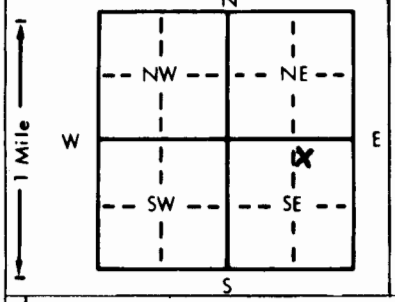
WATER WELL RECORD Form WWC-5 KSA 82a-1212

1 LOCATION OF WATER WELL	Fraction	Section Number	Township Number	Range Number
County: Douglas	NW ¼ NE ¼ SE ¼	2	T 13 S	R 19 E/W

Distance and direction from nearest town or city street address of well if located within city?

2 WATER WELL OWNER: Kansas Geological Survey
RR#, St. Address, Box # : 1930 Constant Avenue
City, State, ZIP Code : Lawrence, KS 66045
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 293 ft. ELEVATION: 922
Depth(s) Groundwater Encountered 1. ..... ft. 2. ..... ft. 3. ..... ft.
WELL'S STATIC WATER LEVEL 86.75' ft. below land surface measured on mo/day/yr 5/10/85
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 10 in. to 31.5 ft., and 6 3/4 in. to 263 ft.
WELL WATER TO BE USED AS: 1 Domestic 2 Irrigation 3 Feedlot 4 Industrial 5 Public water supply 6 Oil field water supply 7 Lawn and garden only 8 Air conditioning 9 Dewatering 10 Observation well 11 Injection well 4 3/4-29 12 Other (Specify below) Research
Was a chemical/bacteriological sample submitted to Department? Yes ..... No XX; If yes, mo/day/yr sample was submitted
Water Well Disinfected? Yes No XX

5 TYPE OF BLANK CASING USED: 1 Steel 2 PVC 3 RMP (SR) 4 ABS 5 Wrought iron 6 Asbestos-Cement 7 Fiberglass 8 Concrete tile 9 Other (specify below)
CASING JOINTS: Glued XX Clamped ..... Welded ..... Threaded .....
Blank casing diameter 8 in. to 31.5 ft., Dia ..... in. to ..... ft., Dia ..... in. to ..... ft.
Casing height above land surface 1.61 in., weight ..... lbs./ft. Wall thickness or gauge No. Schd. 40

TYPE OF SCREEN OR PERFORATION MATERIAL: 1 Steel 2 Brass 3 Stainless steel 4 Galvanized steel 5 Fiberglass 6 Concrete tile 7 PVC 8 RMP (SR) 9 ABS 10 Asbestos-cement 11 Other (specify) ..... 12 None used (open hole)

SCREEN OR PERFORATION OPENINGS ARE: 1 Continuous slot 2 Louvered shutter 3 Mill slot 4 Key punched 5 Gauzed wrapped 6 Wire wrapped 7 Torch cut 8 Saw cut 9 Drilled holes 10 Other (specify) ..... 11 None (open hole)

SCREEN-PERFORATED INTERVALS: From ..... ft. to ..... ft., From ..... ft. to ..... ft.
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 0 ft. to 31.5 ft., From ..... ft. to ..... ft., From ..... ft. to ..... ft.

What is the nearest source of possible contamination:
1 Septic tank 2 Sewer lines 3 Watertight sewer lines 4 Lateral lines 5 Cess pool 6 Seepage pit 7 Pit privy 8 Sewage lagoon 9 Feedyard 10 Livestock pens 11 Fuel storage 12 Fertilizer storage 13 Insecticide storage 14 Abandoned water well 15 Oil well/Gas well 16 Other (specify below) .....
Direction from well? How many feet? 20 feet East

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) 5/10/85 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) 6-5-85
under the business name of Kan. Geol. Survey by (signature) Thomas M. Evans

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.

