 9:38 continued reaming to 101' approximately 10 a.m. - stopped - put on small barrel.

Started coring approximately 10:42.

FOOT

DEPTH

TIME

3

102

10:42

4

103

10:55

5

104

11:12

6

105

11:40

7

106

12:00

7.7

106.7

12:17

Stopped

102'-103' mud press. 100 psi - color change in foam on mud pit (dark gray to black). Mud pressure 140 psi - black foam on pit-pressure dropped back to 100 psi - fine black film on pit - pull down chain loose - 106' mud press.

100 psi - small amount black scum on pit - pull down chain loose.

Recovered approximately 5' core (shale and mud). Core had to be removed from small barrel from the upper end except for the very bottom 3" of very hard (calc)? Shale

- pieces with bits of wood. - Quit at 1:45.

Started coring at 106.7

From Mel K's notes

| FOOT | DEPTH | TIME  |                                                                                                                                                             |
|------|-------|-------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4.2  | 106.7 | 1:56  |                                                                                                                                                             |
| 10   |       | 2:23  |                                                                                                                                                             |
| 10.5 |       |       |                                                                                                                                                             |
| 11   |       | 3:00  |                                                                                                                                                             |
| 11.5 |       | 3:28  |                                                                                                                                                             |
| 12   |       | 3:44  |                                                                                                                                                             |
| 12.5 | 115.0 | 4:13  | Pulled barrel at 116' - full - drilled to approximately 116 - but did not pull all of core - Recovered approximately 9' - some Haskell Limestone in bottom. |
| 7.7  | 116   | 11:13 | Started coring at 116' approximately                                                                                                                        |
| 8.7  | 117   | 11:25 | 11:13 a.m. with small barrel in Haskell Limestone.                                                                                                          |
| 9.0  | 117.3 | 11:32 | - Drill quieter - bottom of Haskell                                                                                                                         |
| 11.0 | 119   | 11:38 | - Much chatter at 119                                                                                                                                       |
| 12.0 | 120   | 11:40 |                                                                                                                                                             |
| 13.0 | 121   | 11:43 | 121 top of sandstone? - smoother                                                                                                                            |
| 14.0 | 122   | 11:45 | drilling - no chatter - fast drilling.                                                                                                                      |
| 15.0 | 123   | 11:47 |                                                                                                                                                             |
| 15.3 | 123.6 | 11:48 | - stopped - pulled core - recovered 8'                                                                                                                      |
|      |       | 12:20 | reamed from 116 to 122 from 12:20 to 2:10 p.m.                                                                                                              |
| 1.3  | 121   | 2:19  |                                                                                                                                                             |
| 2.0  |       | 2:20  |                                                                                                                                                             |
| 3.0  |       | 2:25  |                                                                                                                                                             |
| 4.0  |       | 2:31  |                                                                                                                                                             |
| 5.0  |       | 2:35  | 5.5' chattering slightly                                                                                                                                    |
| 6.0  |       | 2:43  | 5.8' chattering more                                                                                                                                        |
| 7.0  |       | 2:52  | 6.5' smoother (5.5-6.5 hard zone)                                                                                                                           |
| 8.0  |       | 3:00  |                                                                                                                                                             |
| 9.0  |       | 3:09  | 9.0' Harder drilling.                                                                                                                                       |
| 9.3  | 129   | 3:14  | Stopped drilling to pull core recovered _____?                                                                                                              |
| 6.5  | 127   | 3:48  | Started coring with small barrel.                                                                                                                           |
| 7    |       |       |                                                                                                                                                             |

|       |     |      |                                             |
|-------|-----|------|---------------------------------------------|
| 7.5   |     |      | Springleak just before 11 1/2 - stopped     |
| 8     |     |      | at 4:20 (=11 3/4) to work on leak.          |
| 8.5   |     |      | Began again after repair - small            |
| 9     |     | 3:56 | leak again approximately 4:26 - <u>Big</u>  |
| 9.5   |     |      | leak at 4:27 - pulled core -                |
| 10    |     | 4:00 | <u>recovered approximately 4'</u> core from |
| 10.5  |     |      | <u>small barrel approximately 2'</u> still  |
| 11    |     | 4:07 | stuck in barrel - quit for day - get        |
| 11.5  | 132 | 4:14 | rest out tomorrow.                          |
| 11.75 |     | 4:28 |                                             |

4/23 Started coring with large barrel.

T.J.M.

| FOOT | DEPTH | TIME  |
|------|-------|-------|
| 1.4  | 131   | 12:53 |
| 2    | 131.5 |       |
| 3    | 132.5 |       |
| 4    | 133.5 | 1:13  |
| 5    | 134.5 | 1:27  |
| 6    | 135.5 | 1:42  |
| 7    | 136.5 | 1:56  |
| 8    | 137.5 | 2:08  |
| 9    | 138.5 | 2:19  |
| 10   | 139.5 | 2:28  |
| 10.5 | 140   | 2:33  |

7.5 harderzone - sandstone coming up in cuttings.

10.0 harder -  
stopped drilling - pulled core recovered 6.8' lost approximately 2.2' - good coal at bottom of core.

|    |     |      |
|----|-----|------|
| 1  | 138 | 3:13 |
| 2  | 139 | 3:14 |
| 3  | 140 | 3:15 |
| 4  | 141 | 3:18 |
| 5  | 142 | 3:23 |
| 6  | 143 | 3:26 |
| 7  | 144 | 3:30 |
| 8  | 145 | 3:33 |
| 9  | 146 | 3:38 |
| 10 | 147 | 3:44 |

- started coring at 138 (small barrel?)

- cored fast to 3' - probably 2' piece of big core left in hole from last try.

3:48 stopped drilling - pulled core recovered 8' of core - reamed to 147 - end of day.

4/24

T.J.M.

| FOOT | DEPTH | TIME  |
|------|-------|-------|
| 2    | 147   | 10:48 |
| 3    | 148   | 10:55 |
| 4    | 149   | 11:01 |
| 5    | 150   | 11:07 |
| 6    | 151   | 11:14 |
| 7    | 152   | 11:22 |
| 8    | 153   |       |
| 9    | 154   | 11:37 |
| 10   | 155   | 11:45 |
| 11   | 156   | 11:53 |
| 11.5 | 156.5 | 11:57 |

Started with big barrel - hard drilling - chattering - zones of 2 or 3 inches.

Started with big barrel - hard drilling - chattering - zones of 2 or 3 inches.

Stopped - pulled core - recovered approximately 9.3' - whole core!!

4/24  
M.A.S.

put on small barrel

| FOOT | DEPTH | TIME  |
|------|-------|-------|
| 4    | 154   | 12:55 |
| 5    | 155   | 12:57 |
| 6    | 156   | 1:02  |
| 7    | 157   | 1:07  |
| 8    | 158   |       |
| 9    | 159   |       |
| 10   | 160   | ?     |
| 11   | 161   | ?     |
| 12   | 162   | ?     |
| 2    | 162   | 4:11  |
| 3    | 163   | 4:24  |
| 4    | 164   | 4:40  |
| 5    | 165   | 4:55  |
| 6    | 166   | 5:10  |
| 7    | 167   | 5:26  |
| 8    | 168   | 5:40  |

Much discussion about how deep is hole! Pulled barrel - recovered approximately 7' of core 156 + 7 = 162. Mel reamed to 162 +/- with roller. Started coring with big barrel @ 162'.

Stopped coring - 5:44 cable broke  
6:15 broken cable taken out of system - pulled barrel NO CORE 162-168.

4/25  
T.J.M.

|    |     |      |
|----|-----|------|
| 3  | 168 | 1:13 |
| 4  | 169 | 1:25 |
| 5  | 170 | 1:36 |
| 6  | 171 | 1:48 |
| 7  | 172 | 2:02 |
| 8  | 173 | 2:14 |
| 9  | 174 | 2:30 |
| 10 | 175 | 2:48 |
| 11 | 176 | 3:06 |

Fixed cable - went in with small barrel to try to get yesterday's core - started at 162' cored to 166' and plugged bit - pulled barrel and cleaned it out - decided to ream to 168 and start fresh.  
11:14 - cored with big barrel - smooth to 3.5 - chatter and quiet after that (alternating) hard and soft zones coal pieces at 172-172.5 (lower sibley)? Stopped - pulled barrel - recovered 5.3' of core with lower sibley at bottom of core - lost lower part of coal and underclay. Put in small barrel - plugged it - quit for day.

4/26  
T.J.M.

|    |     |      |
|----|-----|------|
| 7  | 174 | 8:50 |
| 8  | 175 | 8:51 |
| 9  | 176 | 8:54 |
| 10 | 177 | 9:00 |
| 11 | 178 | 9:06 |
| 12 | 179 | 9:11 |
| 13 | 180 | 9:18 |
| 14 | 181 | 9:24 |
| 15 | 182 | 9:28 |

Put on small barrel to 174' - went down fast to approximately 175.5 then slower.

Drill smooth and quiet.

Drills smooth and quiet; shale.

Drills smooth and quiet; shale.

Drills smooth and quiet; shale.

Drills smooth and quiet; shale.

Stopped at 182 - pulled barrel - upper 2 feet came out of top of barrel (174 - 176) - lower 6 feet (176 - 182) stuck in barrel - hooked up mud hose to top of barrel to force core out. Core blew out and got scrambled (176 - 181) - 181-182 probably in right order. Stopped drilling due to rain.

|                   |       |       |                                                                                                             |
|-------------------|-------|-------|-------------------------------------------------------------------------------------------------------------|
| 4/29              |       |       | 9:45 - 10:30 reamed hole with roller                                                                        |
| James McCallister |       |       | to 182.5 - put on large barrel.                                                                             |
| 2.2               | 182.5 | 11:00 |                                                                                                             |
| 3                 |       | 11:23 |                                                                                                             |
| 4                 |       | 11:31 |                                                                                                             |
| 5                 |       | 11:35 |                                                                                                             |
| 6                 |       | 11:39 |                                                                                                             |
| 7                 |       | 11:43 |                                                                                                             |
| 8                 |       | 11:46 |                                                                                                             |
| 9                 |       | 11:48 |                                                                                                             |
| 10                |       |       |                                                                                                             |
| 11                |       | 11:50 |                                                                                                             |
| 12                | 194.3 | 11:52 | Stopped coring - pulled barrel                                                                              |
|                   |       |       | Good core - approximately 8' - top 8" are shale and fine sand lenses. Lower part is sandstone (Tonganoxie). |
| 0                 | 192.3 | 12:51 | Start coring with small barrel.                                                                             |
| 2                 |       | 12:55 |                                                                                                             |
| 3                 |       | 12:57 |                                                                                                             |
| 4                 |       | 1:00  |                                                                                                             |
| 5                 |       | 1:02  |                                                                                                             |
| 7                 |       | 1:06  |                                                                                                             |
| 8                 |       | 1:09  |                                                                                                             |
| 9                 |       | 1:12  |                                                                                                             |
| 9.2               | 201.5 | 1:13  | Pulled barrel - retrieved approximately 5' core - all sandstone.                                            |
| 4.2               | 201.5 | 2:15  | 4.2' put small barrel back in - started coring                                                              |
| 5                 |       | 2:16  |                                                                                                             |
| 7                 |       | 2:22  |                                                                                                             |
| 8                 |       | 2:25  |                                                                                                             |
| 9                 |       | 2:28  | Hard zone at 8.5 - (chatter).                                                                               |
| 10                |       | 2:30  |                                                                                                             |
| 11                |       | 2:32  |                                                                                                             |
| 12                |       | 2:35  |                                                                                                             |
| 13.2              | 210.5 | 2:38  | Pulled barrel - retrieved approximately 5' core - sandstone with minor organic streaks.                     |
| 4/30              |       |       |                                                                                                             |
| P.A.M.            |       |       |                                                                                                             |
| 0                 | 205   | 10:37 | Started coring at 10:37 approximately 205'.                                                                 |
| 1                 |       | 10:41 |                                                                                                             |
| 2                 |       | 10:44 | Chattering at 1.8'.                                                                                         |
| 3                 |       | 10:49 |                                                                                                             |
| 4                 |       | 10:53 | Slight chattering then quiet.                                                                               |
| 5                 |       | 10:58 | Some chattering.                                                                                            |
| 6                 |       | 11:03 | Some chattering.                                                                                            |
| 7                 |       | 11:09 | Some chattering.                                                                                            |
| 8                 |       | 11:11 | Some chattering.                                                                                            |
| 9.5               | 215   | 11:13 | Cored to 215' ? - pulled barrel retrieved _____" core.                                                      |
| 7.0               |       | 12:25 | Started coring again at 12:25                                                                               |
| 10                |       | 12:31 | stopped temporarily at 11' to try to                                                                        |
| 11                |       | 12:46 | clear bit - slow progress - bit                                                                             |

|                |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|----------------|-------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12             |       | 1:05  | plugged stopped coring and pulled out at 219' samples in bags - core in pieces.                                                                                                                                                                                                                                                                                                                                                               |
| 5/2            |       |       | Reamed to 218 ( 6 3/4 roller) - put on big barrel - started coring at 10:21.                                                                                                                                                                                                                                                                                                                                                                  |
| T.J.M.         |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 8              | 218   | 10:21 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 9              | 219   | 10:24 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 10             | 220   | 10:26 | Drill chattering - no pulldown pressure - only weight of stem and barrel on bit. Easy smooth drilling.                                                                                                                                                                                                                                                                                                                                        |
| 11             | 221   | 10:27 | Easy smooth drilling.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 12             | 222   | 10:30 | Easy smooth drilling.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 13             | 223   | 10:32 | Easy smooth drilling.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 14             | 224   | 10:34 | Easy smooth drilling.                                                                                                                                                                                                                                                                                                                                                                                                                         |
| 15             | 225   | 10:36 | Easy smooth drilling.                                                                                                                                                                                                                                                                                                                                                                                                                         |
|                |       |       | Stopped at 15 - recovered 2.8' of poorly cemented gray sandstone - at 1.2' of upper part of core already cored by small barrel - several thin <1" zones with plant remains (carbonized). Bottom of core approximately 3" - 4" hanging out bottom of barrel when it was pulled up. Put on small barrel - ran down to 221' - barrel stopped on top of approximately 4' core of last run - cored thru that fast (<1 min) and started at 3' mark. |
| 3              | 225   | 11:29 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 4              | 226   | 11:32 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 5              | 227   | 11:35 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 6              | 228   | 11:39 | Harder at 6.5                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 7              | 229   | 11:42 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 8              | 230   | 11:48 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 9              | 231   | 11:55 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 9.5            | 231.5 | 11:59 | Stopped drilling at 9.5. Pulled barrel - recovered approximately 3' core - by 3:34 pm we succeeded in plugging small barrel and finding a bad throw out bearing in a clutch. No core on this run. Reamed to 234' so we can start fresh tomorrow.                                                                                                                                                                                              |
| 5/3            |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| J. McCallister |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| -1             | 234   | 9:13  |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 0              | 235   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 1              | 236   |       |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 2              | 237   | 9:16  |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 3              | 238   | 9:18  |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 4              | 239   | 9:25  | Coring with big barrel.                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 5              | 240   | 9:38  |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 6              | 241   | 9:41  |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 7              | 242   | 9:42  |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 8              | 243   | 9:43  |                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| 8.5            | 243.5 | 9:44  | Pulled barrel - retrieved 8'7" of core - put in 3 boxes - core is sandstone with shale bed in middle. Shale interclasts are present in sandstone - some coal stringers.                                                                                                                                                                                                                                                                       |
| 1.5            | 243.5 | 10:56 | Put in small barrel.                                                                                                                                                                                                                                                                                                                                                                                                                          |
| 4              | 246   | 10:58 |                                                                                                                                                                                                                                                                                                                                                                                                                                               |

|      |       |       |                                                                                                                   |
|------|-------|-------|-------------------------------------------------------------------------------------------------------------------|
| 5    | 247   | 11:00 |                                                                                                                   |
| 6    | 248   | 11:05 |                                                                                                                   |
| 7    | 249   | 11:09 |                                                                                                                   |
| 8    | 250   | 11:12 |                                                                                                                   |
| 9    | 251   | 11:16 | Labelled #1 in box.                                                                                               |
| 10   | 252   | 11:24 |                                                                                                                   |
| 10.5 | 252.5 | 11:29 | Pulled barrel (10.5' - 1.5' = 9.0') recovered approximately 2.8' core - all sandstone broken in 1" - 4" segments. |

|        |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------|-------|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| M.A.S. |       |       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 5      | 252   | 12:45 | Attempt to go from 252 to 256 (5-9 feet) to try to recover more core from the partial recovery from 243.5 to 252.5.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| 6      | 253   | 12:49 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 7      | 254   | 12:58 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 8      | 255   | 1:04  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| 8.5    | 255.5 | 1:09  | Stopped to try to retrieve core approximately 1:50 pm - recovered only approximately 1' of core. Most in small pieces. Largest is 2.5" long. Labelled the 5 - 8.5' run #2 in same box as 243.5 - 252.5. Broke the bit by drilling the last 6" with no water. (Attempt to plug bit and keep core in barrel). Core should have been 246 - 255.5 so return was 246 - 247??? Material is gray sandstone with few small streaks or very thin layers of organics. Cracked the econo shoe on bit so stopped coring or could have lost new bit. Reamed hole to 247' - began putting stem back in approximately 2:30 pm. |

|        |       |       |                                                                                                                                                                                              |
|--------|-------|-------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5/6    |       |       |                                                                                                                                                                                              |
| T.J.M. |       |       |                                                                                                                                                                                              |
| 7      | 247   | 10:14 | Big barrel run down to 247' - started coring at 10:14 - new bit on big barrel.                                                                                                               |
| 8      | 248   | 10:15 |                                                                                                                                                                                              |
| 9      | 249   | 10:17 |                                                                                                                                                                                              |
| 10     | 250   | 10:18 |                                                                                                                                                                                              |
| 11     | 251   | 10:19 |                                                                                                                                                                                              |
| 12     | 252   | 10:21 |                                                                                                                                                                                              |
| 13     | 253   | 10:24 |                                                                                                                                                                                              |
| 14     | 254   | 10:26 |                                                                                                                                                                                              |
| 15     | 255   | 10:27 |                                                                                                                                                                                              |
| 15.5   | 255.5 | 10:28 | Pulled up big barrel - lost most of core - approximately 2' of big pieces with small barrel cored out of them. Cleaned big barrel and went back into try to recover lost core. Did not ream. |

|     |     |       |                                                                                                                                                                                            |
|-----|-----|-------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TJM |     |       |                                                                                                                                                                                            |
| 5   | 255 | 11:35 | No Pulldown Pressure on - only weight of stem & barrel - 5' - 8'                                                                                                                           |
| 6   | 256 | 11:37 | Pulldown on 9' - 10'                                                                                                                                                                       |
| 7   | 257 | 11:44 |                                                                                                                                                                                            |
| 8   | 258 | 11:56 |                                                                                                                                                                                            |
| 9   | 259 | 12:00 |                                                                                                                                                                                            |
| 10  | 260 | 12:05 | Pulled up at 12:05 - forgot to put steel ball in top of barrel - core washed badly - recovered approximately 3.5' of core 3" diameter - did not ream. Put big barrel back on to core more. |

|     |     |      |                           |
|-----|-----|------|---------------------------|
| TJM |     |      |                           |
| 5   | 260 | 1:10 | Pulldown on - drill quiet |

|    |     |      |                           |
|----|-----|------|---------------------------|
| 6  | 261 | 1:12 | Pulldown on - drill quiet |
| 7  | 262 | 1:15 | Pulldown on - drill quiet |
| 8  | 263 | 1:18 | 263.25 chattering         |
| 9  | 264 | 1:21 | Chattering continued      |
| 10 | 265 | 1:25 | Chattering continued      |

Stopped at 265' - pulled barrel - no core!!\*? Made decision to core no more - finished hole with 4 3/4" roller. Take samples every foot.

|         |           |                                            |
|---------|-----------|--------------------------------------------|
| 265     | SS        |                                            |
| 266     | SS        |                                            |
| 267     | SS & Coal |                                            |
| 268     | LS        | Chatter - Top of South Bend Limestone 268' |
| 269     | LS        |                                            |
| 270     | LS        | End of stem                                |
| 271     | LS        | New stem 3:37                              |
| 272     | LS        |                                            |
| 273     | LS        | Chatter - all limestone 273-281 1/4        |
| to      |           | Quiet at 281 1/4 - top of Rocklake         |
| 281 1/4 | LS        | Shale - drilled about 4' of shale -        |
| to      | SH        | stopped drilling for day at 4:41 pm        |
| 285     |           | 4:41 pm                                    |

5/7/85

TJM

|    |       |       |    |                                                                                                                                                                 |
|----|-------|-------|----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6  | 286   | 10:39 | SH | Started drilling with 4 3/4" bit at<br>286 - samples only no core - black and<br>gray shale down to 291.5 not much<br>pressure on pulldow very little cuttings. |
| 7  | 287   | 10:43 | SH |                                                                                                                                                                 |
| 8  | 288   | 10:49 | SH |                                                                                                                                                                 |
| 9  | 289   | 10:59 | SH |                                                                                                                                                                 |
| 10 | 290   | 11:07 | SH |                                                                                                                                                                 |
| 11 | 291   | 11:13 | SH |                                                                                                                                                                 |
|    | 291.5 |       | SH |                                                                                                                                                                 |

|    |     |       |                                                                                                                                                                                                                                                                                   |
|----|-----|-------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 12 | 292 | 11:17 | 291.5 harder - chatter - limestone chips                                                                                                                                                                                                                                          |
| 13 | 293 | 11:29 | Stoner limestone @ 291.5                                                                                                                                                                                                                                                          |
|    |     |       | 293 bottom of hole. Drilled about 2 feet into top of stoner limestone - stopped and pulled up stem a few feet - flushed hole with approximately _____ gallons of fresh water to clear mud. Pulled stem out and started logging. Ran Gamma and Caliper - looks good, quit for day. |
|    |     |       | 5/1/85 - Afternoon - logged hole - ran SP-Re5, got decent logs - cleaned up site and made form for concrete pad.                                                                                                                                                                  |
|    |     |       | 5/9/85 - no logging - poured concrete pad around base.                                                                                                                                                                                                                            |
|    |     |       | 5/10/85 - measured W.L. - 86.75' below top of 8" casing.                                                                                                                                                                                                                          |

①

## Test Hole KU Fishponds #3

Test hole ~~cored~~ located approximately 50' N  
of Foley Hall on west campus, KU.

T135 - R19E - 02 OAB - E/ 922.

4-10-85

4-10-85 <sup>Thurs</sup>

0-33' Drilled with 10" roller bit - samples  
collected - no cores. - upper ~~part~~ of hole  
weathered Lawrence shales - lower - gray shale  
calcareous - hard. Hole drilled to 33' and  
8" pvc surface casing <sup>casing?</sup> installed and grouted  
in place from top to bottom. (0-33').  
Allow to harden for 48 hrs. Cement came  
up in casing to 31.5'.

4-12-85

Start Page ① here

(1)

4-12-85 0-31.5 Drilled with 10" p.t. - surface casing installed -

1-2 31.5-32.5

2-3 32.5-33.5 4 min

3-4 33.5-34.5 9 "

4-5 34.5-36 13 "

5-6 36-36.5 6 " <sup>y</sup> harden at 36.5

6-7 36.5-37 4 "

7-8 37-38 8

8-9 38-39 9

39-40 9

40-41 8

41-42 10

8

~~Reamed~~ core recovery  $\approx 3'$  - measured  
depth of Hole 35' - went back in + recovered

$\sim 3$  more feet - meas. Depth = 38' -

Reamed to 37½' with 6¾ bit.