(604)

OFFICE USE ONLY T R E/W SEC. ¼ ¼ ¼

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 Shal
127	135 19	Shale gray-with coal at approx. 133' (upper sibley)	
135	158 23	Sandstone	
158	165 19	Shale	Tonganoxie Sandstone
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 Limest

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 0 7 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.

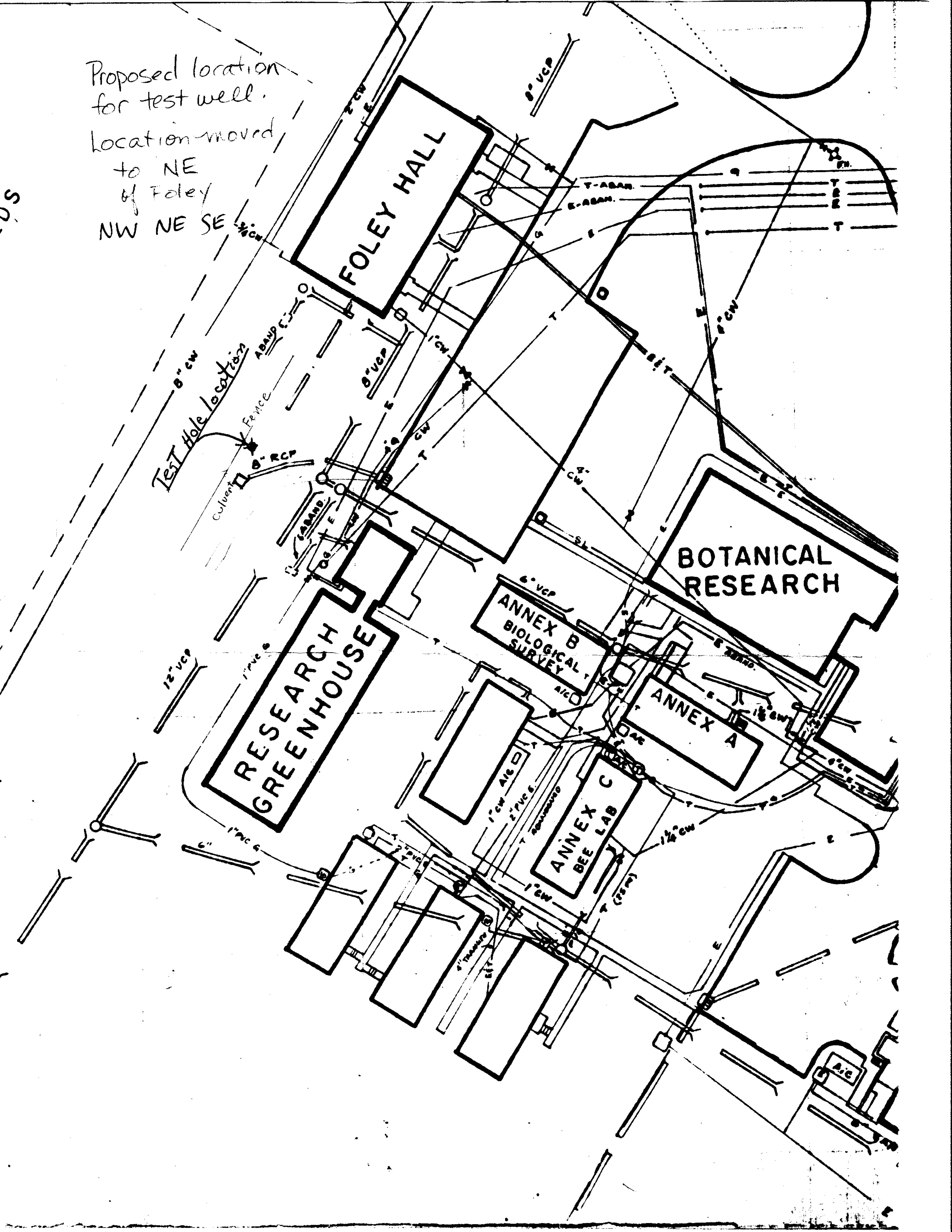
I would anticipate infrequent (several times a year) use of the site in order to back a van up next to the well and run a probe up and down the well to take some readings. Hopefully this will not interfere with any future plans on this part of campus. Please let me know if there are any conflicts with 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
Test Hole location
Fence
Culvert
FOLEY HALL
BOTANICAL RESEARCH
RESEARCH GREENHOUSE
ANNEX B
BIOLOGICAL SURVEY
ANNEX A
ANNEX C
BEE LAB
8" CW
8" VCP
8" RCP
6" VCP
12" VCP
T-ABAN.
E-ABAN.
ABAND