Started casing @ 38' ~~stopped at 35.5~~

with small bit - stopped at 43½

~~4-12-85~~ 38-43½ 30

4-15-85 43-44½ 10

44.5-47.5 21

started at ~10 AM - small barrel  
hard  
hard layer @ 47

" " @ 48-48.4

" " @ 49.5-49.7

P.A.M.

47.5-50 42

50-51 6

51-52 6

52-59 50

pulled barrel to retrieve Core -  
Reamed from 38 to 52 with 6¾"  
started casing with large barrel  
Pulled barrel - no core -

4-15 (cont)  
Rachot/Miller

3:25pm - went in with large barrel to try & recover core from last run

3:27 began coring

61' 3:32 1' cored 6' on Tower - smoother

62' 3:39 rattling - stopped - pulled core

got core already cored by small barrel -  
Tape measured to 49' (barrel was down to 62') - got 1' of core from 52'-62'  
~~probably~~ probably from very top

4:22 - went in with large barrel/cable to try to retrieve core - 3 times - no luck

4:42 Tried again with spring catcher on large barrel - stuck at 55' (no drilling)

4-16 -  
MAS &  
TJM

- measured Hole 54'

- Ran in large barrel to 63' - recovered core from 253 to 63' (recovered ~80%) - 2 boxes marked 53' to 63' - Boxes 1 & 2 & 2 & 2 -

11:09 started coring with small barrel @ 63½

|           |    |                                                |
|-----------|----|------------------------------------------------|
| 63.5-65.5 | 8  |                                                |
| 65.5-66.5 | 3½ |                                                |
| 66.5-67.5 | 5  |                                                |
| 67.5-69   | -  |                                                |
| 69-69⅓    | 14 | - stopped to change barrel -<br>Core recovery? |

Reamed to 70.5 with  $6\frac{3}{4}$  Roller  
 Started 4" barrel @ 70.5

70.5 - 72 -  
 72 - 73 14.5  
 73 - 74 14  
 74 - 75 18  
 75 - 76 -  
 76 - 77 -  
 77 - 77.5

73'-77' took 45' to drill

Stopped Drilling on big barrel @ 4:38  
 Total of 7' - Recovered?

4-17

PAM

76.5 - 81.5 45  
 81.5 - 83.6 30

8:00 am started coring with small barrel  
 began at 76.5' - cored to 83.6 (to) 9:15  
 Recovered \_\_\_\_\_?

83 - 89.4

Reamed to 83.0 with Roller by 11:00 -  
 began Coring with big barrel from 83.0' -  
 Completed at 12:40 (no recovery) Tried  
 again and recovered some core - \_\_\_\_\_?  
 Depth of Hole 89.4' - used small barrel  
 to start coring at 89.4' - finished coring  
 @ 4:10 pm (small barrel) - estimated Depth 102'  
 Recovered \_\_\_\_\_?

8

4-18

P.K. Chaffee

9:22 - started reaming - went to 93' @ 9:38  
 continued reaming to 101' ~ 10 am - stopped -  
 Put on small barrel -

4-18 (cont)  
P.K.C.

Started Coring ~ 10:42

| Foot | Depth | Time  |
|------|-------|-------|
| 3    | 102   | 10:42 |
| 4    | 103   | 10:55 |
| 5    | 104   | 11:12 |
| 6    | 105   | 11:40 |
| 7    | 106   | 12:00 |
| 7.7  | 106.7 | 12:17 |

Stopped

← mud press. 100 psi - color change in foam  
on mud pit (dark gray to black) 102-103  
← mud pressure 140 psi - black <sup>foam</sup> on pit  
Pressure dropped back to 100 psi - Fine black  
film on pit - Pull down chain loose -  
106' - mud press. 100 psi - small amt black  
scum on pit - pull down chain loose

Recovered ~ 5' cone (shale + mud). Cone had to  
be removed from small barrel from the upper end  
except for the very bottom 3" of very hard (calc)  
shale - so explains the shape of the mud/  
shale pieces w/ bits of wood. -  
Quit at 1:45

4-19  
~~From~~  
From Mol's  
Notes

Started coring @ 106.7

| Foot   | Depth          | Time |
|--------|----------------|------|
| 4.2    | 106.7          | 1:56 |
| 10     | <del>106</del> | 2:23 |
| 10 1/2 |                |      |
| 11     |                | 3:00 |
| 11 1/2 |                | 3:28 |
| 12     |                | 3:44 |
| 12 1/2 | 115.0          | 4:13 |

- pulled barrel - Full - Drilled  
to ~ 116 - but did not pull off of cone - Recovered  
~ 9' - some Haskell ls in Bottom -

4-22

Tfm

Started Coring ~ 11:13 am w/ small  
barrall in Haskell Ls

| Foot                    | Depth                     | Time  |
|-------------------------|---------------------------|-------|
| 7.7                     | 116                       | 11:13 |
| 8.7                     | 117                       | 11:25 |
| 9.0                     | 117.3                     | 11:32 |
| <del>11.0</del><br>10.8 | ~119                      | 11:38 |
| 12.0                    | 120                       | 11:40 |
| 13.0                    | 121                       | 11:43 |
| 14.0                    | 122                       | 11:45 |
| 15.0                    | 123                       | 11:47 |
| 15.3                    | <del>123.6</del><br>123.6 | 11:48 |
| <del>16.5</del>         | <del>124.5</del>          |       |

- quarter  
- Drill quarter bottom of Haskell  
- much chatter @ 119  
sandstone  
121 Top of sandstone? - smoother  
drilling - no chatter - fast drilling  
foot  
- stopped - pulled Core -  
recovered 8'

12:20 Reamed from 116 to 122 @ 2:10 pm

Big barrel - smooth Drilling

| Foot                  | Depth | Time |
|-----------------------|-------|------|
| 1.3                   | 121   | 2:17 |
| 2.0                   |       | 2:20 |
| 3.0                   |       | 2:25 |
| 4.0                   |       | 2:31 |
| 5.0                   |       | 2:35 |
| 6.0                   |       | 2:43 |
| 7.0                   |       | 2:52 |
| 8.0                   |       | 3:00 |
| 9.0                   |       | 3:09 |
| <del>9.3</del><br>9.3 | 129   | 3:14 |

- 5.5 chattering slightly  
5.8 " more  
6.5 smoother 5.5-6.5 hardens  
9.0 Harder Drilling  
Stopped Drilling to pull Core  
recovered \_\_\_\_?

(6)

JED  
+  
P.A.M.

| Foot | Depth | Time         |
|------|-------|--------------|
| 6½   | 127   | 3:48         |
| 7    |       |              |
| 7½   |       |              |
| 8    |       |              |
| 8½   |       |              |
| 9    |       | 3:56         |
| 9½   |       |              |
| 10   |       | 4:00         |
| 10½  |       |              |
| 11   |       | 4:07         |
| 11½  | 132   | 4:14 } Break |
| 11¾  |       | 4:28         |

3:45 Started coring w/ small barrel

sprung leak (dent) before 11½ - stopped at 4:20 (= 11¾) to work on leak. Began again after repair - small leak again ~ 4:26 - Big leak @ 4:27 - pulled core - recovered ~ 4' core from small barrel ~ 2' still stuck in barrel - just for day - get rest out tomorrow -

4-23

Tfm

| Foot | Depth  | Time  |
|------|--------|-------|
| 1.4  | 131    | 12:53 |
| 2    | ~131.5 |       |
| 3    | 132.5  |       |
| 4    | 133.5  | 1:13  |
| 5    | 134.5  | 1:27  |
| 6    | 135.5  | 1:42  |
| 7    | 136.5  | 1:56  |

Started coring w/ large Barrel

4-23  
(cont)  
Tfm

| Foot | Depth | Time |
|------|-------|------|
| 8    | 137.5 | 2:08 |
| 9    | 138.5 | 2:19 |
| 10   | 139.5 | 2:28 |
| 10.5 | 140   | 2:33 |

7.5 hard zone - sandstone coming up in  
cuttings  
10.0 harder -  
Stopped Drilling - pulled core  
recovered 6.5' lost ~ 2.2'  
good coal at bottom of core  
coal?

| Foot | Depth | Time |
|------|-------|------|
| 1    | 138   | 3:13 |
| 2    | 139   | 3:14 |
| 3    | 140   | 3:15 |
| 4    | 141   | 3:18 |
| 5    | 142   | 3:23 |
| 6    | 143   | 3:26 |
| 7    | 144   | 3:30 |
| 8    | 145   | 3:33 |
| 9    | 146   | 3:38 |
| 10   | 147   | 3:44 |

- started coring @ 138 (small barrel?)

Foot?  
- cored fast to 3' - probably 2' piece  
of the core left in hole from last try.

3:48 stopped drilling - pulled core  
recovered 8' of core -  
Reamed to 147 - End of Day

4-24  
Tfm

| Foot | Depth | Time  |
|------|-------|-------|
| 2    | 147   | 10:48 |
| 3    | 148   | 10:55 |
| 4    | 149   | 11:01 |
| 5    | 150   | 11:07 |

started with Big Barrel - Hand drilling  
- chattering - zones of 2 or 3 inches -

4-24 (cont)

Tfm

| Foot                 | Depth | Time  |
|----------------------|-------|-------|
| 6                    | 151   | 11:14 |
| 7                    | 152   | 11:22 |
| 8                    | 153   | -     |
| 9                    | 154   | 11:37 |
| 10                   | 155   | 11:45 |
| 11                   | 156   | 11:53 |
| 11½<br><del>12</del> | 156½  | 11:57 |

Stopped - pulled core - Recovered  
~ 9.3' - Whole Core - !!

4-24 (cont)

MAS

| Foot | Depth | Time  |
|------|-------|-------|
| 4    | 154   | 12:55 |
| 5    | 155   | 12:57 |
| 6    | 156   | 1:02  |
| 7    | 157   | 1:07  |
| 8    | 158   |       |
| 9    | 159   |       |
| 10   | 160 ? |       |
| 11   | 161 ? |       |
| 12   | 162 ? |       |

put on small barrel

Much Discussion about how deep is hole!  
Pulled Barrel - recovered ~ 7' of Core  
 $156 + 7 = 162$   
Mel Reamed to 162 ± with Roller

|   |     |      |
|---|-----|------|
| 2 | 162 | 4:11 |
| 3 | 163 | 4:24 |
| 4 | 164 | 4:40 |
| 5 | 165 | 4:55 |
| 6 | 166 | 5:10 |

Corey with big Barrel

4-24  
(Cont)

MAS

| Foot | Depth | Time |
|------|-------|------|
| 7    | 167   | 5:26 |
| 8    | 168   | 5:40 |

- 5 Topped Coring -

5:44 Cable Broke - 6:15 broken cable  
Taken out of system - Pulled Barrel

NO CORE 162-168

4-25

T&M

| 3  | 168 | 1:13 | <p>Fixed Cable - went in with small barrel to try to<br/>get yesterday's Core - started @ 162' cored<br/>to 166' + plugged bit - Pulled barrel and<br/>cleaned it out - Decided to ream to 168 and<br/>start fresh. 11:14 -</p> |
|----|-----|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 4  | 169 | 1:25 |                                                                                                                                                                                                                                 |
| 5  | 170 | 1:36 |                                                                                                                                                                                                                                 |
| 6  | 171 | 1:48 |                                                                                                                                                                                                                                 |
| 7  | 172 | 2:02 | <p>Cored with big barrel - smooth to 3 1/2 - chatter<br/>and quiet ofter that (alternating)<br/>hard &amp; soft zones<br/>hard and soft zones<br/>coal pieces @ 172-172 1/2 (lower 5' b'loy)?</p>                               |
| 8  | 173 | 2:14 |                                                                                                                                                                                                                                 |
| 9  | 174 | 2:30 |                                                                                                                                                                                                                                 |
| 10 | 175 | 2:48 |                                                                                                                                                                                                                                 |
| 11 | 176 | 3:06 |                                                                                                                                                                                                                                 |

- stopped - pulled barrel - recovered 5.3'  
of Core with lower 5' b'loy at bottom of  
Core - lost lower part of Coal and underclay  
put in small barrel - plugged it - quit for day.

4-26

T&M

|    |     |      |
|----|-----|------|
| 7  | 174 | 8:50 |
| 8  | 175 | 8:51 |
| 9  | 176 | 8:54 |
| 10 | 177 | 9:00 |
| 11 | 178 | 9:06 |

put on small barrel to 174' - went down  
foot to ~175 1/2 then slower

Drill smooth & quiet

|             |      |       |      |                                        |
|-------------|------|-------|------|----------------------------------------|
| 4-26 (cont) | Foot | Depth | Time |                                        |
| Tfm         | 12   | 179   | 9:11 | Drills smooth + quiet - still in shale |
|             | 13   | 180   | 9:18 | " "                                    |
|             | 14   | 181   | 9:24 | " "                                    |
|             | 15   | 182   | 9:28 | " "                                    |

Stopped at 182 - pulled Barrel - ~~core stuck in Barrel~~ - ~~hooked mud hose to upper end of barrel to force core out~~ - upper 2 feet came out of Top of Barrel (174-176) - lower 6 feet (176-182) stuck in Barrel - Hooked up mud hose to top of Barrel to force core out. Core Blew out and got scrambled (176-181) - 181-182 Probably in right order. - Stopped Drilling due to rain

|             |     |       |       |                                                       |
|-------------|-----|-------|-------|-------------------------------------------------------|
| 4-29        |     |       |       | 9:43 - 10:30 reamed hole with Roller <u>To 182.5'</u> |
| James       | 2.2 | 182.5 | 11:   | put on large Gauge                                    |
| McCallister | 3.0 |       | :23   |                                                       |
|             | 4.0 |       | :31   |                                                       |
|             | 5   |       | :35   |                                                       |
|             | 6   |       | :39   |                                                       |
|             | 7   |       | :43   |                                                       |
|             | 8   |       | :46   |                                                       |
|             | 9   |       | :48   |                                                       |
|             | 10  |       | :50   |                                                       |
|             | 11  |       | :50   |                                                       |
|             | 12  | 194.3 | 11:32 | - stopped coring - pulled barrel -                    |

4-29 (cont.)  
James  
McCallister

good core - approx 8' - Top 8" are shale  
and fine sand lenses. lower part is sandstone  
(Tanganoxie) ← Tanganoxie?

start coring with small barrel

| Foot | Depth | Time  |
|------|-------|-------|
| 0    | 192.3 | 12:51 |
| 2    |       | 12:55 |
| 3    |       | 12:57 |
| 4    |       | 1:00  |
| 5    |       | 1:02  |
| 7    |       | 1:06  |
| 8    |       | 1:09  |
| 9    |       | 1:12  |

9.2 201.5 1:13

pulled barrel - retrieved ~5' core - all sandstone

|     |       |      |
|-----|-------|------|
| 4.2 | 201.5 | 2:15 |
| 5   |       | 2:16 |
| 7   |       | 2:22 |
| 8   |       | 2:25 |
| 9   |       | 2:28 |
| 10  |       | 2:30 |
| 11  |       | 2:32 |
| 12  |       | 2:35 |

Put small barrel back in - started coring

hard zone @ 8.5 - (chatter)

13.2 210.5 2:38

- pulled barrel - retrieved ~5' core -  
sandstone w/ minor organic streaks

End of Day

4-30  
PAM.

started coring @ 10:37  $\approx$  ~~210'~~ <sup>205'</sup> (con. by PAM)

| Foot | Depth | Time  |
|------|-------|-------|
| 1    |       | 10:41 |
| 2    |       | 10:44 |
| 3    |       | 10:49 |
| 4    |       | 10:53 |
| 5    |       | 10:58 |
| 6    |       | 11:03 |
| 7    |       | 11:07 |
| 8    |       | 11:11 |
| 9.5  |       | 11:13 |

chattering @ 1.8'  
slight " Then quiet  
quiet  
some chattering

" "

" "

Cored to 215' ? - pulled barrel  
retrieved \_\_\_\_\_' core

|     |       |
|-----|-------|
| 7.0 | 12:25 |
| 10. | 12:31 |
| 11  | 12:46 |

started coring again @ 12:25

|    |      |
|----|------|
| 12 | 1:05 |
|----|------|

stopped temporarily @ 11 to try to clear bit -  
slow progress - bit plugged  
stopped coring and pulled out @ 219'  
Samples in bags - core in pieces -  
bags?

5-2

Tm

| Foot | Depth | Time  |
|------|-------|-------|
| 8    | 218   | 10:21 |
| 9    | 219   | 10:24 |
| 10   | 220   | :26   |
| 11   | 221   | :27   |
| 12   | 222   | :30   |
| 13   | 223   | :32   |
| 14   | 224   | :34   |
| 15   | 225   | :36   |

(6 3/4 roller)  
 Reached to 218<sub>1</sub> - put on big barrel - started  
~~6 3/4 roller~~ coring @ 10:21

Drill chattering - no pull down pressure -  
 only weight of stem and barrel on bit.

Easy smooth Drilling.

stopped @ 15 - recovered 2.8' of poorly  
 cemented gray sandstone - @ 1.2' of upper part  
 of core already cored by small barrel - several  
 thin < 1" zones with plant remains (carbonized).  
 Bottom of core ~ 3"-4" hanging out bottom of  
 barrel when it was pulled up.

Put on small barrel - ran down to 221' - barrel  
 stopped on top of ~ 4' cone of last run. - cored  
 thru that fast (< 1 min) and started at 3' mark

|     |       |       |
|-----|-------|-------|
| 3   | 225   | 11:29 |
| 4   | 226   | 11:32 |
| 5   | 227   | :35   |
| 6   | 228   | :39   |
| 7   | 229   | :42   |
| 8   | 230   | :48   |
| 9   | 231   | :55   |
| 9.5 | 231.5 | :59   |

hander @ 6 1/2

stopped drilling @ 9.5

pulled barrel - recovered ~ 3' core -  
 by 3:34 pm we succeeded in plugging small  
 barrel and finding a good throwout bearing in  
 a clutch. No core on this run. - Reamed  
 to 234' so we can start fresh tomorrow.

5-4

J. McCallister Foot Depth Time Core up with big barrel -

|              |       |                |
|--------------|-------|----------------|
| -1           | 234   | 9:13           |
| 0            | 235   |                |
| 1            | 236   |                |
| 2            | 237   | 9:16           |
| 3            | 238   | 9:18           |
| 4            | 239   | :25            |
| 5            | 240   | :38            |
| 6            | 241   | :41            |
| 7            | 242   | :42            |
| 8            | 243   | :43            |
| 8.5          | 243.5 | :44            |
| <del>9</del> |       | <del>:45</del> |

pulled barrel - retrieved 8'7" of core -  
 Put in 3 boxes - Core is sandstone w/  
 shale bed in middle. shale (interclasts) are  
 present in S.S. - some coal stringers.

|     |       |       |                       |
|-----|-------|-------|-----------------------|
| 1.5 | 243.5 | 10:56 | Put in small barrel - |
| 4   | 246   | :58   |                       |
| 5   | 247   | 11:00 |                       |
| 6   | 248   | :05   |                       |
| 7   | 249   | :09   |                       |

5-4 (cont)  
J. McAllister

| Foot | Depth | Time  |
|------|-------|-------|
| 8    | 250   | 11:12 |
| 9    | 251   | :16   |
| 10   | 252   | :24   |
| 10.5 | 252.5 | :29   |

} labelled #1 in Box  
pulled barrel -  $\frac{10.5}{9.0}$  intended -

recovered ~ 2.8' core - all ss broken in 1-4" segments

MAS

|     |       |       |
|-----|-------|-------|
| 5   | 252   | 12:45 |
| 6   | 253   | :49   |
| 7   | 254   | :58   |
| 8   | 255   | 1:04  |
| 8.5 | 255.5 | :09   |

Attempt to go from 252 to 256 (5-9 feet) To try to recover more core from the partial recovery from 243.5 to 252.5.  
- stopped to try to retrieve core. ~ 1:50 recovered only ~ 1' of core. most in small pieces. largest is 2.5" long.  
labelled the 5-8.5' run # 2 in same box as 243.5-252.5.  
Broke the Bit by drilling the last 6" with no water. (Attempt to plug bit and keep core in barrel). Core should have been 246-~~255.5~~ 255.5 so return was 246-247 ??? material is gray ss with few small streaks or very thin layers of organics. Cracked the Econo shoe on Bit so stopped coring or could have lost new bit.  
Reamed hole to 247' - began ~~being~~ putting stem back in ~ 2:30 pm.

5-6  
Jm

Big barrel run down to 247' - started coring  
 @ 10:14 - new bit on big barrel. -

| Foot | Depth | Time  |
|------|-------|-------|
| 7    | 247   | 10:14 |
| 8    | 248   | :15   |
| 9    | 249   | :17   |
| 10   | 250   | :18   |
| 11   | 251   | :19   |
| 12   | 252   | :21   |
| 13   | 253   | :24   |
| 14   | 254   | :26   |
| 15   | 255   | :27   |
| 15.5 | 255.5 | :28   |

pulled up big barrel (- lost most of  
 core - ~ 2' of big pieces w/ small  
 barrel cored out of them. cleaned big  
 barrel and went back in to try to recover  
 lost core. Did not Ream.

|    |     |       |
|----|-----|-------|
| 5  | 255 | 11:35 |
| 6  | 256 | :37   |
| 7  | 257 | :44   |
| 8  | 258 | :56   |
| 9  | 259 | 12:00 |
| 10 | 260 | 12:05 |

} no pull down pressure - only unt  
 stem & barrel  
 } pull down on

pulled up @ 12:05 - forgot to put  
 steel Ball in Top of Barrel - core  
 washed badly - recovered ~ 3.5' of  
 core 3" diameter. - Did not Ream.

put big barrel back in to ~~7~~ core more

| Foot | Depth | Time |                           |
|------|-------|------|---------------------------|
| 5    | 260   | 1:10 | Pulldown on - Drill quiet |
| 6    | 261   | :12  | " "                       |
| 7    | 262   | :15  | " "                       |
| 8    | 263   | :18  | 263.25 chattering         |
| 9    | 264   | :21  | " cont.                   |
| 10   | 265   | :25  | " "                       |

stopped at 265' - NO cone !! A?  
 made decision to Cone no more - finish hole  
 with 4 1/2" roller. - Take samples every foot.

|          |           |                   |
|----------|-----------|-------------------|
| 265      | SS        |                   |
| 266      | SS        |                   |
| 267      | SS + coal |                   |
| 268      | LS        | chatter           |
| 269      | LS        |                   |
| 270      | LS        | End of stem       |
| 271      | LS        | new stem 3:37     |
| 272      | LS        | ↓<br>chatter<br>↓ |
| 273      | LS        |                   |
| ↓ all LS |           |                   |

281 1/4 sh  
 285 sh  
 quiet at 281 1/4 - Top of Rocklake shale  
 Stopped Drilling for day - Shale 4:41

5-7-85 Foot Depth Time Started Drilling with  $4\frac{3}{4}$ " bit @ 286  
 6 286 10:39 Samples only no core - Black and gray  
 7 287 :43 shale down to 291½  
 8 288 :49 Not much pressure on pull down  
 9 289 :59 Very little cuttings  
 10 290 11:07  
 11 291 :13  
 12 292 :17 Stones chips - } 291½ harder - chatter - limestone  
 13 293 :29  
 293 Bottom of Hole -

Drilled about 2 feet into top of Stoner limestone -  
 stopped and pulled up stem a few feet - flushed hole  
 with ~ gallons of Fresh water to clear mud.  
 pulled stem out and started logging. Ran Gamma  
and Coliper - looks good quit for day.