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

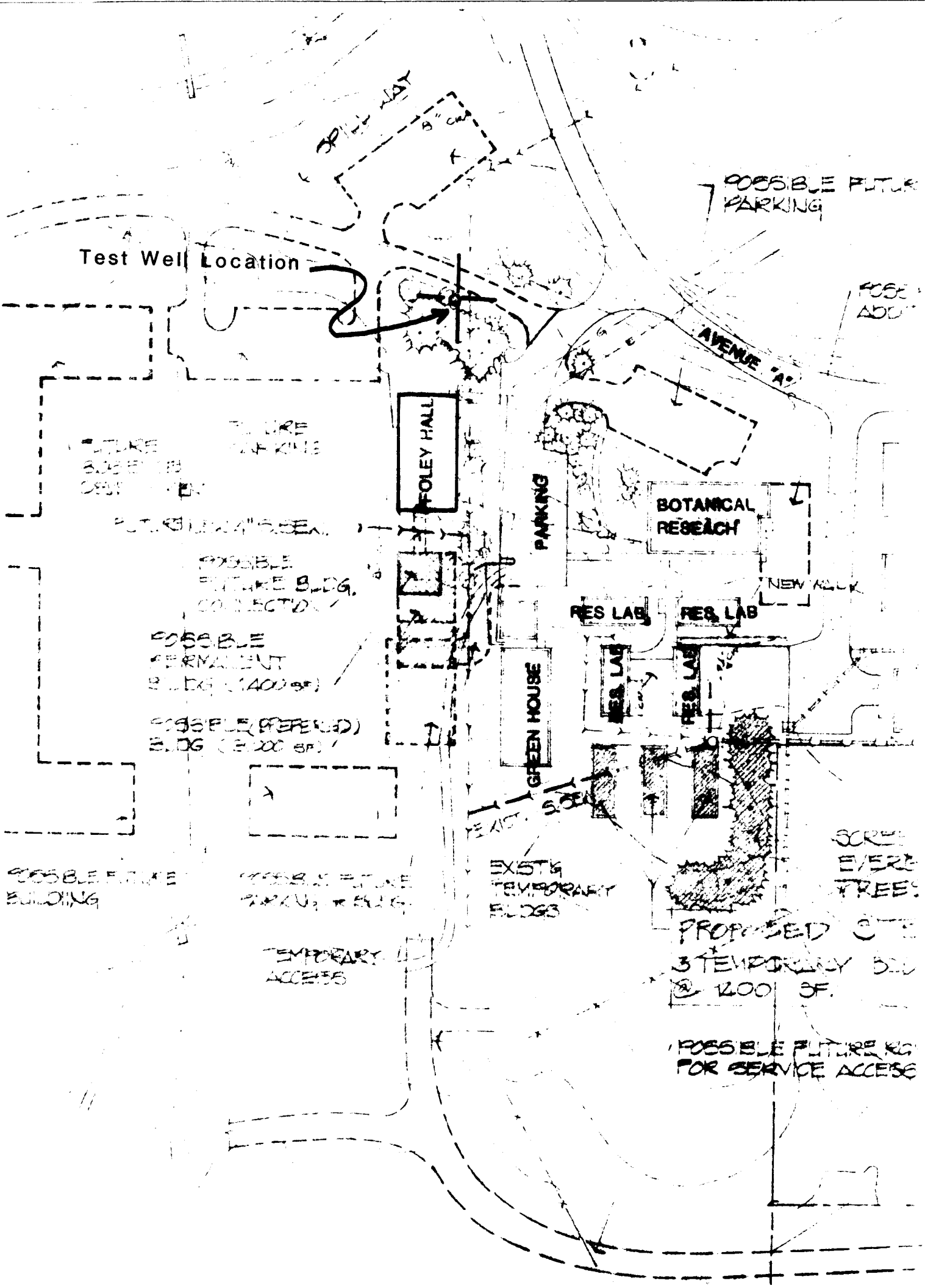
SUBJECT: Test Well North of Foley Hall – 922' SL