5-8-85 Afternoon - ~~8~~ logged hole - Ran SP-Res, got decent  
 logs - cleaned up site and made form for concrete  
 pad.

5-9 No logging - poured concrete ~~and~~ pad around base -

5-10-85 Meas W.L. - 86.75' below top of 8" casing (casing?)

June 03, 85

# PERMEABILITY TEST

SITE 13-19-2 OAB  
Fishponds #3

SS. sample  
SAMPLE #           

DEPTH INTERVAL 201.5 To 210.5

Sample diameter (D) = ~~5.29~~ cm .  $\frac{4.4 + 4.45 + 4.5 + 4.45}{4} = 4.45$  cm.  
Sample length (L) = 2.90 cm.  
Sample X-sectional Area (A) =  $\frac{\pi}{4} D^2 = \frac{\pi}{4} (4.45)^2 = 15.55 \text{ cm}^2$   
Sample volume (V) =  $\sum D^2 * L = 66.169 \text{ cm}^3$ .  
Hydraulic Head (H) = 20.1 cm.  
Permeability Data

| Run # | Time (min) | Volume of Water collected (ml or cm <sup>3</sup> ) | $Q = \frac{\text{Vol. of water}}{\text{Time}}$ | $K = \frac{Q}{A} * \frac{L}{H} \text{ (cm/min)}$ |
|-------|------------|----------------------------------------------------|------------------------------------------------|--------------------------------------------------|
| 1     | 3'-01"     | 10                                                 | 3.33                                           | 3.09276 x 10 <sup>-4</sup>                       |
| 2     | 3'-00"     | 10                                                 | 3.33                                           |                                                  |
| 3     | 3'-00"     | 10                                                 | 3.33                                           |                                                  |
| 4     | 3'-00"     | 10                                                 | 3.33                                           |                                                  |
| 5     | 3'-00"     | 10                                                 | 3.33                                           |                                                  |
| 6     | 3'-00"     | 10                                                 | 3.33                                           |                                                  |
| 7     | 3'-00"     | 10                                                 | 3.33                                           |                                                  |

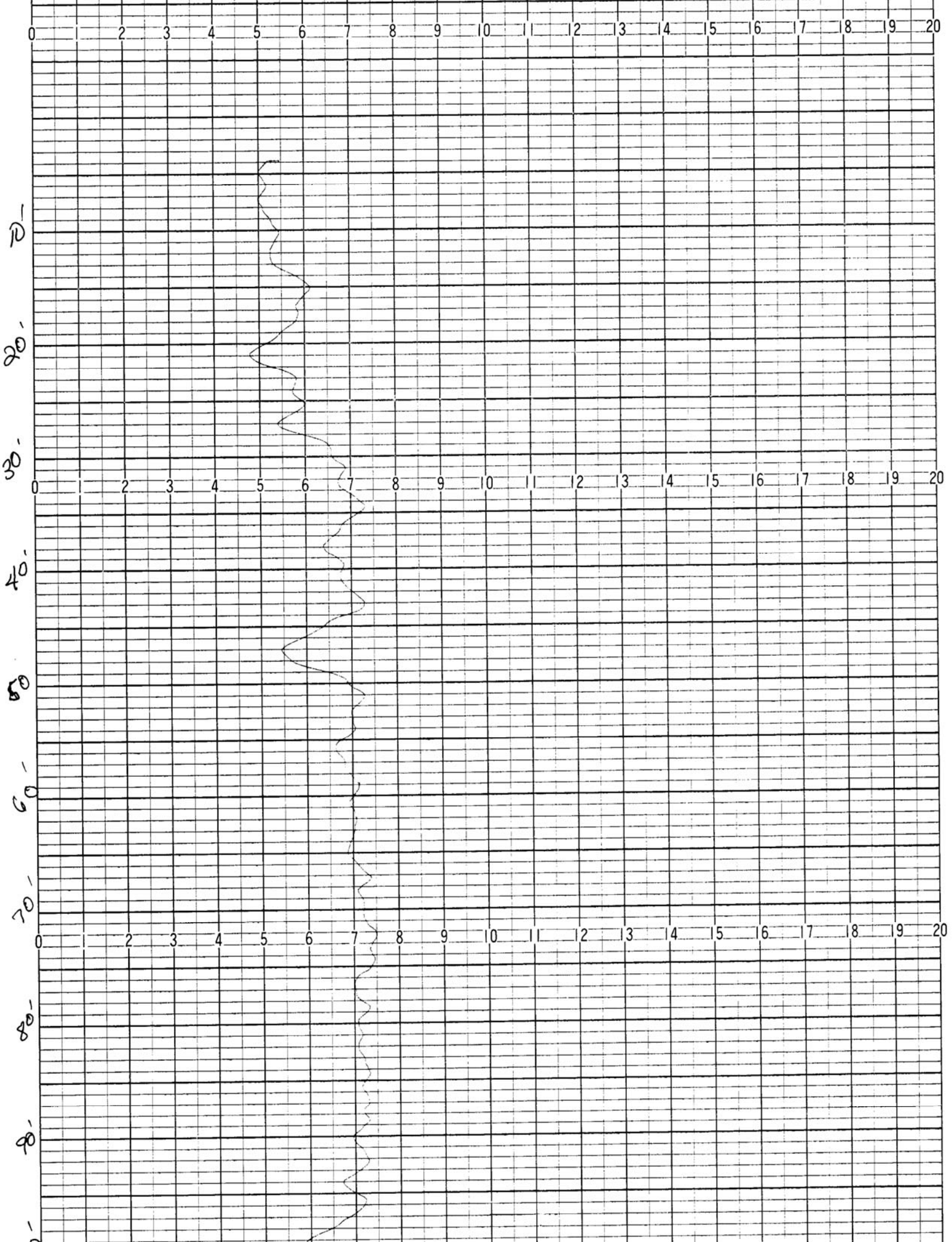
$$\text{Avg } K = \frac{K_1 + K_2 + \dots + K_n}{n}$$

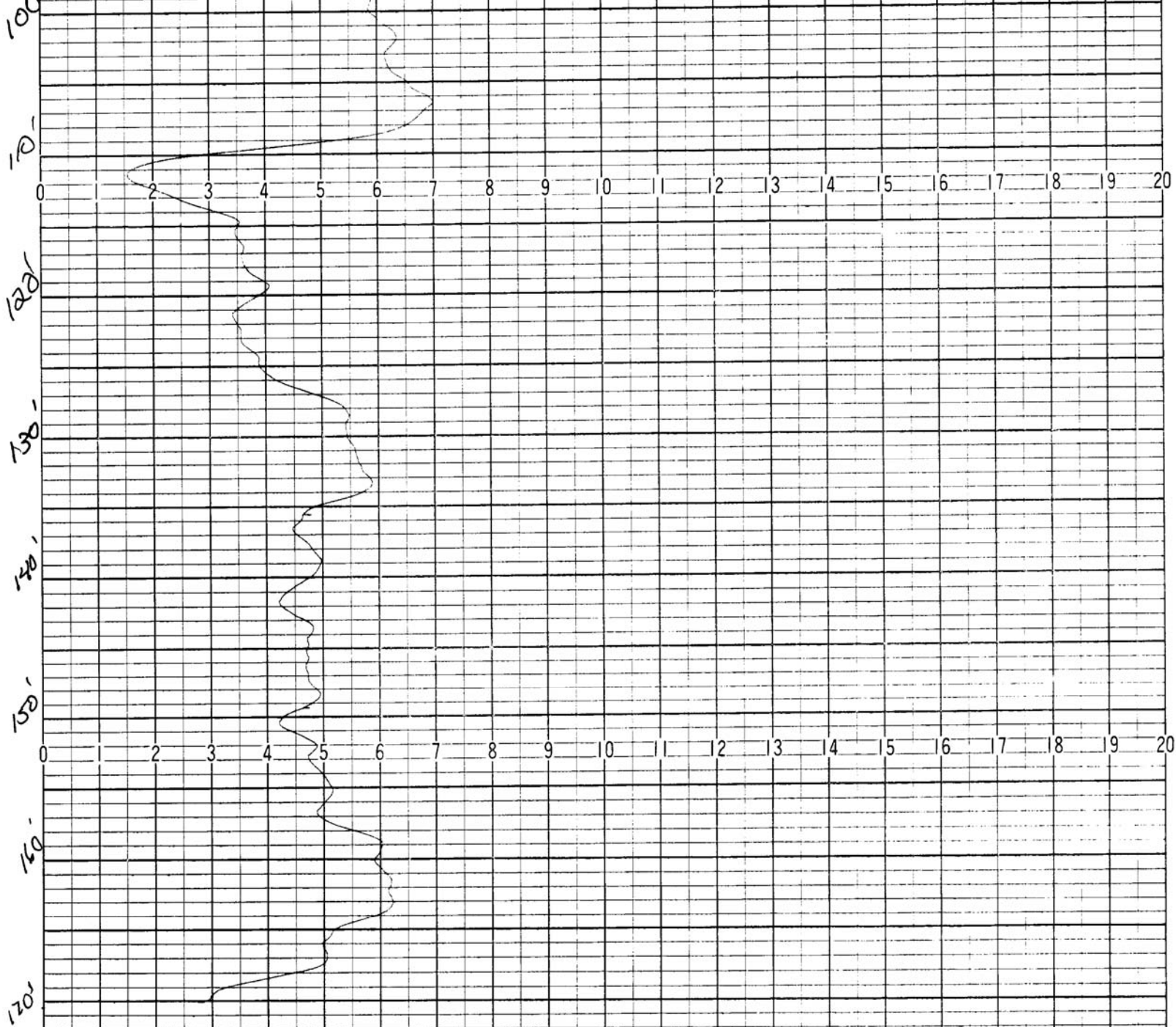
Water Temp = 24°C.

1 cm/day = .2454 ft<sup>2</sup>/day

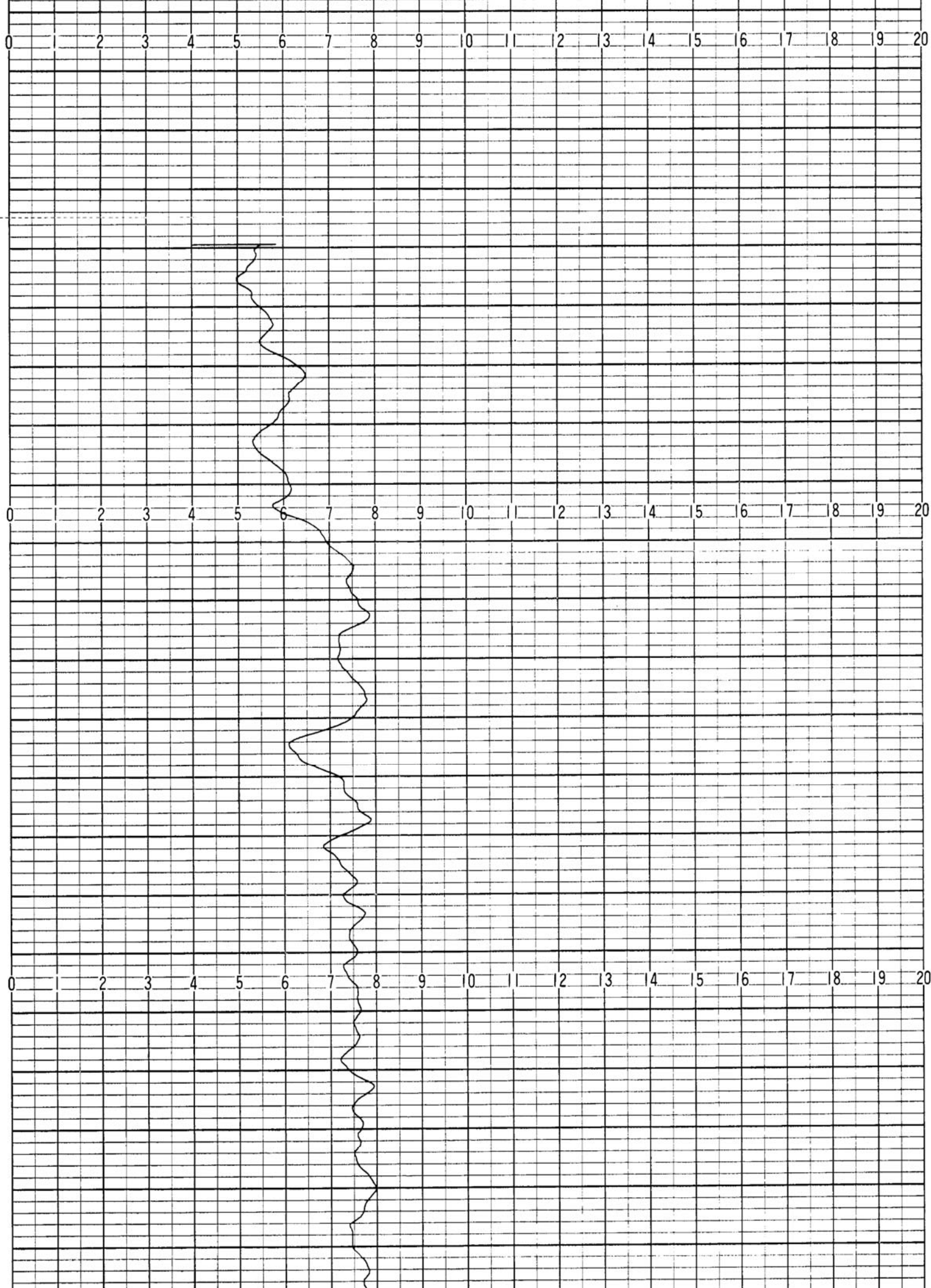
$$\begin{aligned} \text{Avg } K &= 3.09276 \times 10^{-4} \text{ cm/min} \\ &= 5.1546 \times 10^{-4} \text{ cm/sec} \\ &= 1.85 \text{ cm/hr} \end{aligned}$$

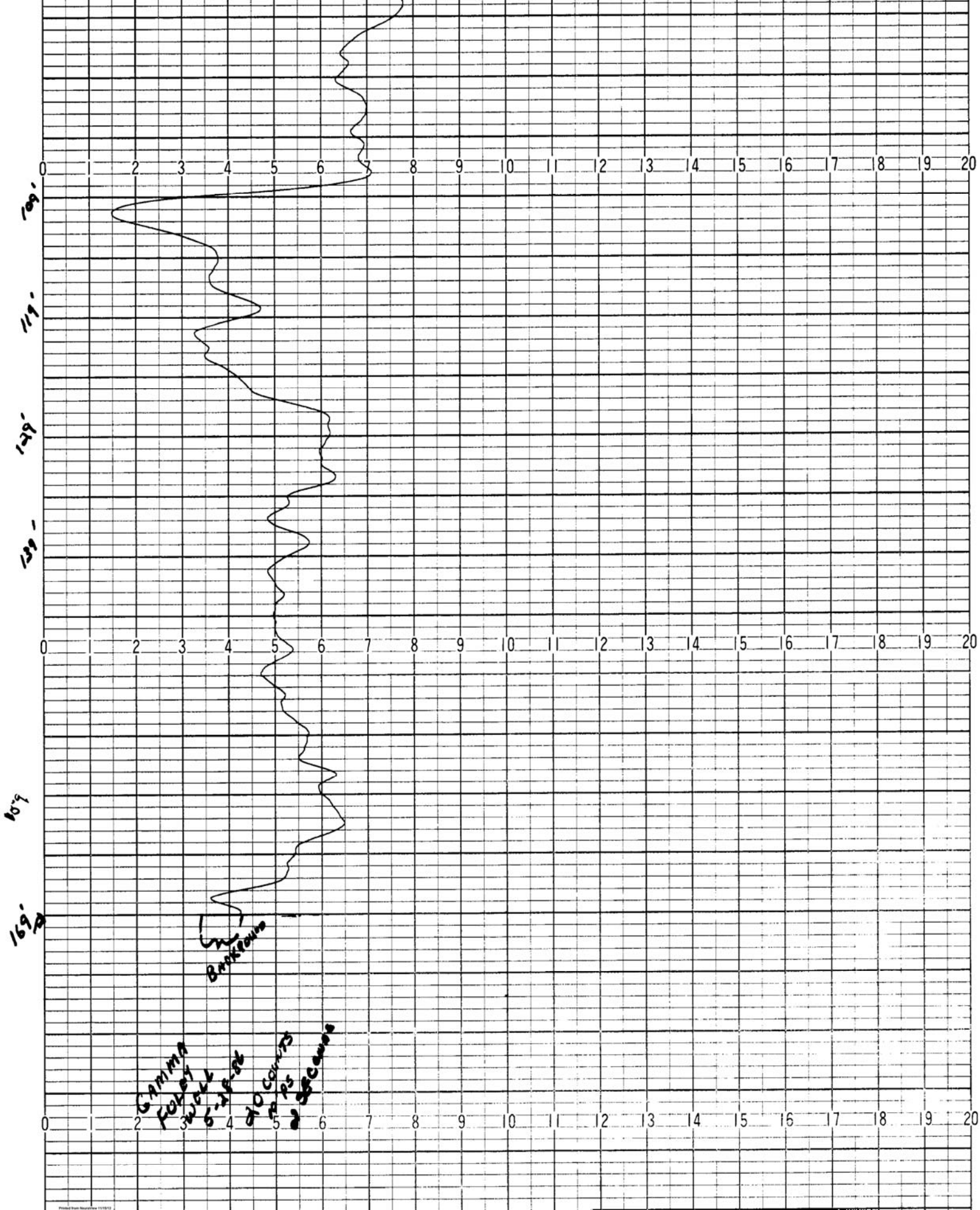
44 cm/day = 10.8 g/d/ft<sup>2</sup>  
1.46 ft/day





TEST  
WELL  
GEOPHYSICAL  
1-13-87  
20 sec  
20 CPS  
0-15 PLUG  
0-15 PLUG  
CALIB. B.  
0-15 PLUG  
587





# KU Fish Ponds Hole

logging down ↓

"North Hole"

Fish Ponds Hole

5" casing with PVC casing inside

13-19-2 DAC

4-25-84

M. Haber  
T. M. Chown  
M. R. Phadnis

Top of Tool (Spring) at hand surface 4.9'

Resistance

5.0'

5m 55.1 A

20.20

10'

20'

50'

70.00  
10.70

75'

82.6'

W.T.

2490

338 S

logging up ↑

5.0'

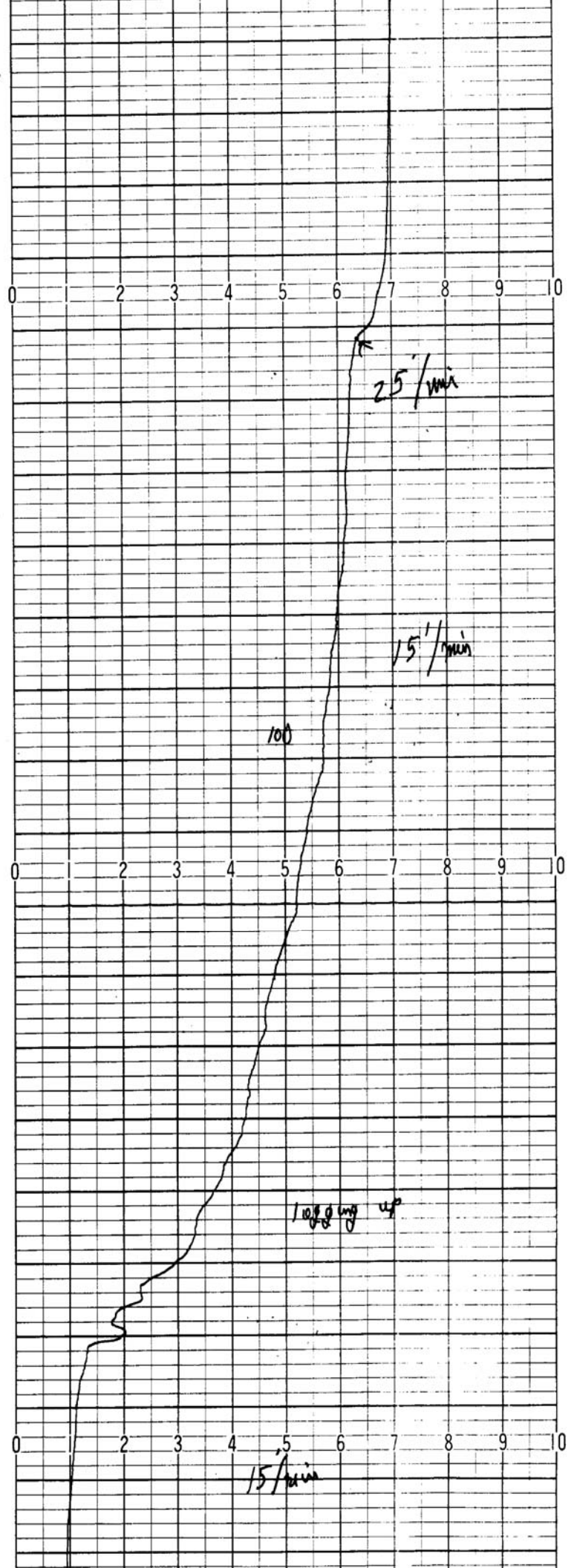
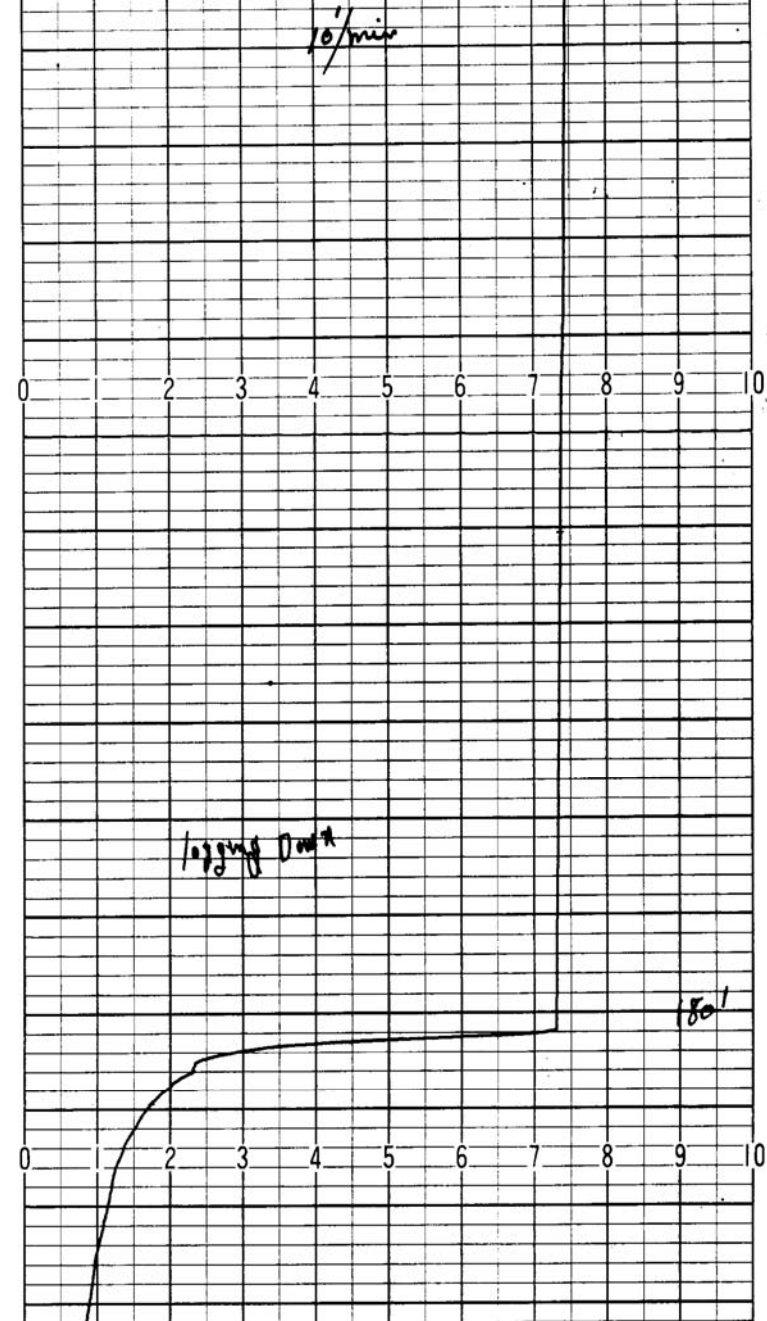
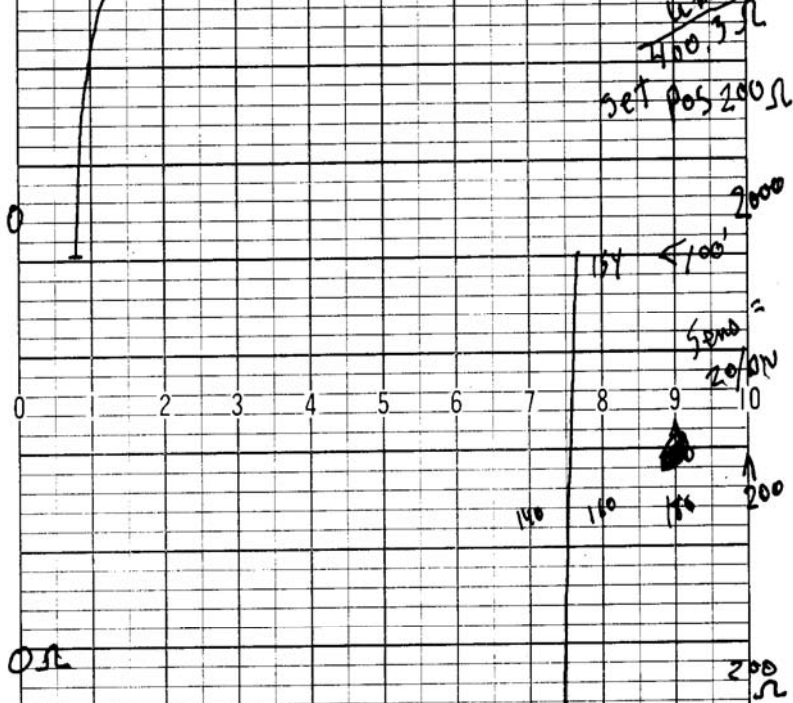
50'

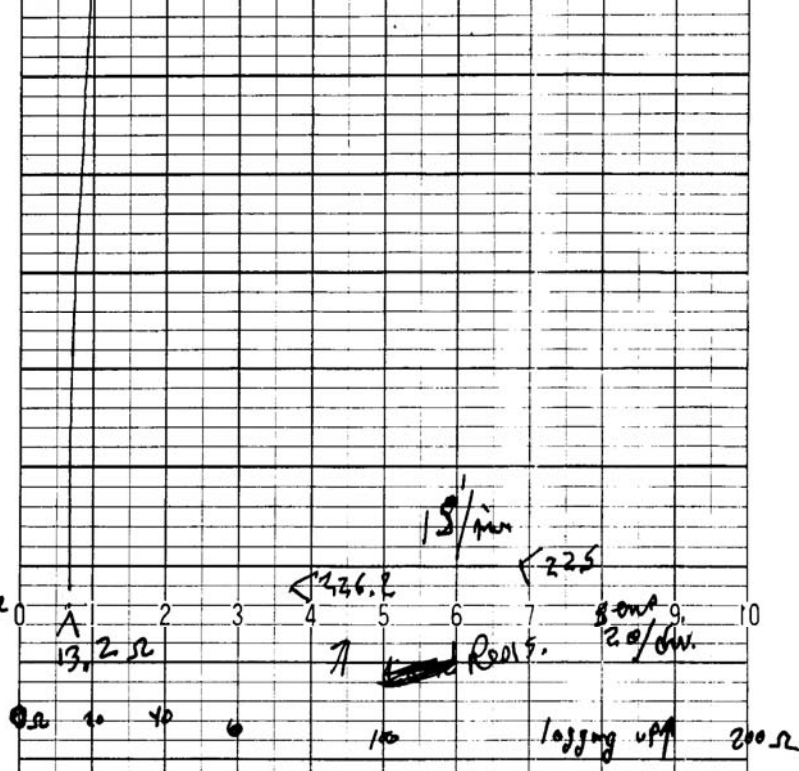
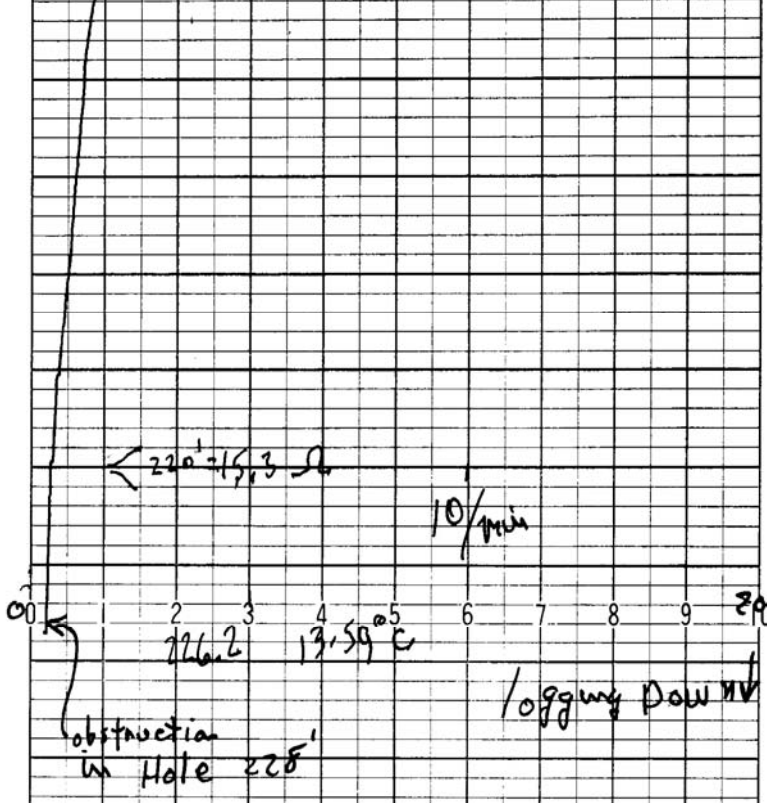
75'

W.T.

200 Ω

Resistance





0 1 2 3 4 5 6 7 8 9 10

0 1 2 3 4 5 6 7 8 9 10

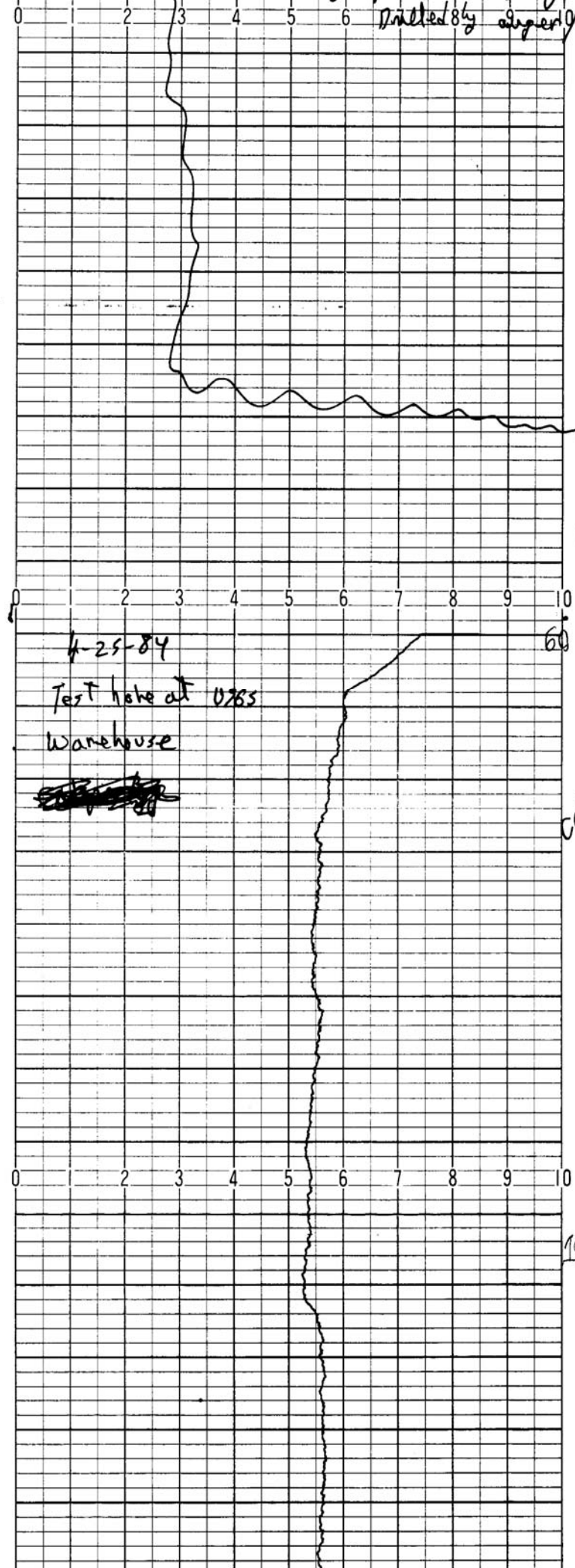
← 0' = 4.8'

Resistance

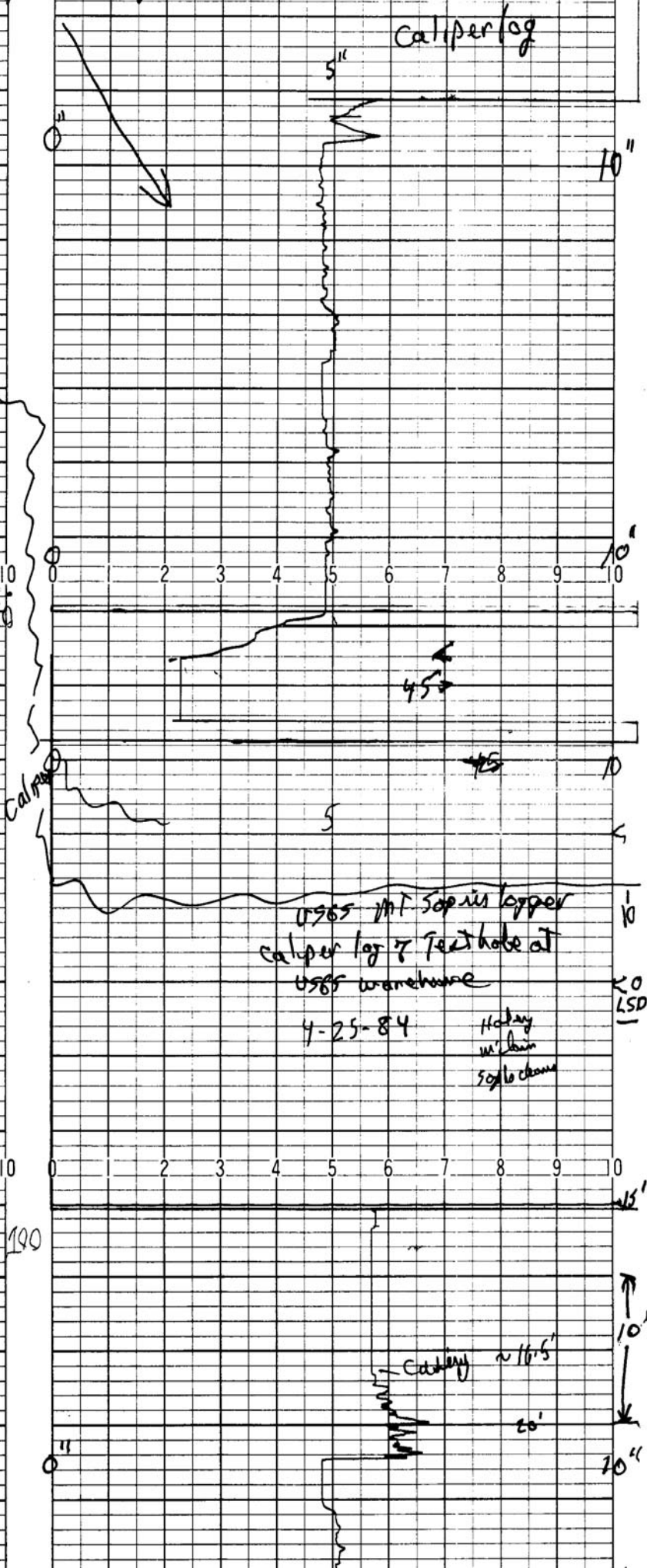


in. to 1/2 inch / ~ 300' W. of K6F Barn 4-25-84

Hole drilled by M. K. ...  
 Drilled by auger & mud rotary system in 55' deep



4-25-84  
 Test hole at 0285  
 Warehouse  
~~0285~~



Caliper log

5"

10"

10"

10"

10"

20' LSD

15'

10'

10"

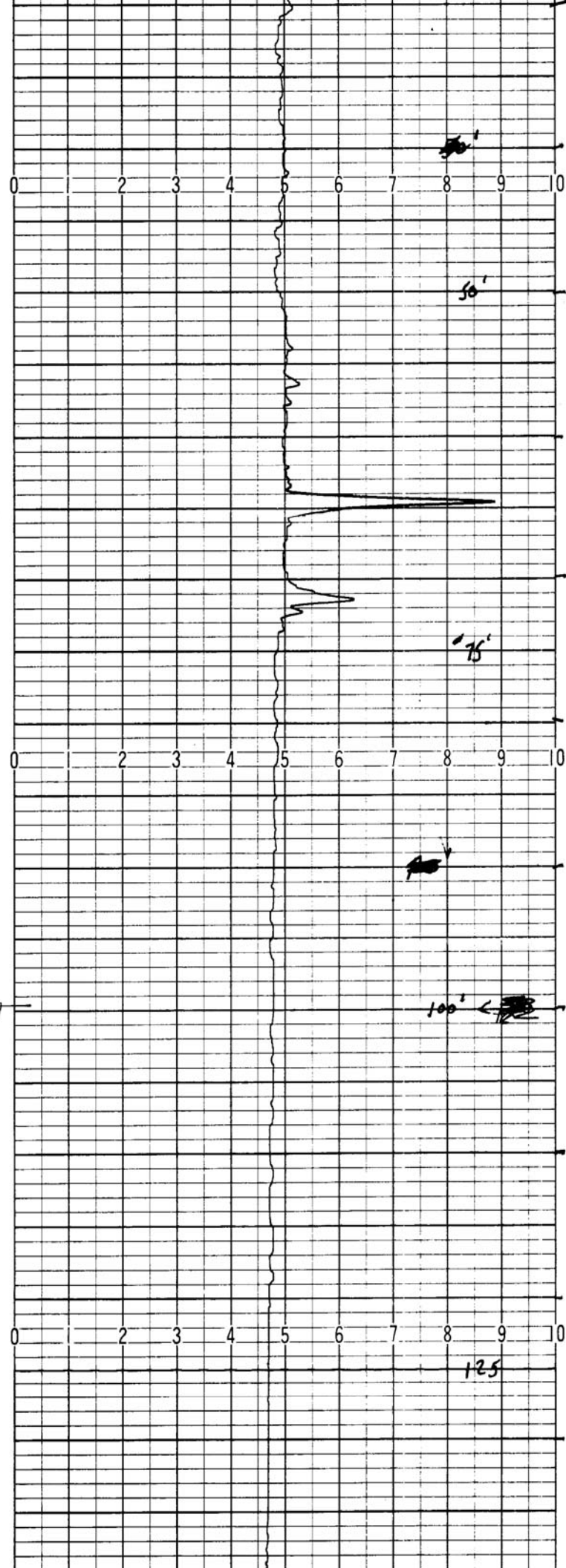
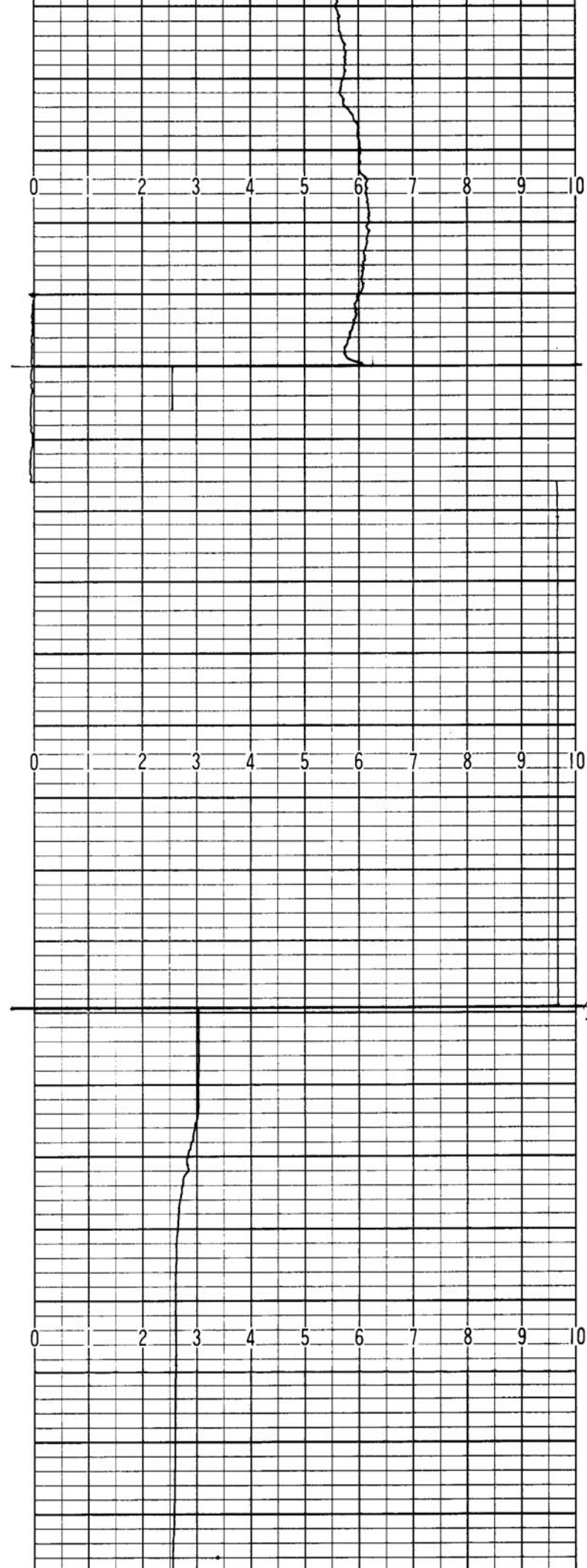
0285 Mt Sopris Lopper  
 caliper log & Test hole at  
 0285 Warehouse

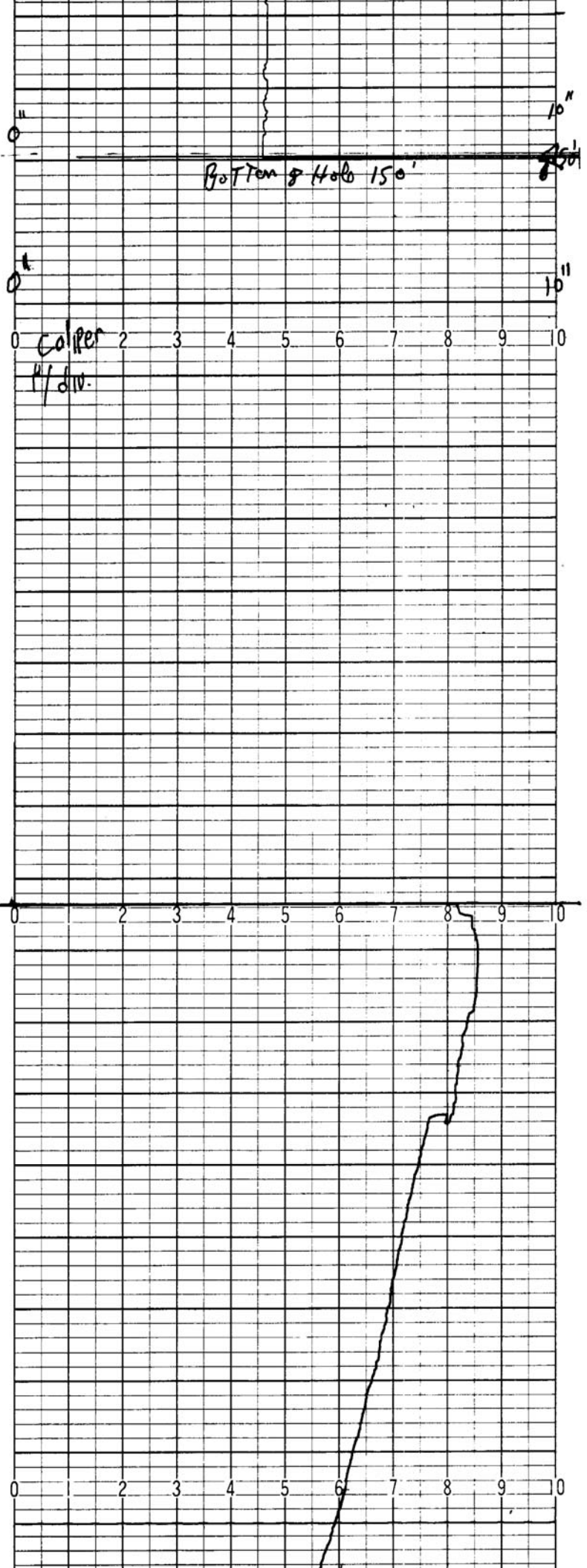
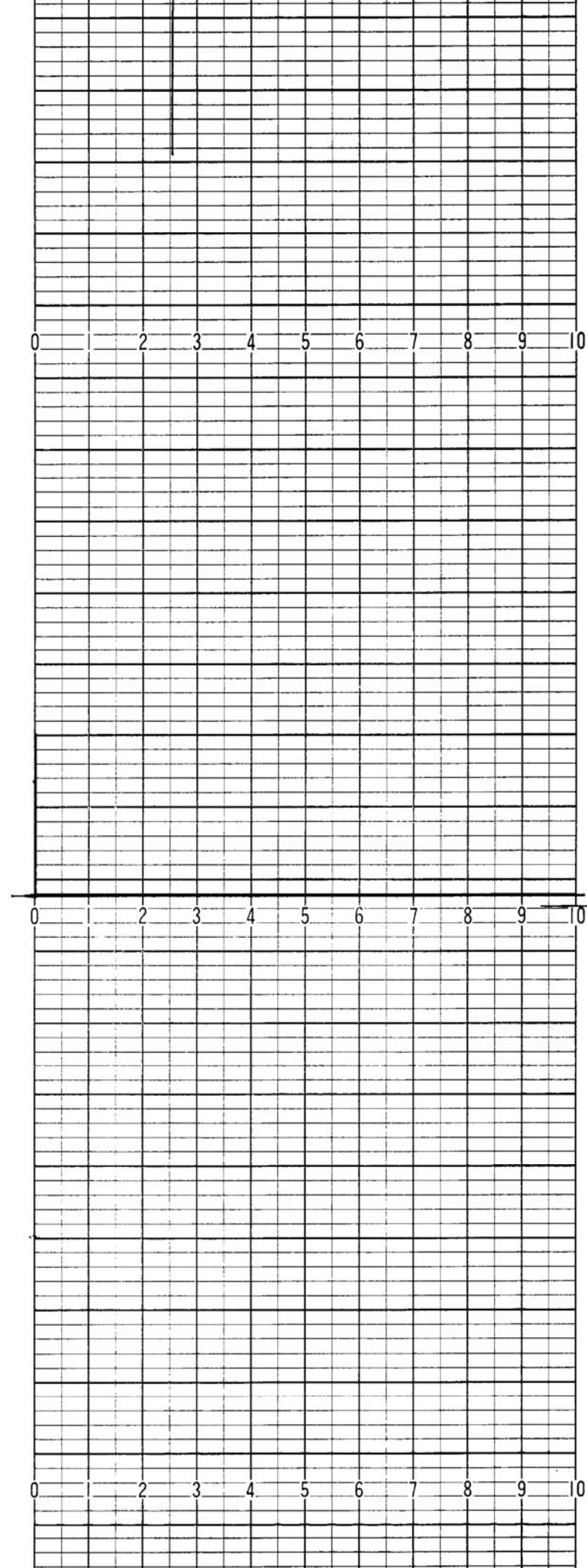
4-25-84

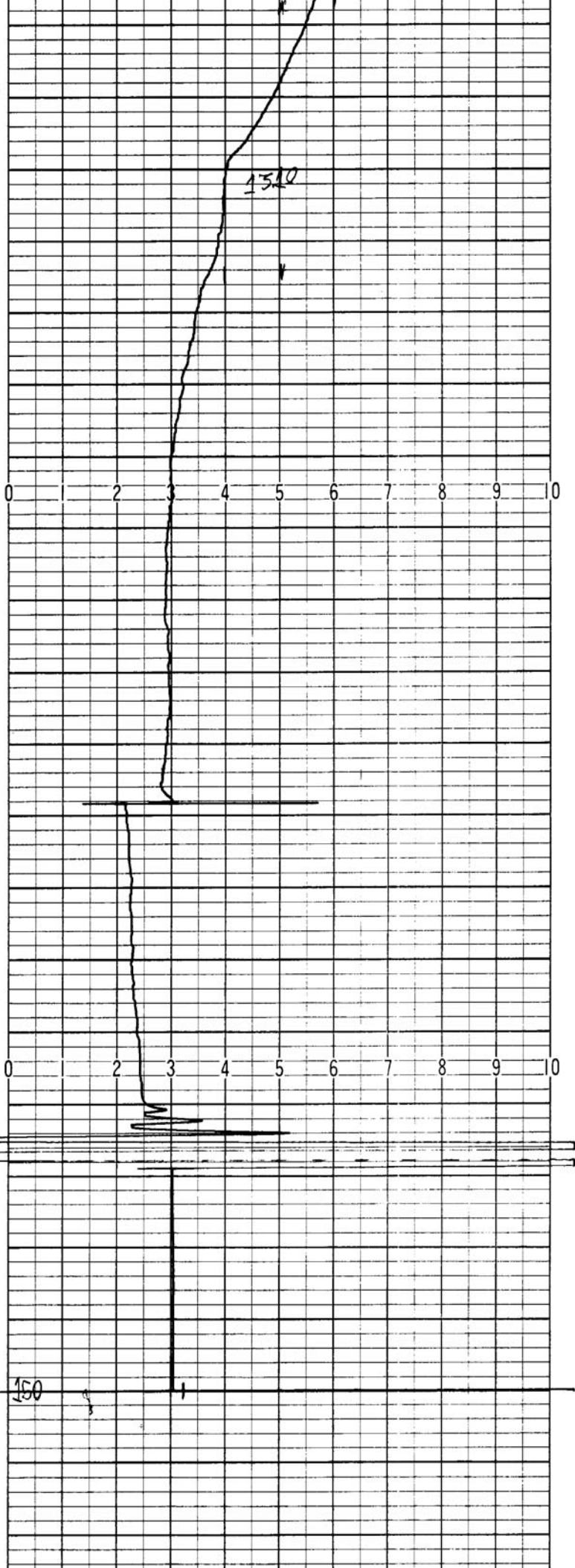
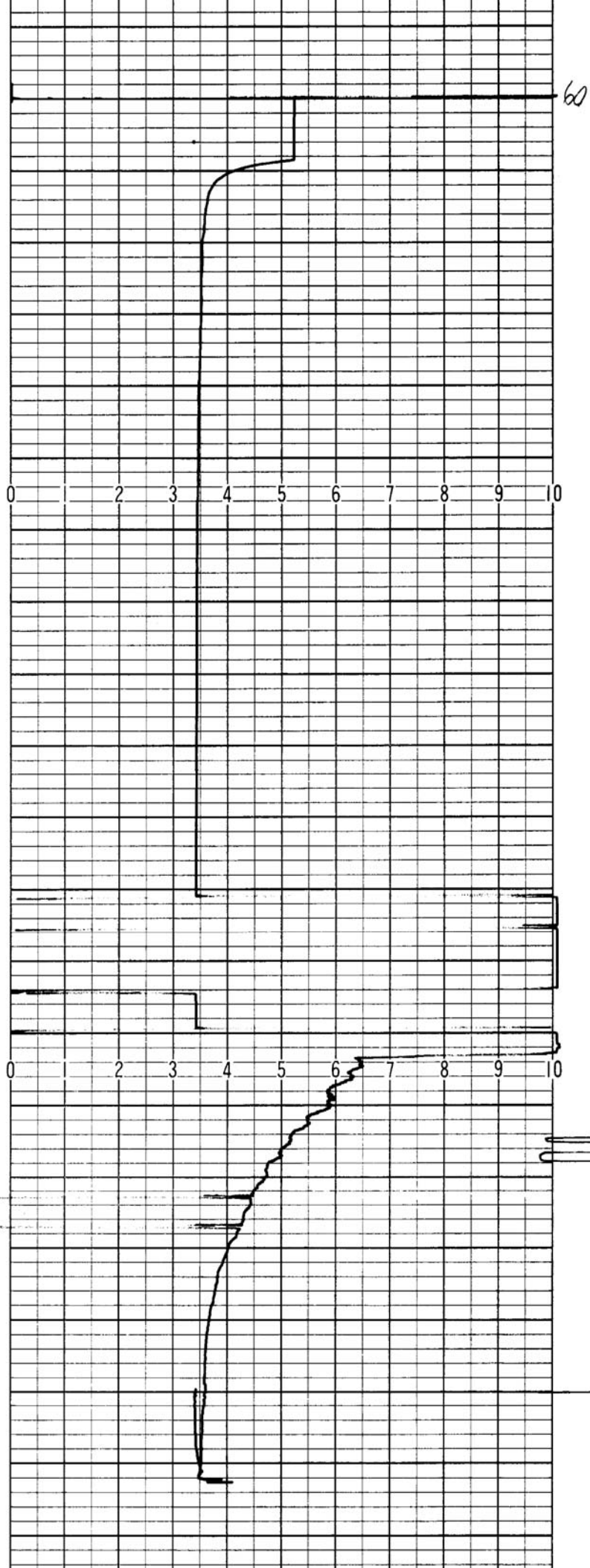
Hole  
 within  
 50' to change

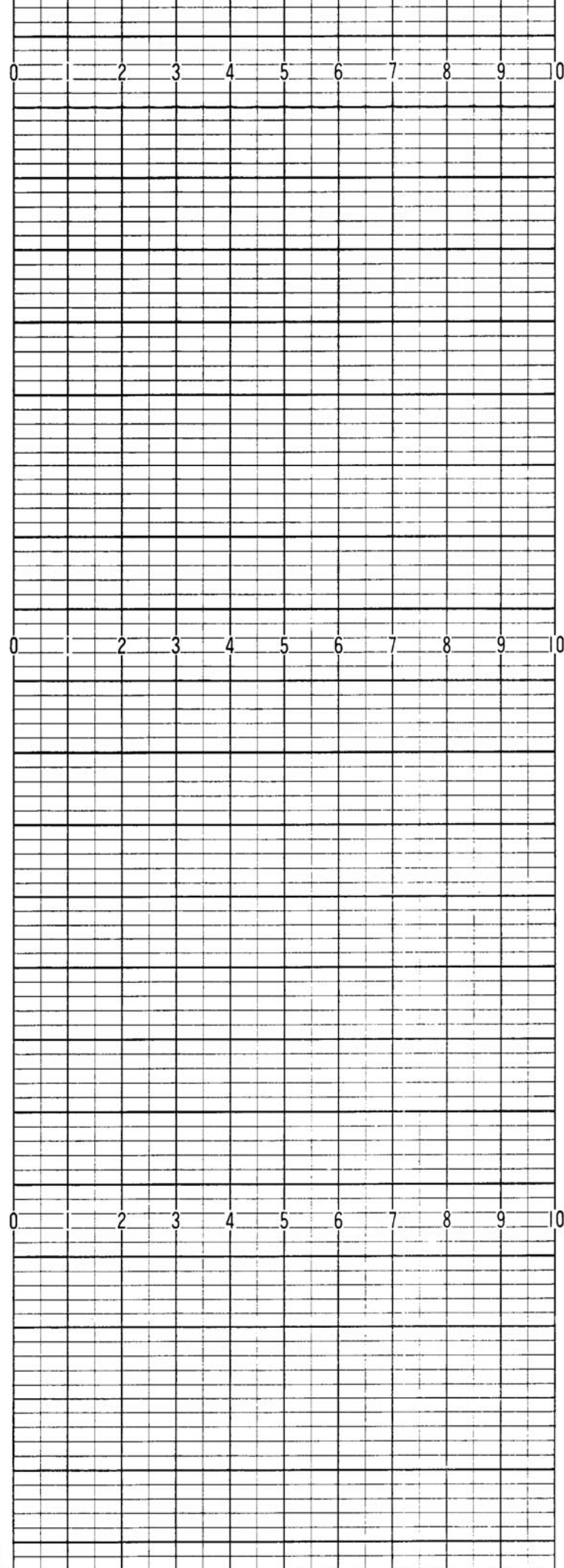
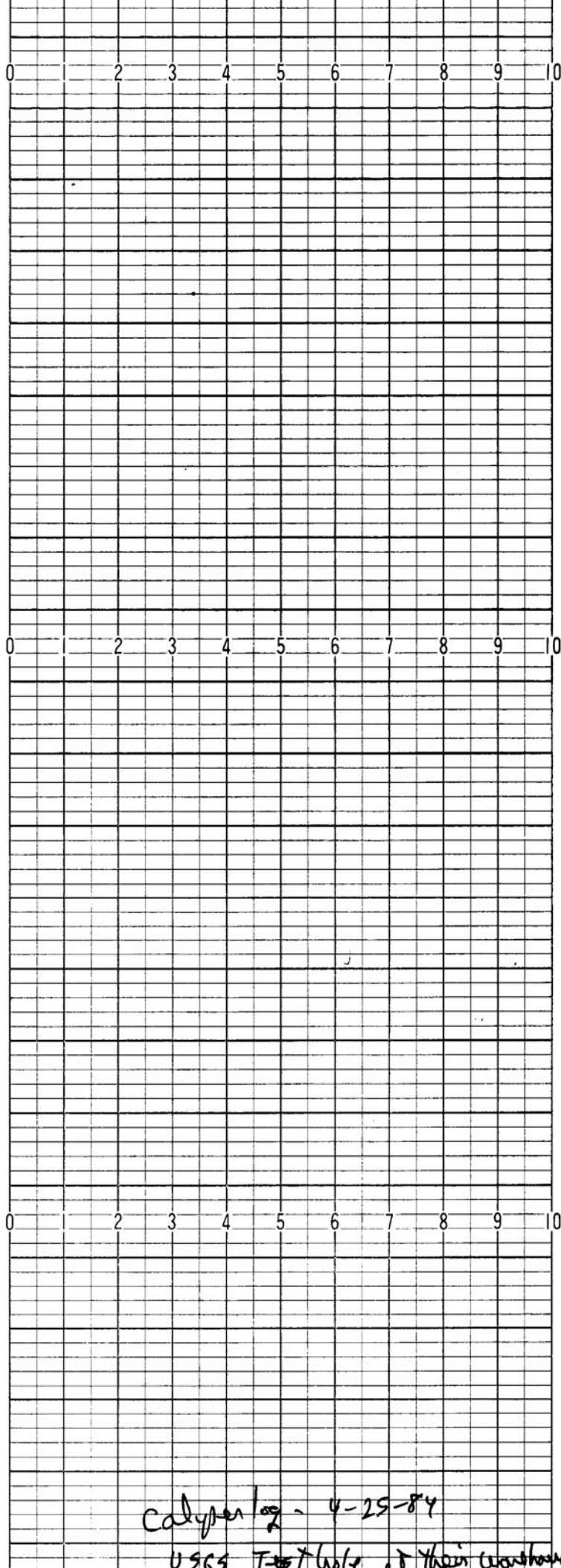
Caliper ~ 16.5'

20'





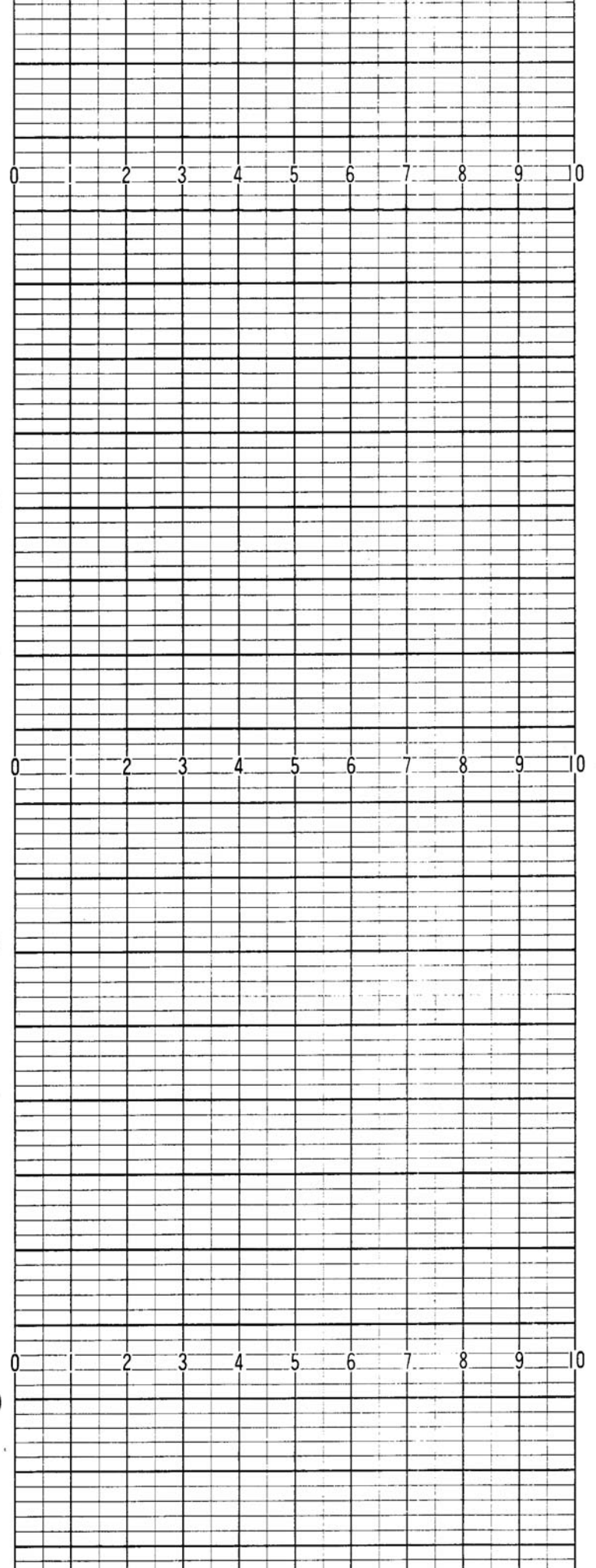
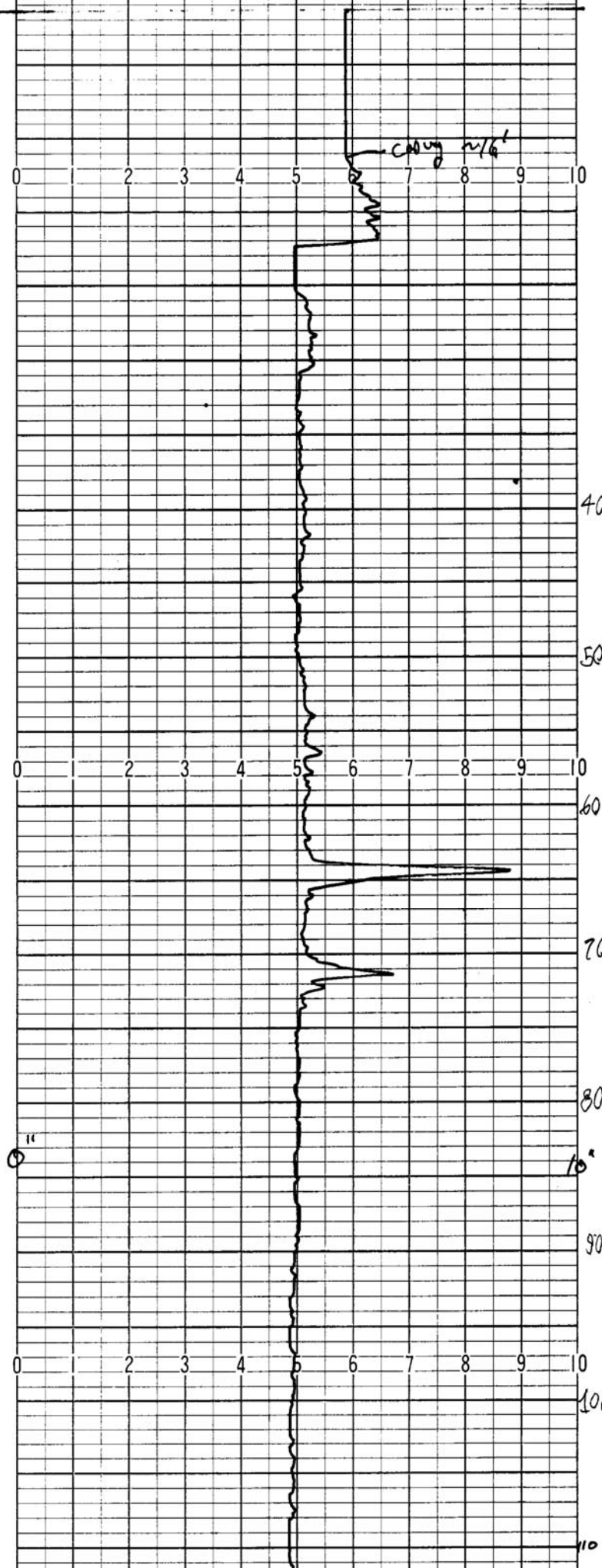


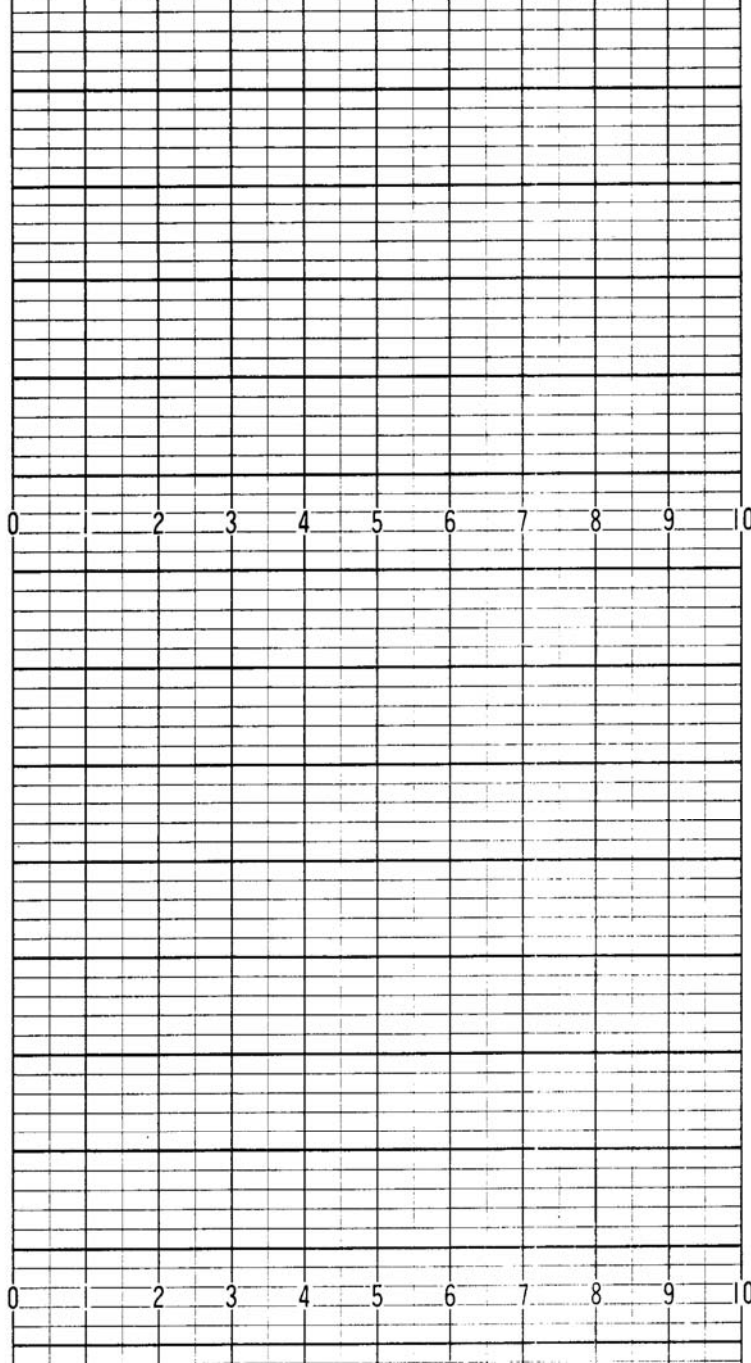
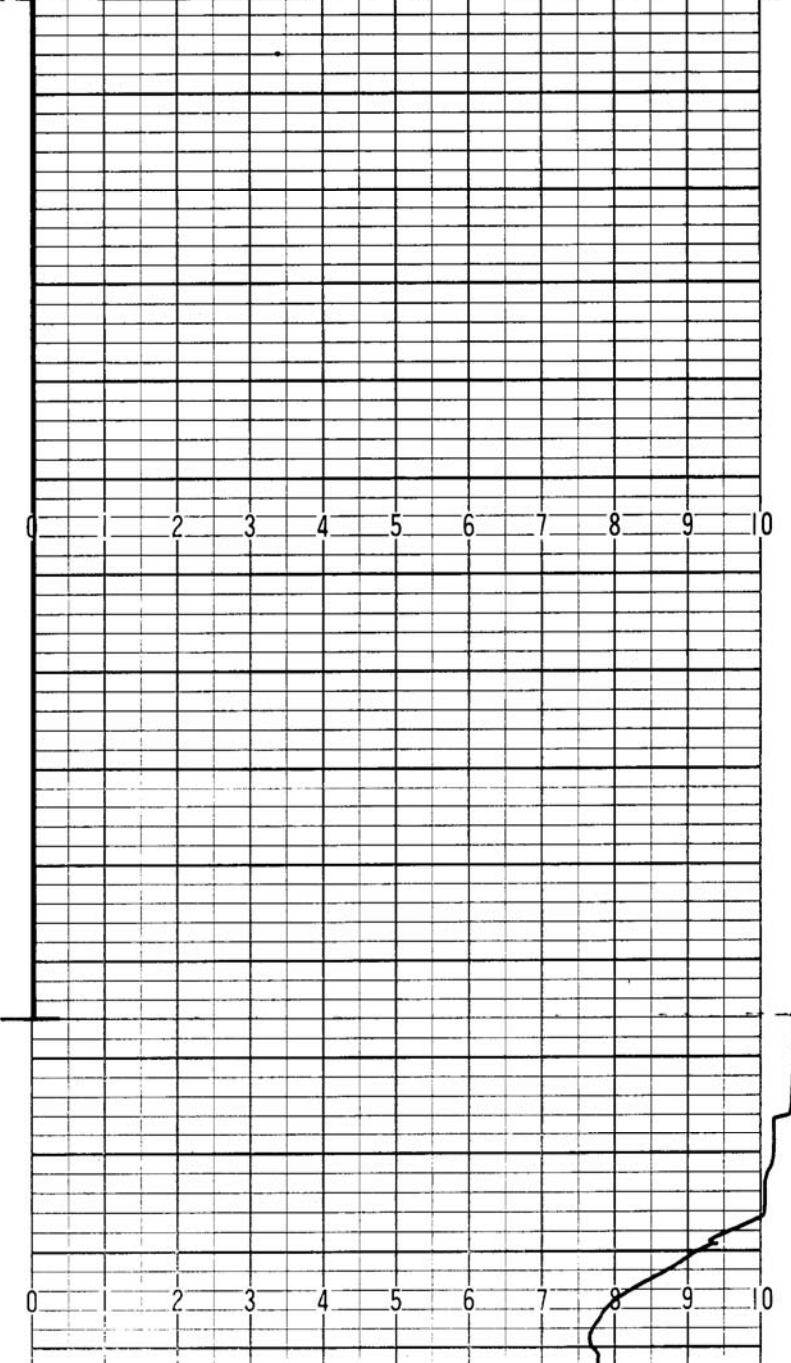
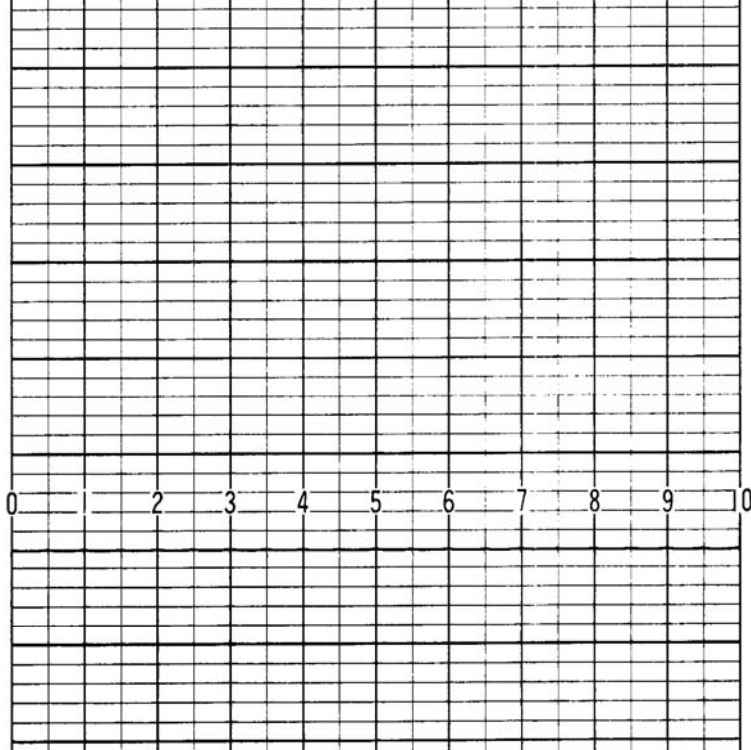
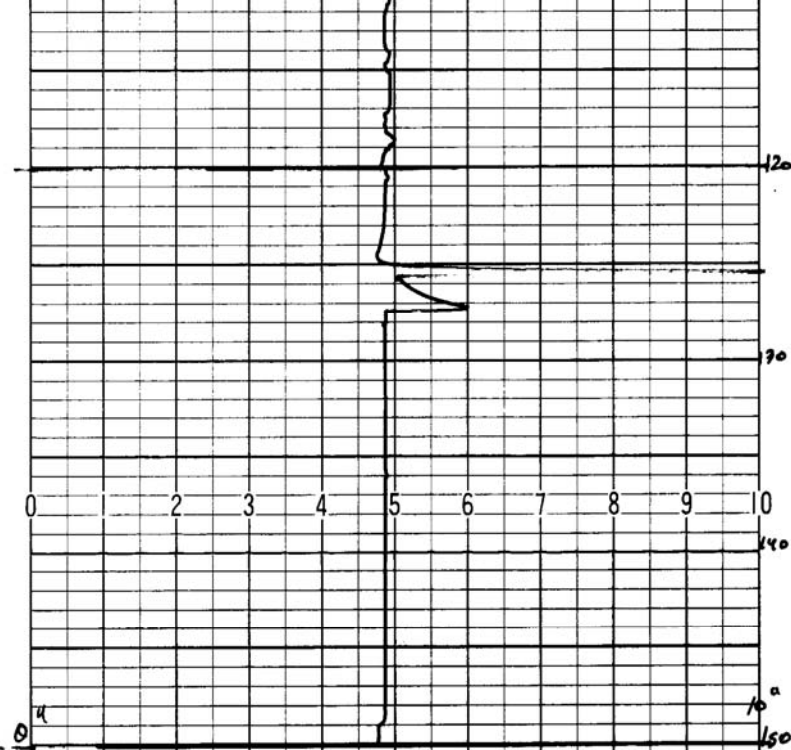


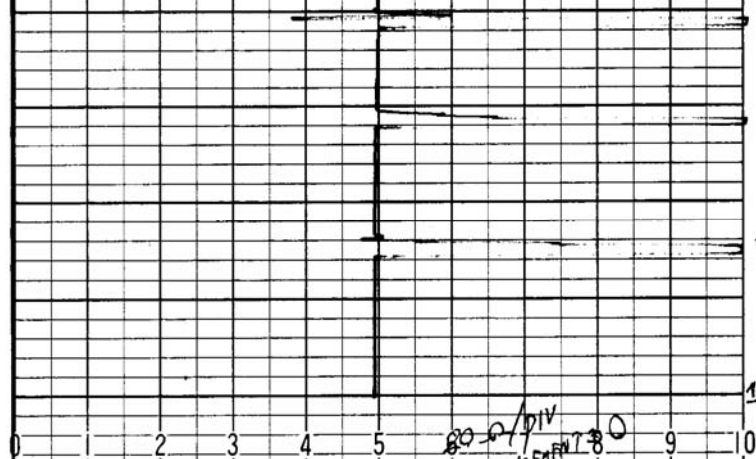
422

Rainy m. Water

Casing 2 1/4"



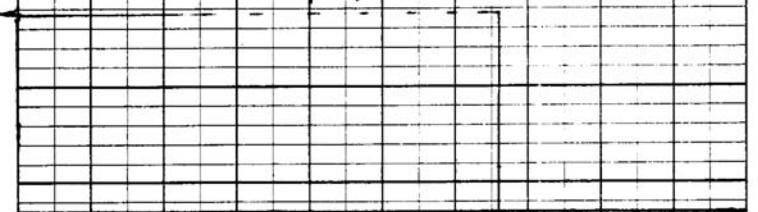
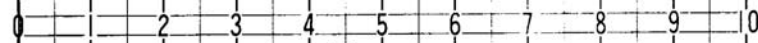
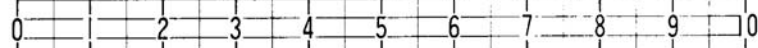


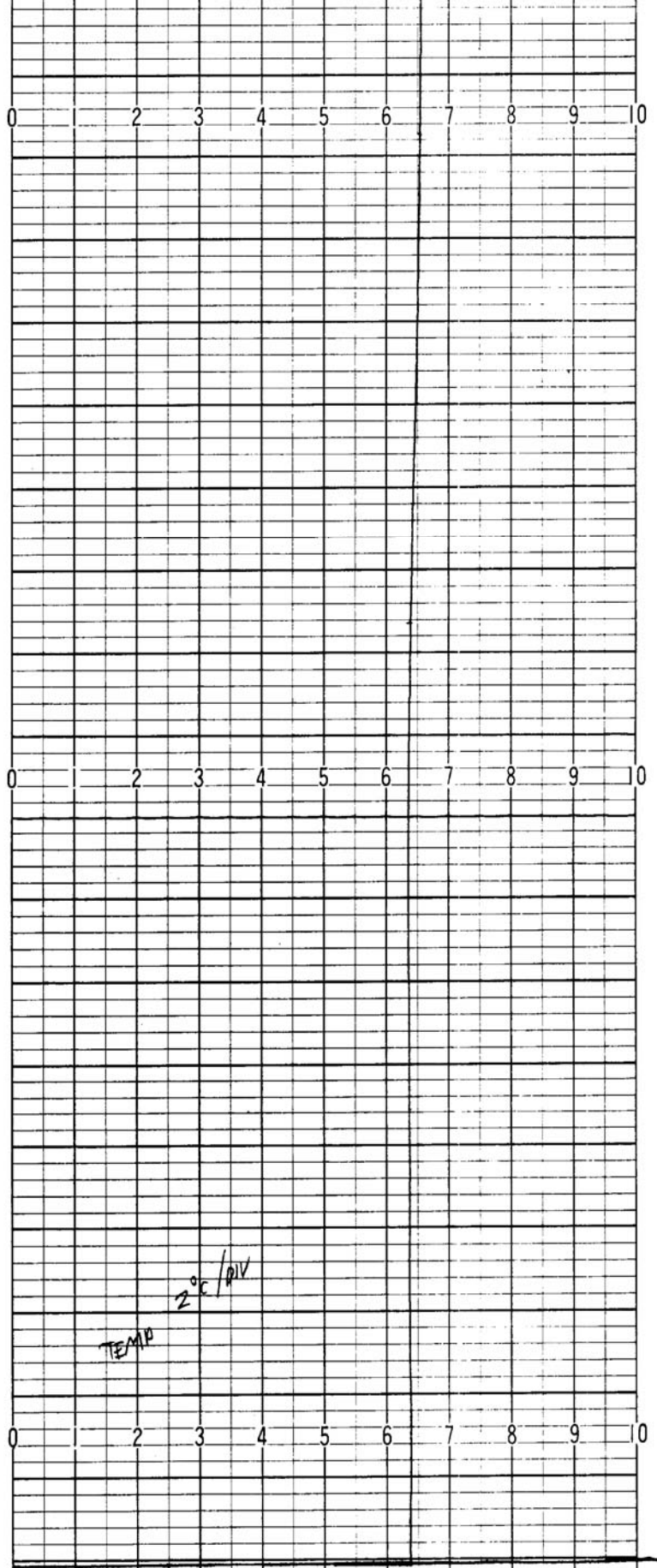
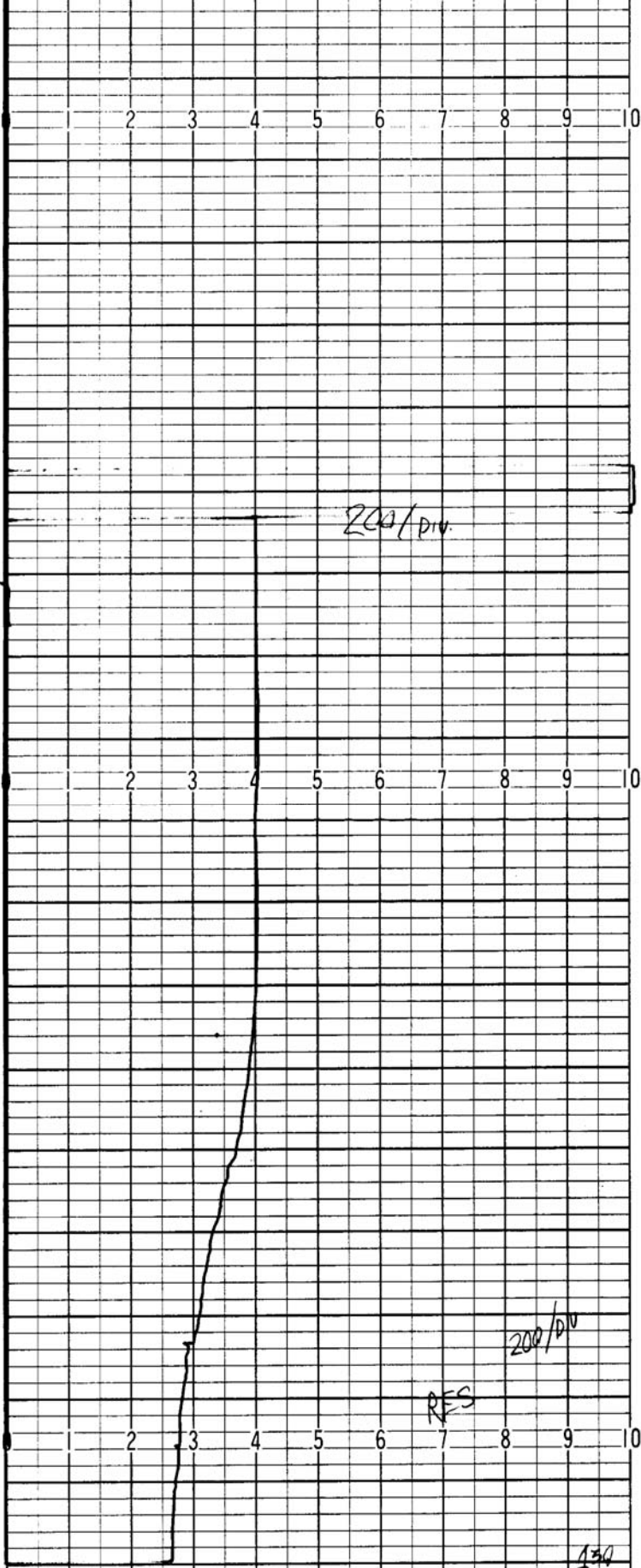


800 DIV  
DISPLACEMENT

150

20





**Charts-Inc**

P.O. BOX 40

P.O. BOX 49

SUN VALLEY, CA 91352

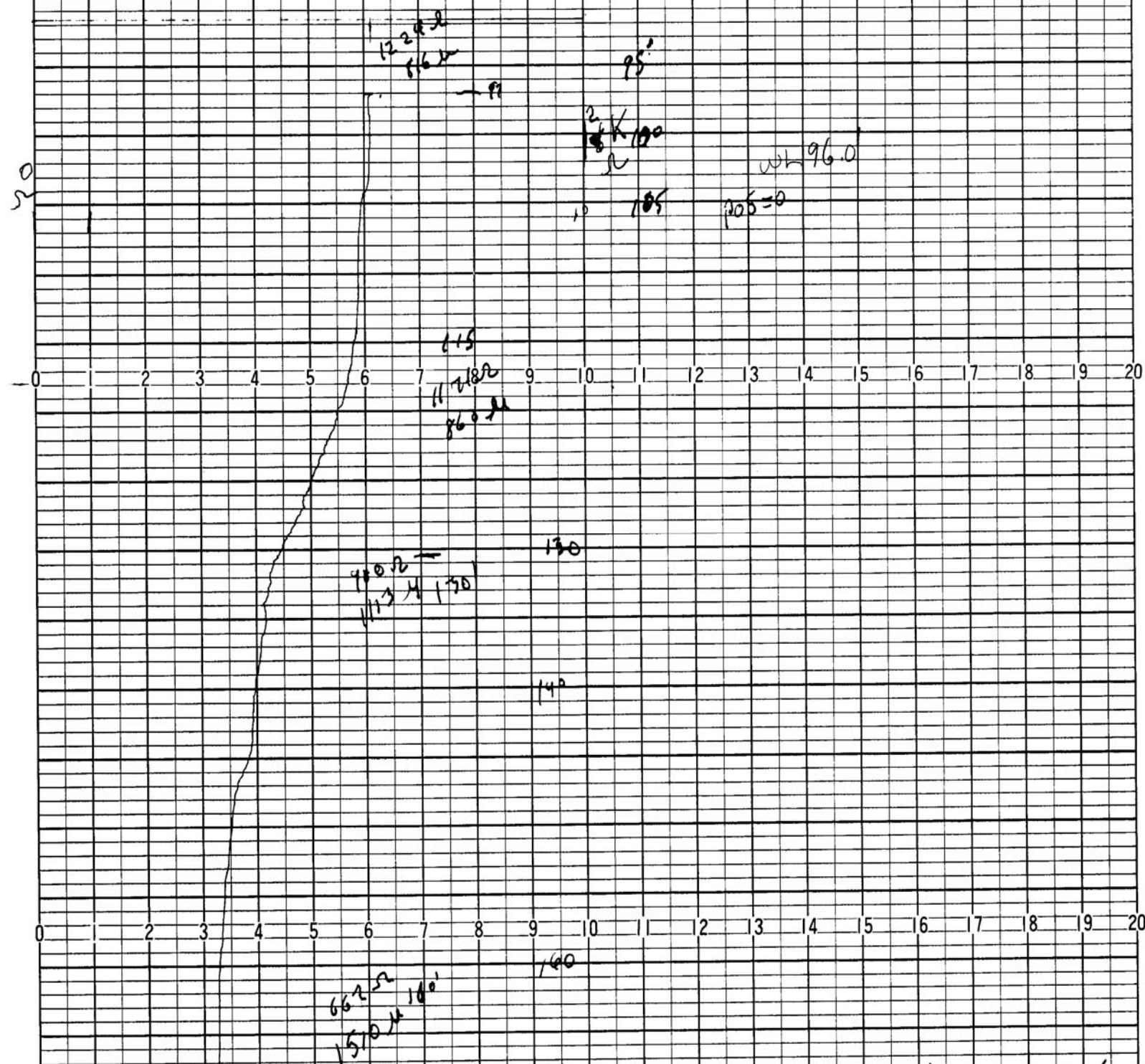
(213) 767-0068

**CHART NO. ENG-2**

Conductivity - Fishponds #3 2-27-86

Conductivity - Fishponds #3 2-27-86

Conductivity - Fishponds #3 2-27-86



← well plugged at 170' - couldn't  
go down

no super.

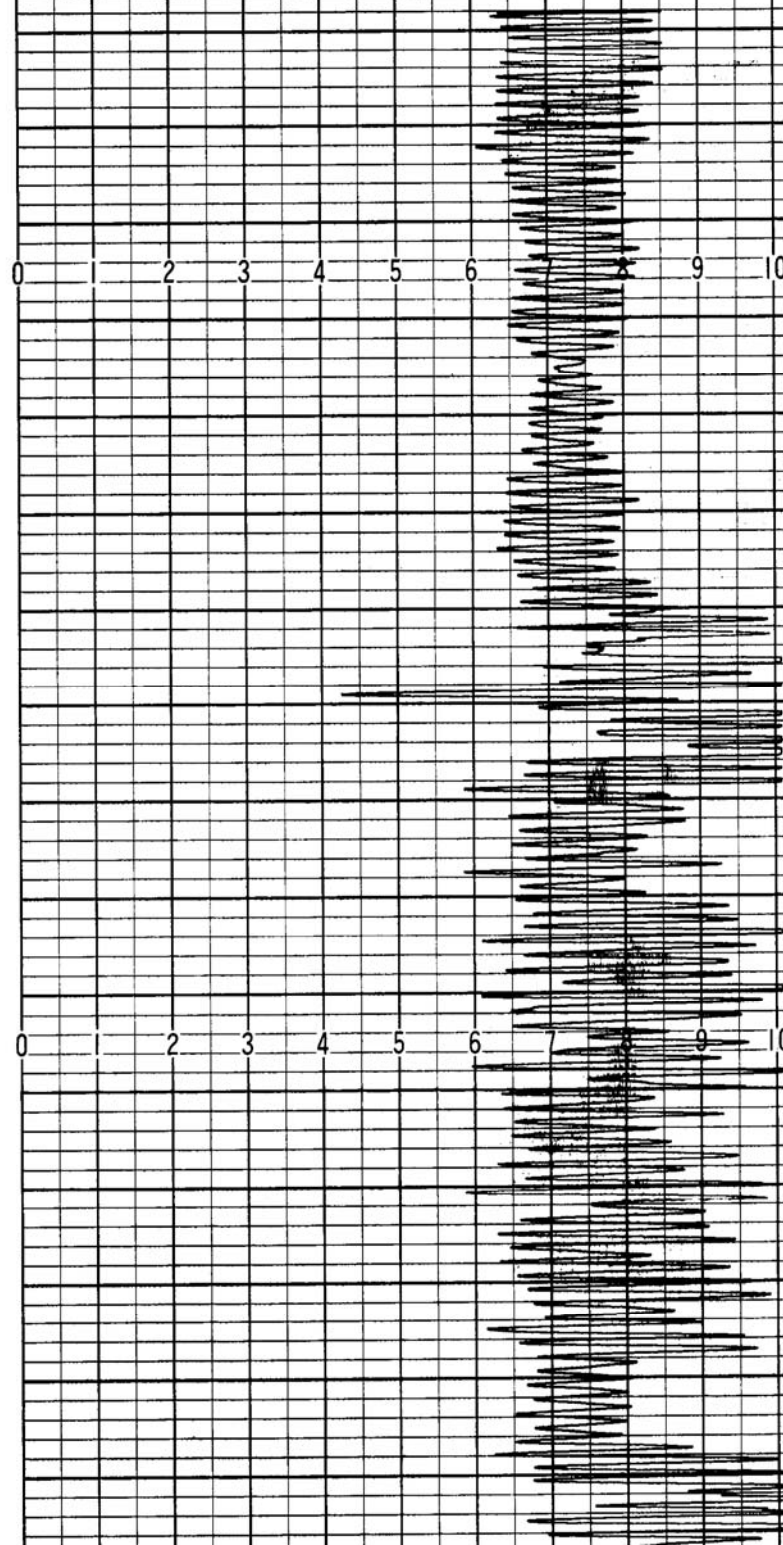
~~64~~  
~~15~~  
180

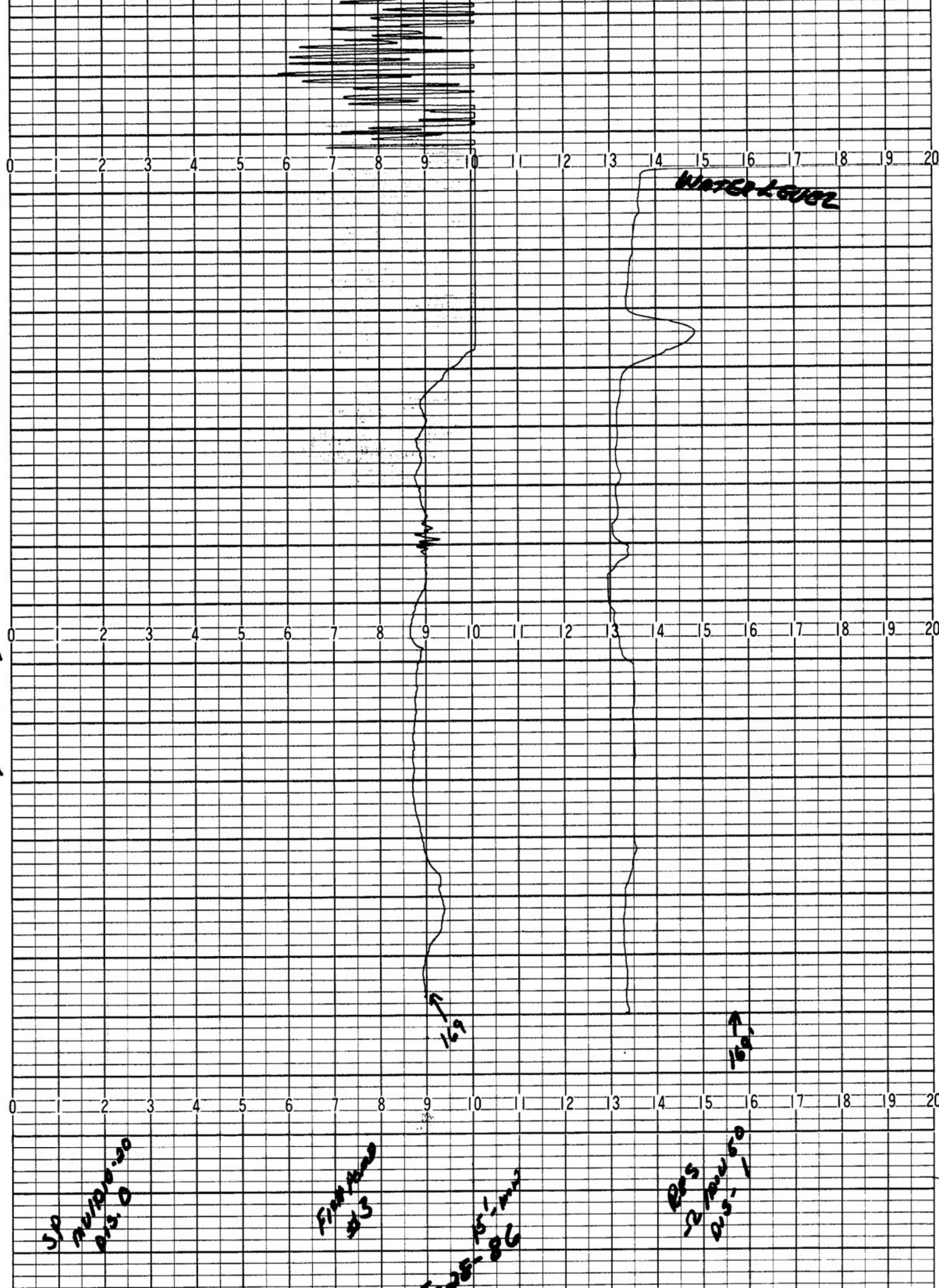
0 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

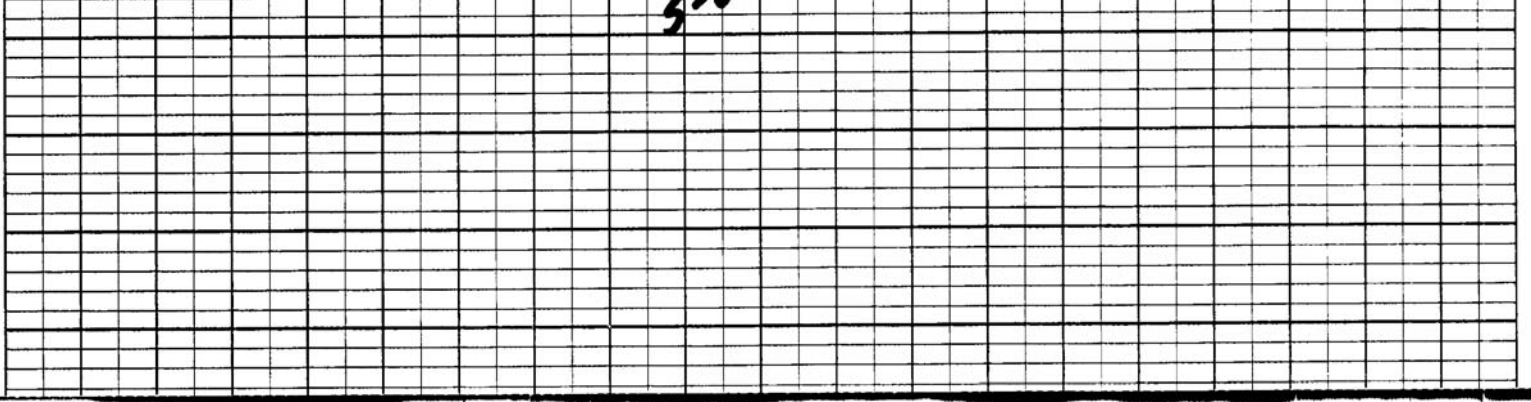
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0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20





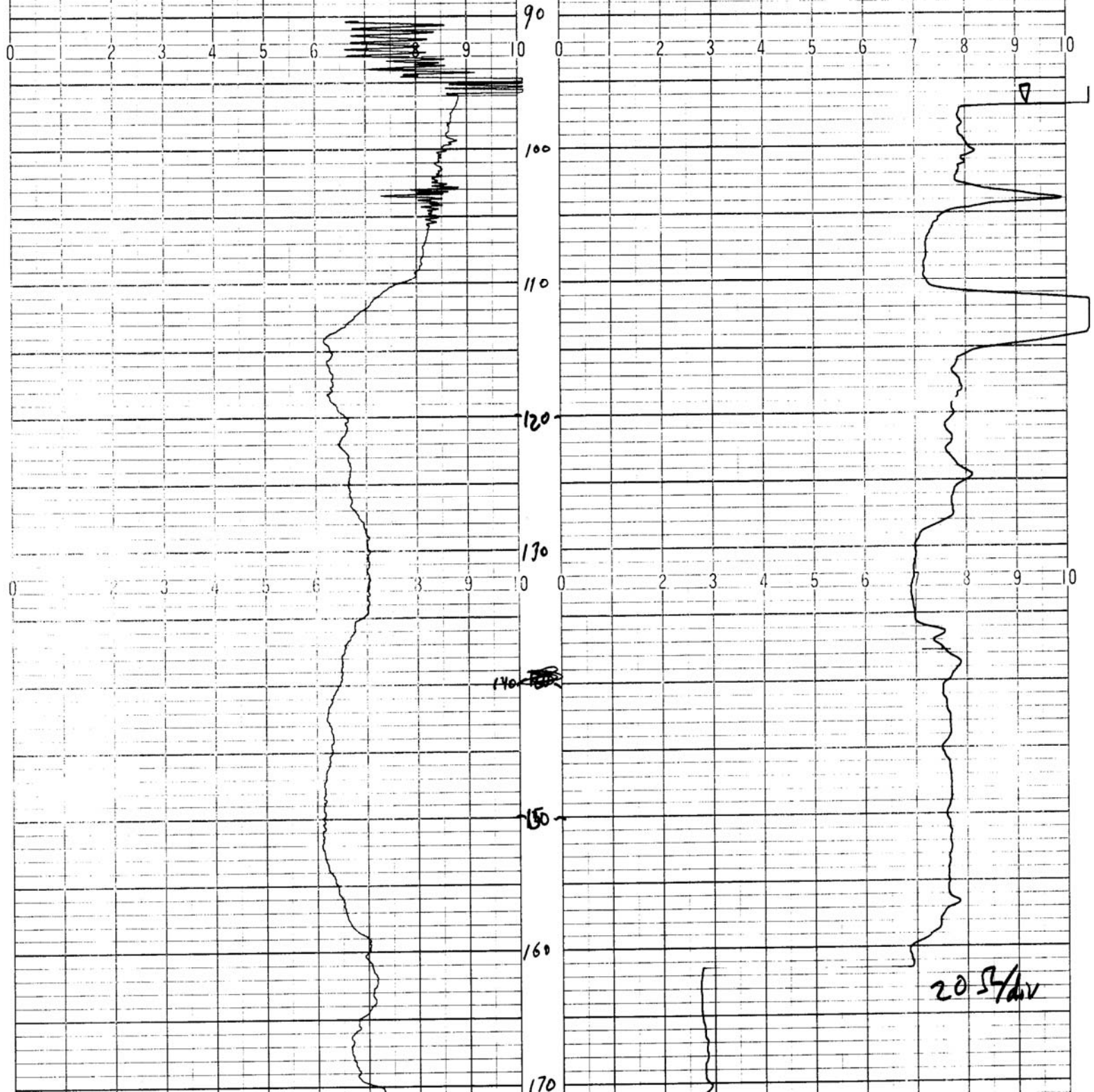


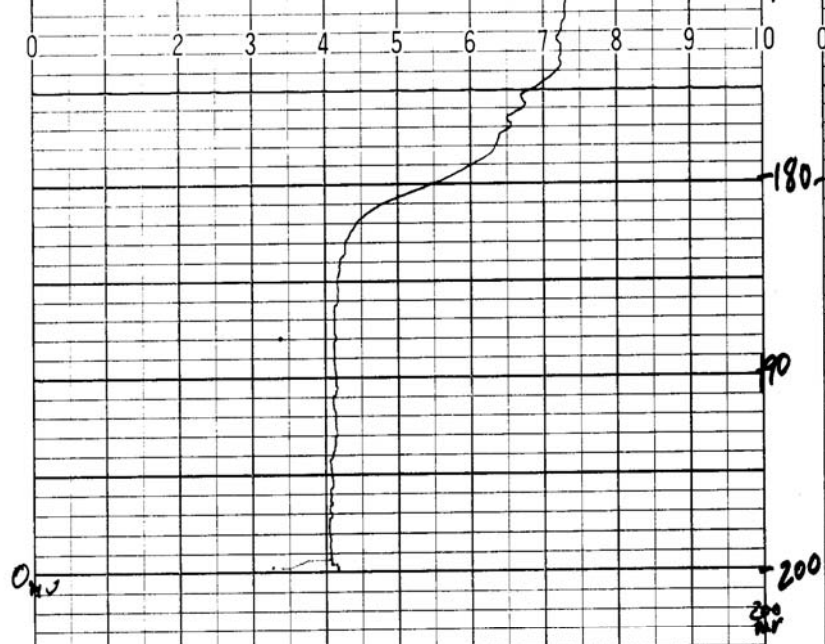
Fish ponds #3  
7-29-85 New Probe

TV Mr R/m

SP

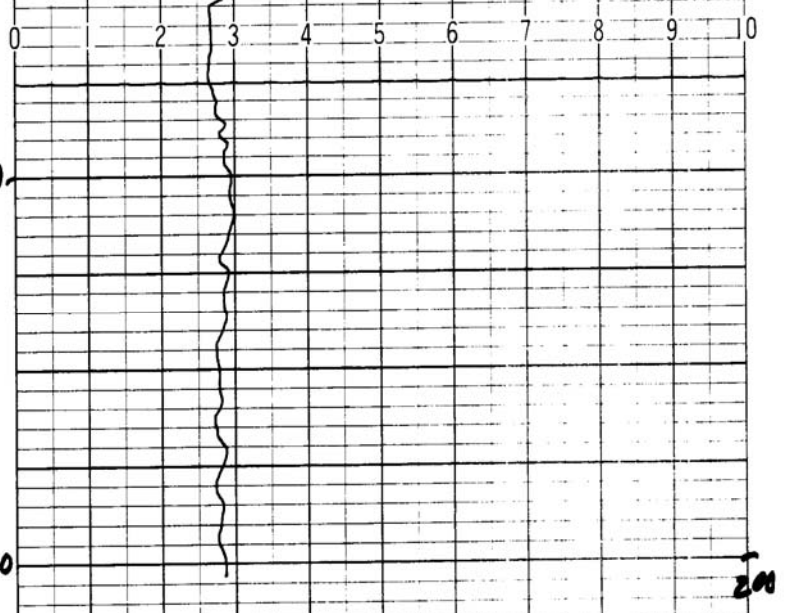
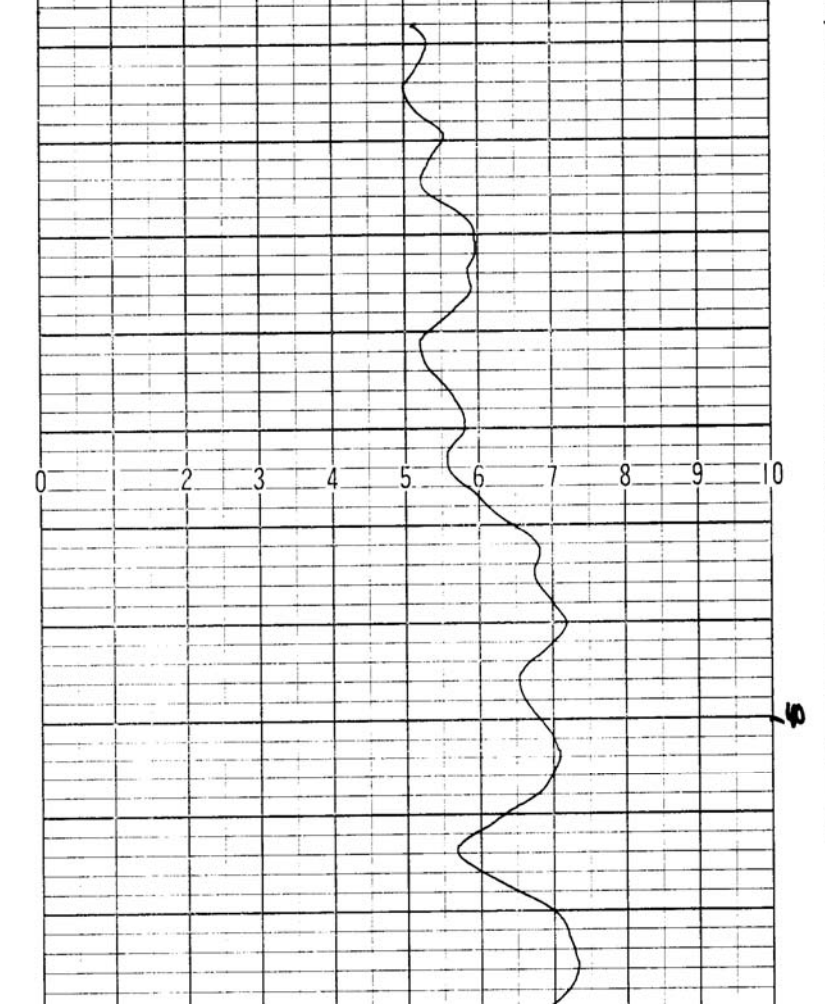
RES



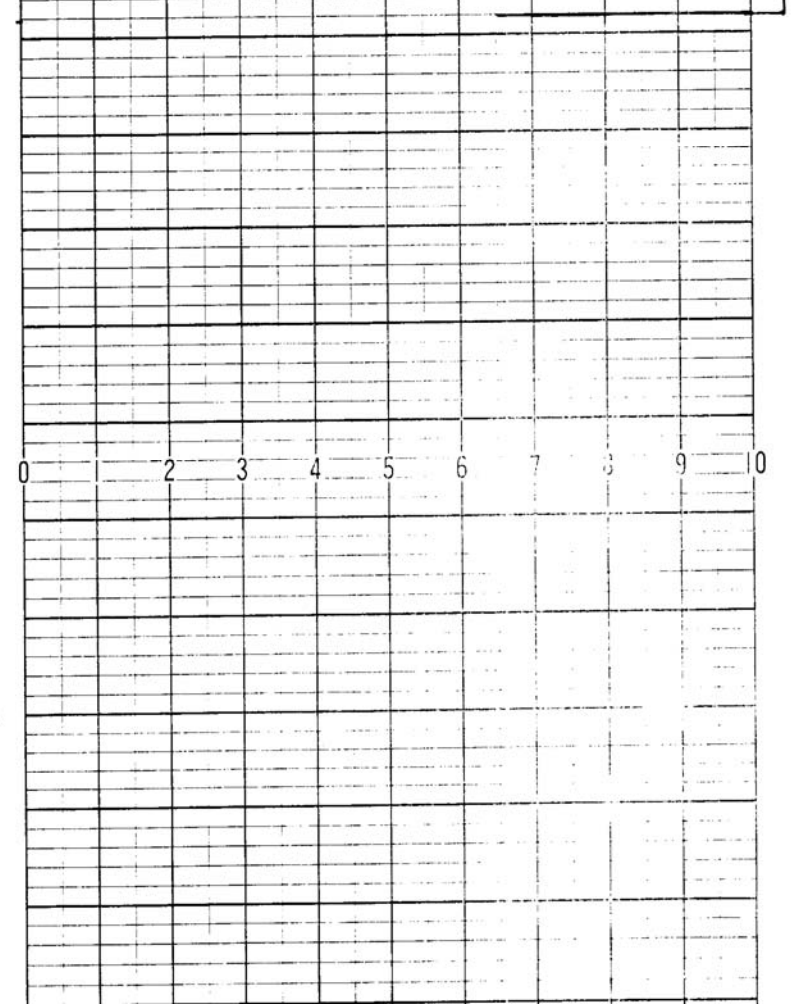


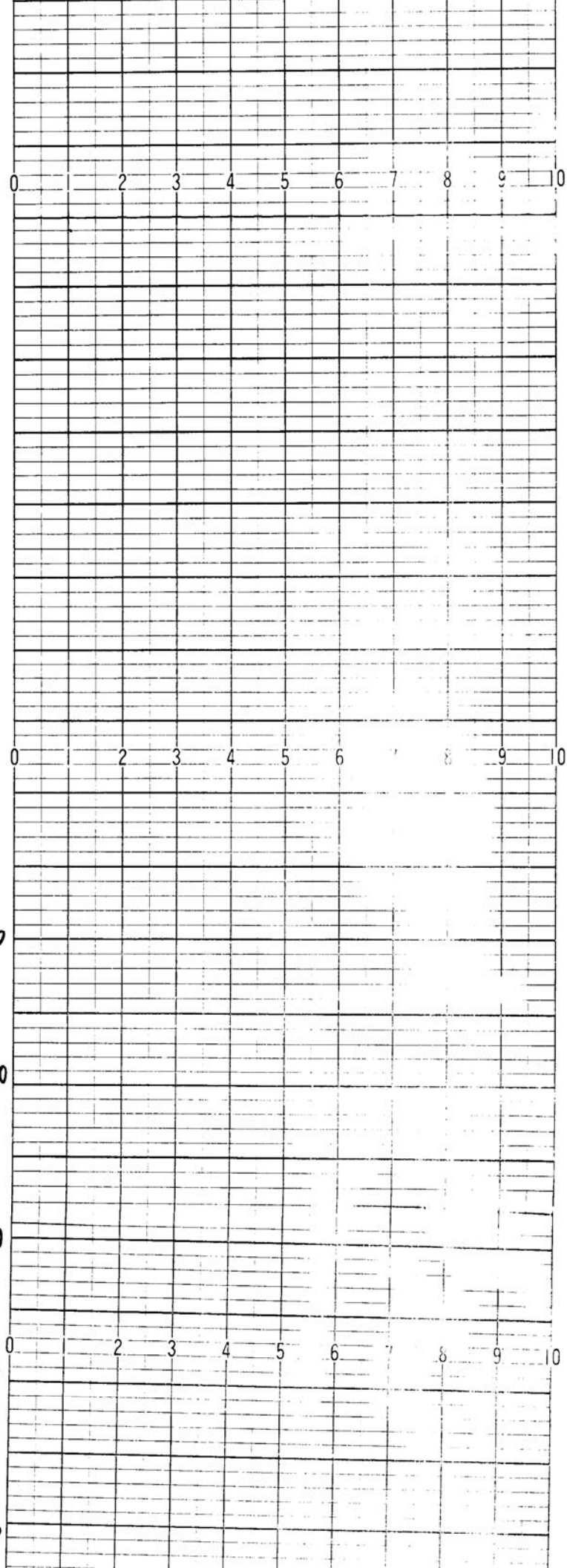
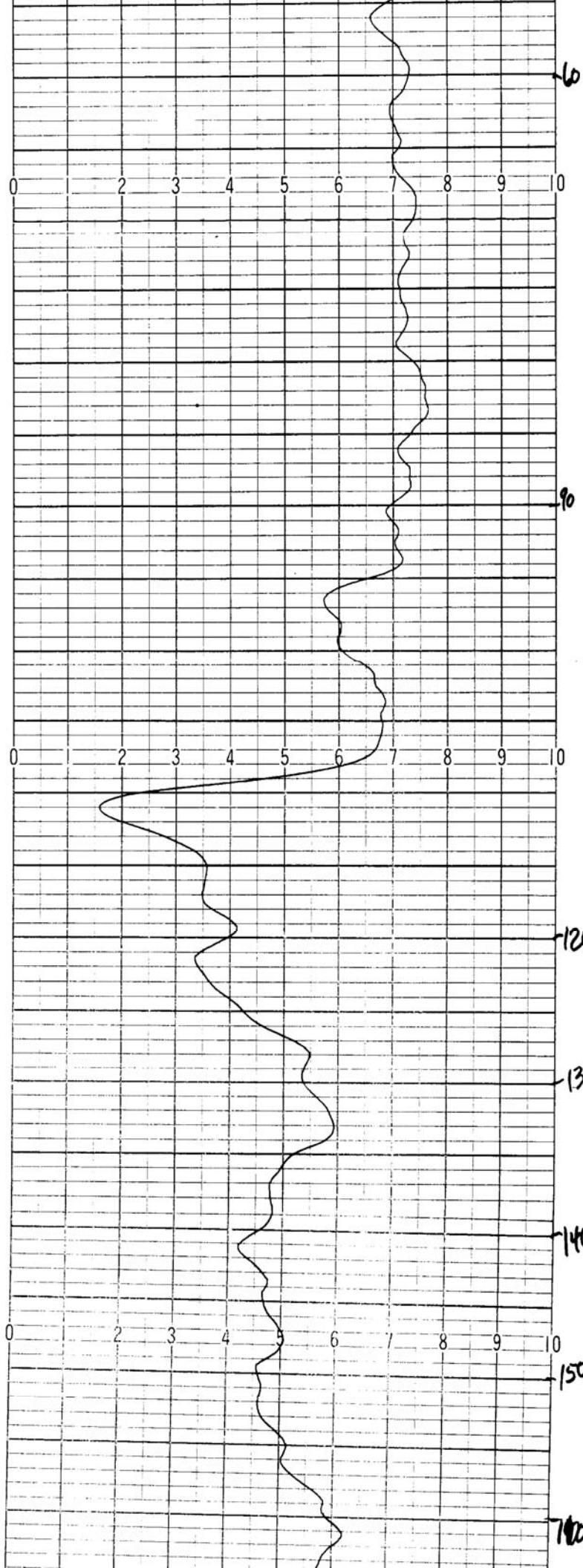
SP 3 20  $\mu V/div$  200  $\Delta SP$  10  $ft/min$

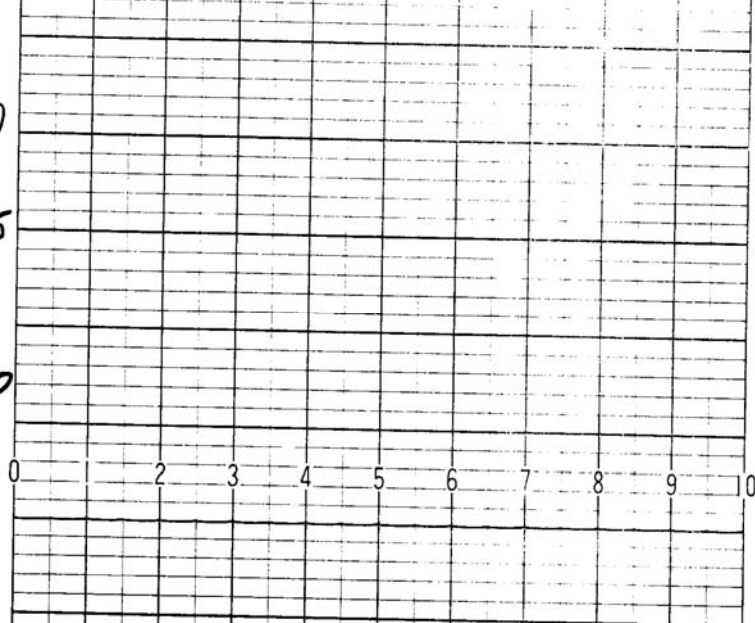
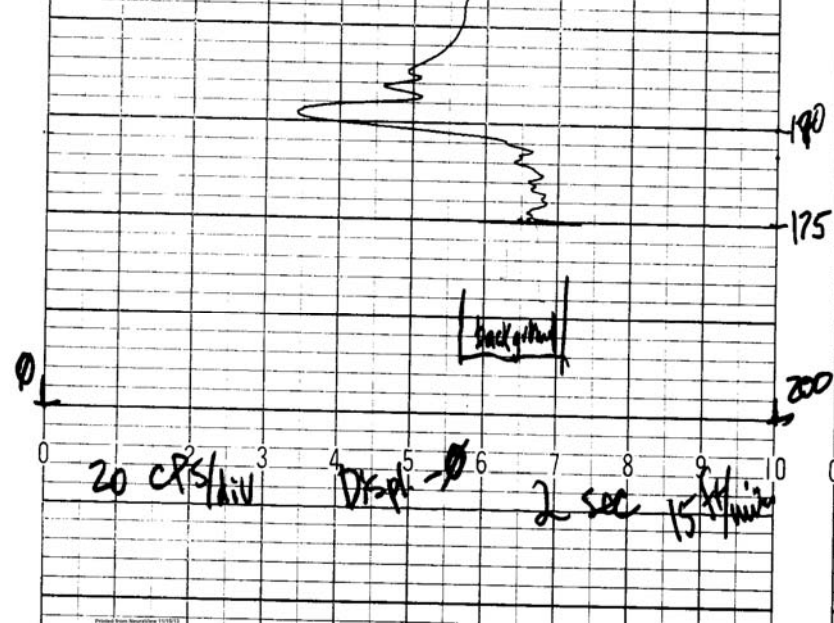
Gamma



RES. 4 50  $\mu V/div$  1  $\Delta SP$







Rep.

64"

Fish Ponds #3

7-26-85

1000  $\Omega$  m/div

TVM

19000

30

35

0 1 2 3 4 5 6 7 8 9 10

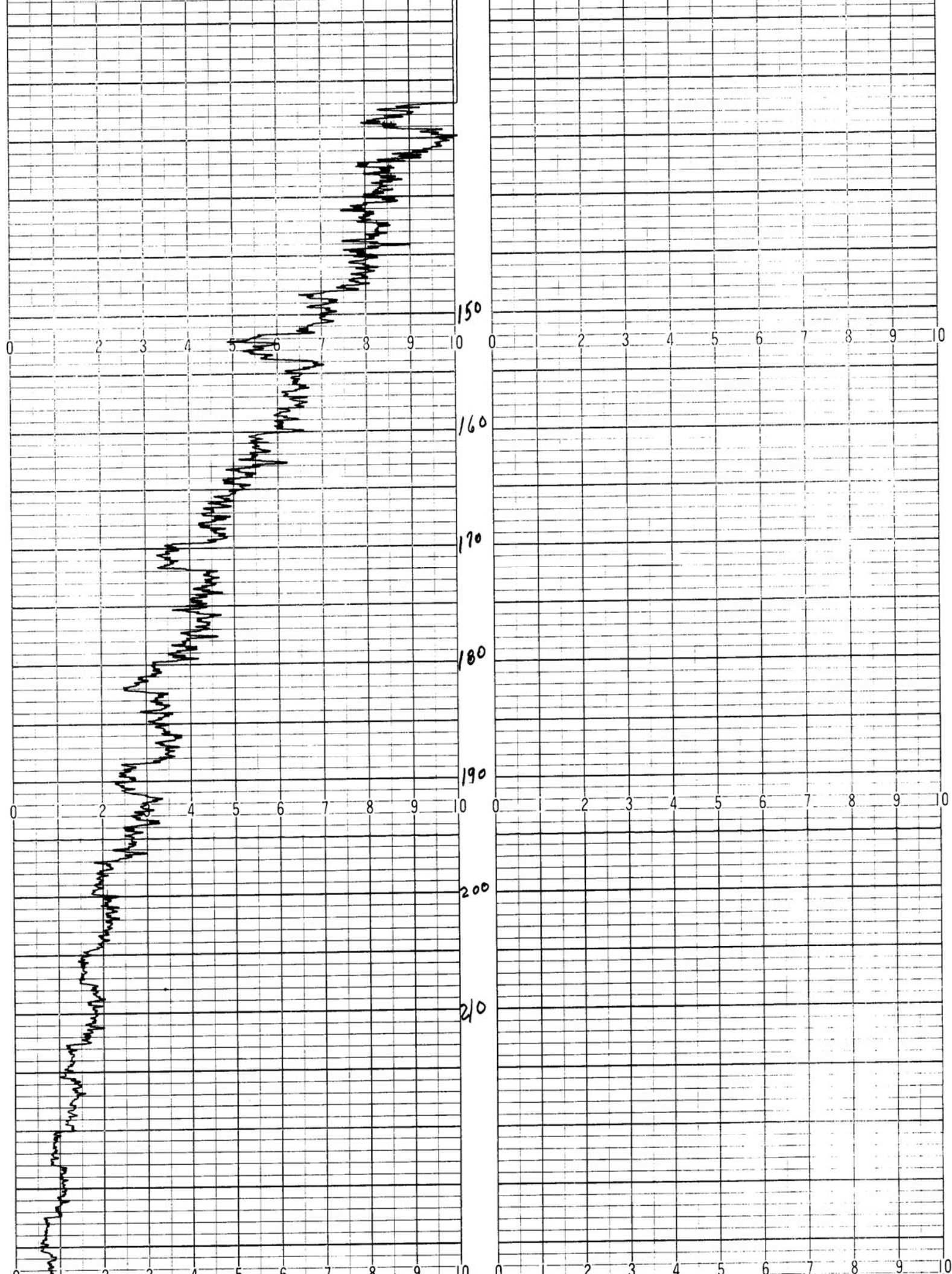
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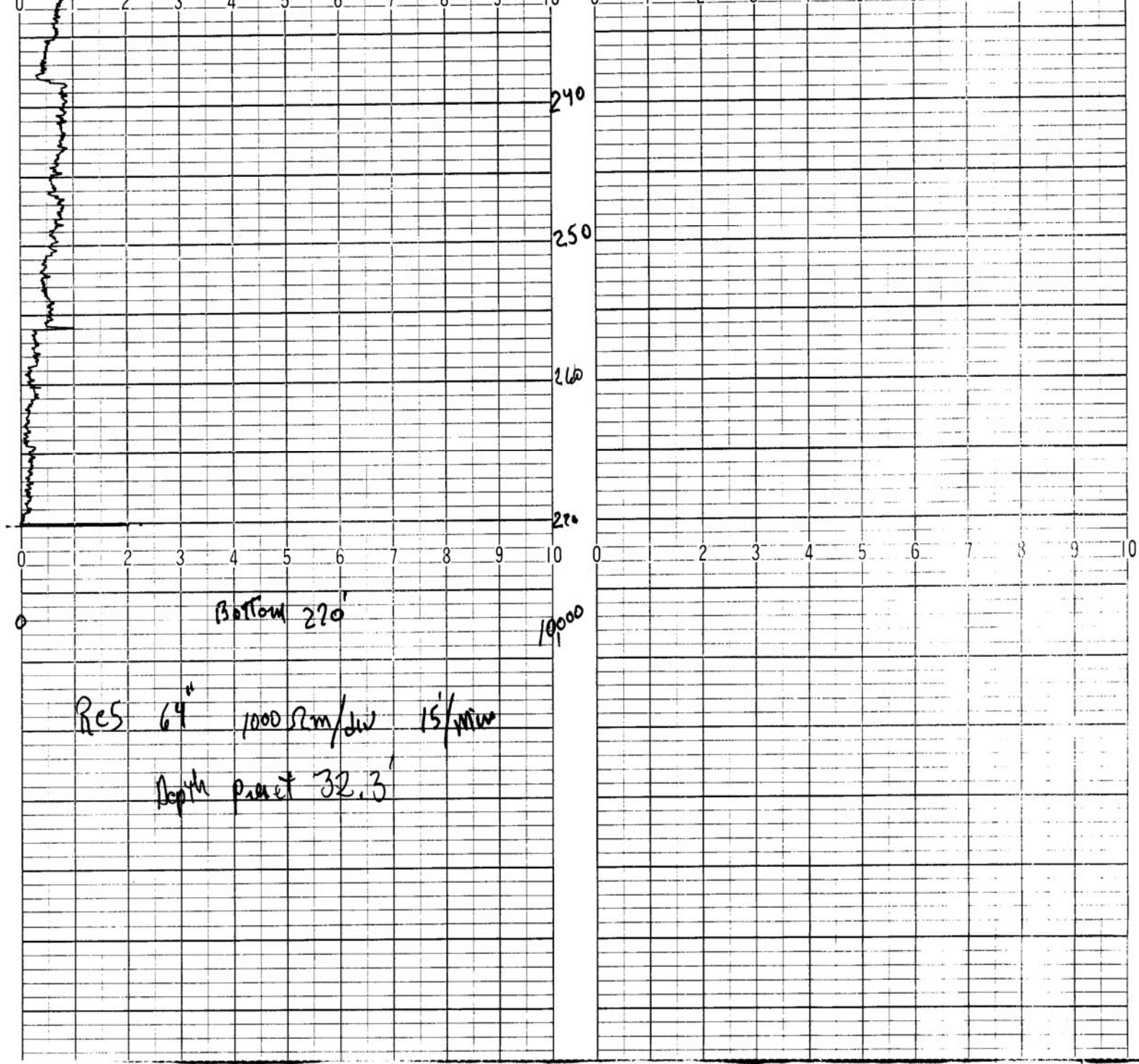
0 1 2 3 4 5 6 7 8 9 10

0 1 2 3 4 5 6 7 8 9 10

0 1 2 3 4 5 6 7 8 9 10

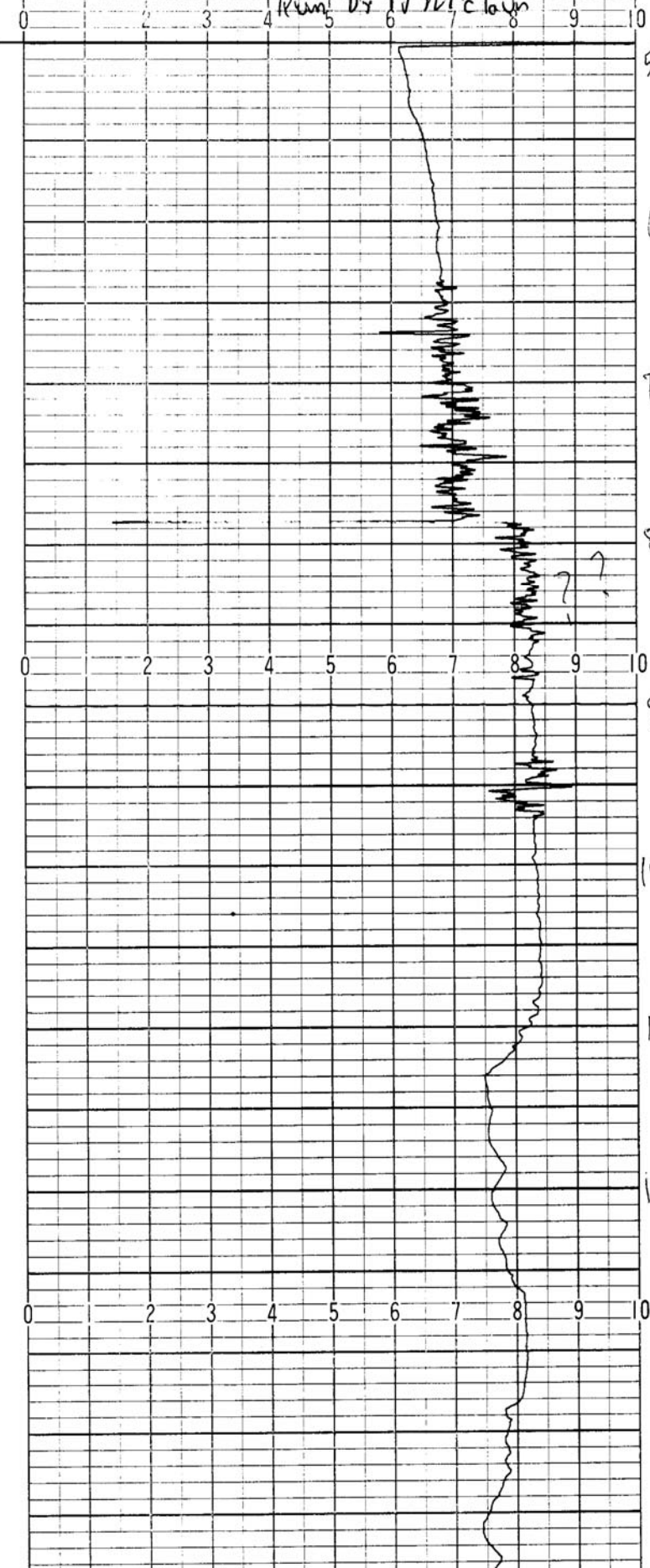
0 1 2 3 4 5 6 7 8 9 10





Fishponds #3 5-8-85

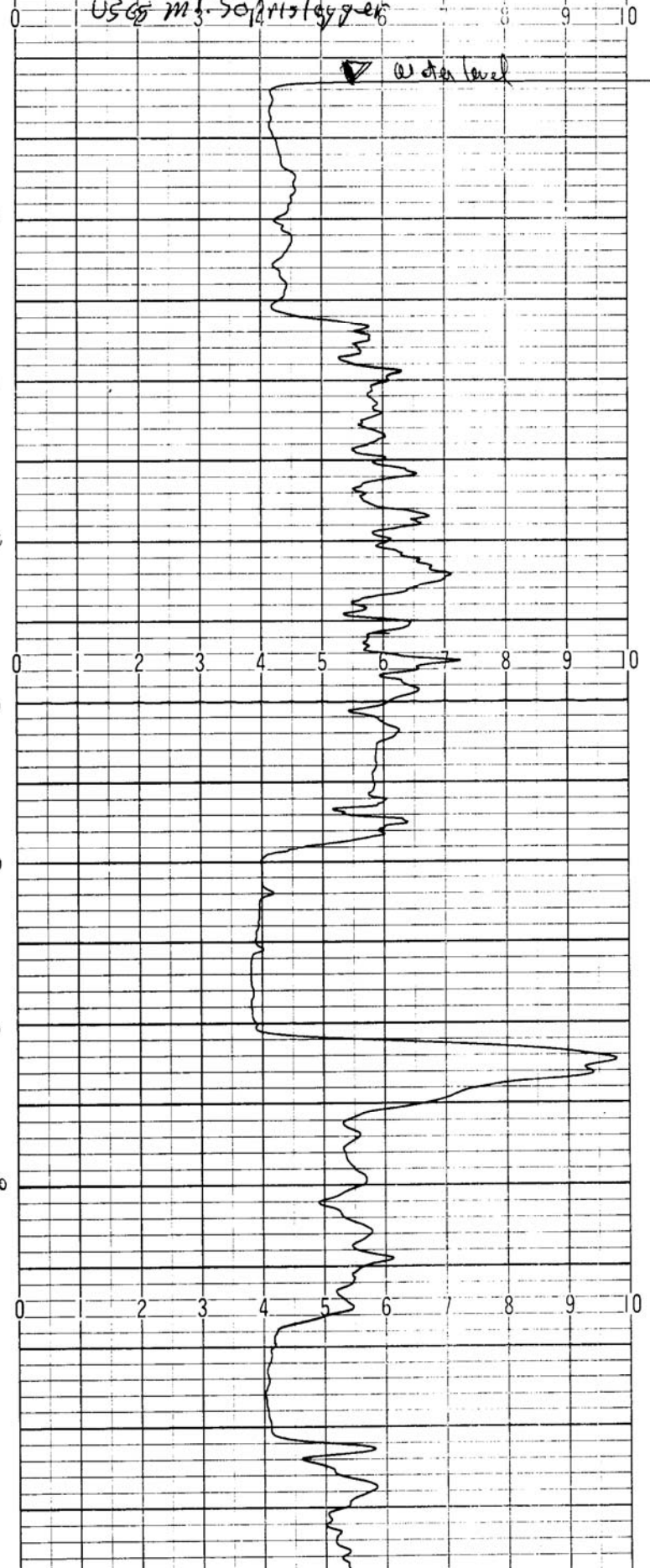
Run by T. M. E. L. J. n

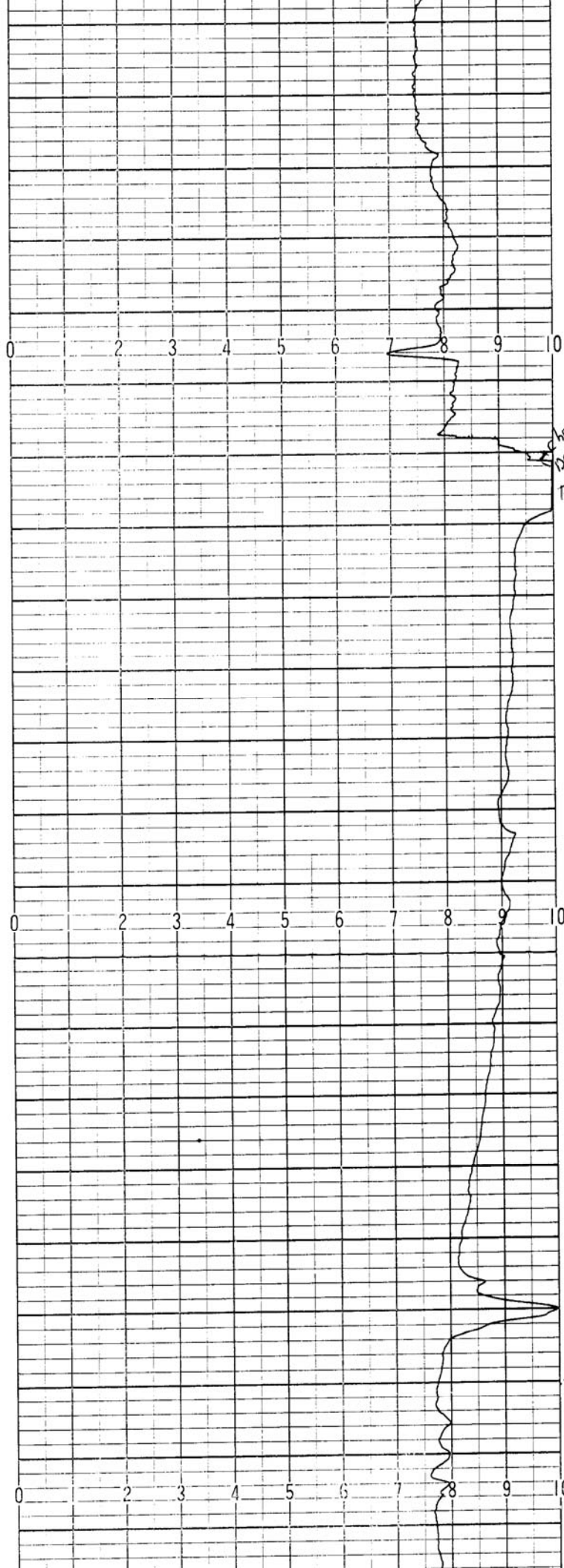


T13-R14E-204B

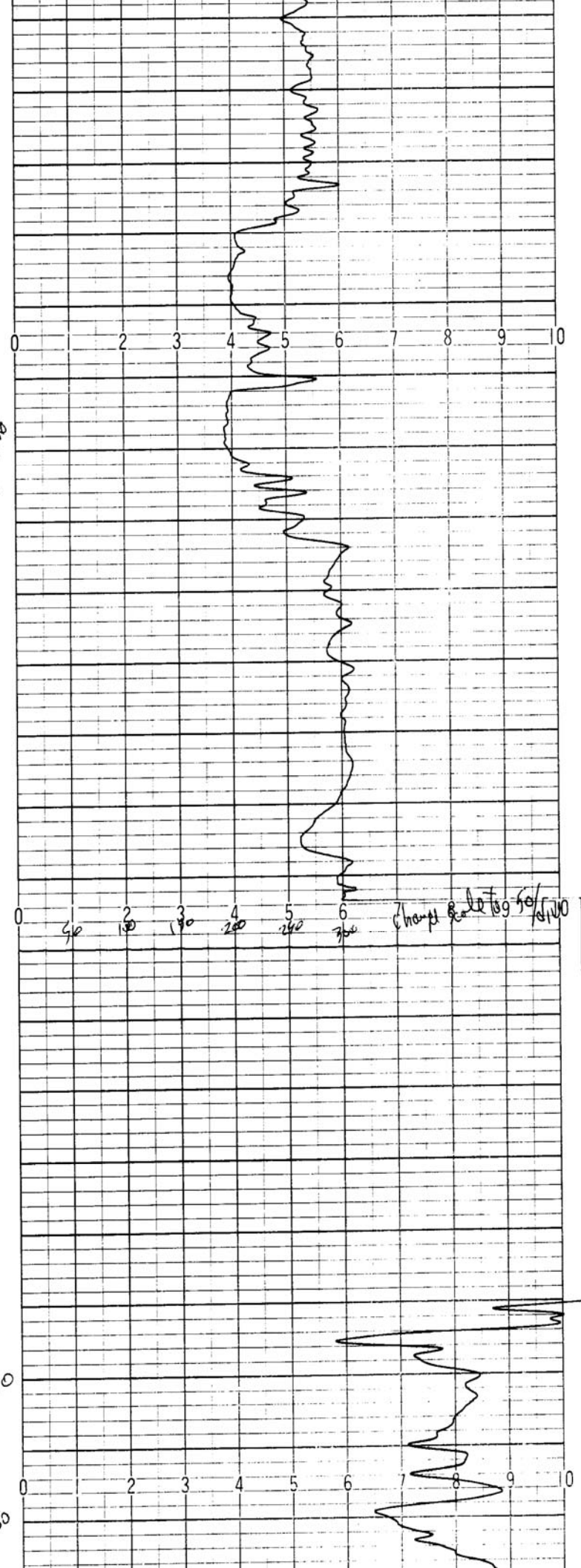
E1.922 msl

USGS M3-502115/1998-06





change  
Dips  
to 4



change scale to 50 ft/100

240  
250