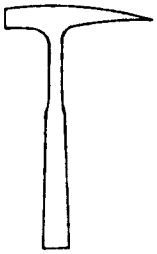
Attached is a location map showing the site for a test well to be drilled north of Foley Hall. Your memo to me, dated April 2, in regard to this subject included correspondence and a location map from Tom McClain which identified a proposed location for this well south of Foley Hall. As you can see from 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 Fairbanks #3

~904 - Fairbanks 1+2


Test Well Location
POSSIBLE FUTURE PARKING
AVENUE "A"
FOLEY HALL
PARKING
BOTANICAL RESEARCH
NEW WALK
RES. LAB
RES. LAB
RES. LAB
RES. LAB
GREEN HOUSE
EXIST'G TEMPORARY BLDGS
PROPOSED 3 TEMPORARY BLDGS @ 1200 S.F.
TEMPORARY ACCESS
POSSIBLE FUTURE BUILDING
POSSIBLE FUTURE PARKING BLDG.
POSSIBLE PERMANENT BLDG (1400 S.F.)
POSSIBLE (PREFERRED) BLDG (3200 S.F.)
POSSIBLE FUTURE BLDG. CONNECTION
POSSIBLE FUTURE PARKING
POSSIBLE FUTURE ACCESS FOR SERVICE ACCESS



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

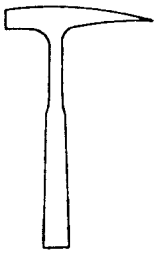
Dear Greg:

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	[illegible]
52 - 59 - 62	[illegible] 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 - 156½	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'

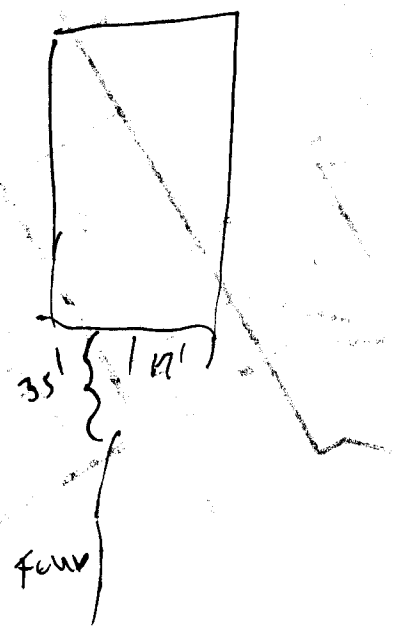
Depth	
205 - 215 ?	___ ?
215 - ?	0
218 - 225	2.8'
225 - 231.5	3'
234 - 243.5	8.75'
243.5 - 252.5	2-8'
252 - 255.5	1'
247 - 255.5	2'
255 - 260	3.5'
260 - 265	0
265 - 293	[illegible] cuttings only

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

Fence = 35' W & market corner

Market To outlet Drain = 35'

N. end of Fence To market 50'



Owner KGS-KU Fishponds #3 ____¼ ____¼ ____¼ sec. 2 T. 13 R. 19

County DG Date 9-9-85 Static Water Level ________

Topo. Sheet Law W Elev. 922 Depth ________ Yield ________

Location ~60' N and 15' W of NE corner of Foley Hall
~20' S of Gravel Rd. 13-19-2 DAB

Formation Record

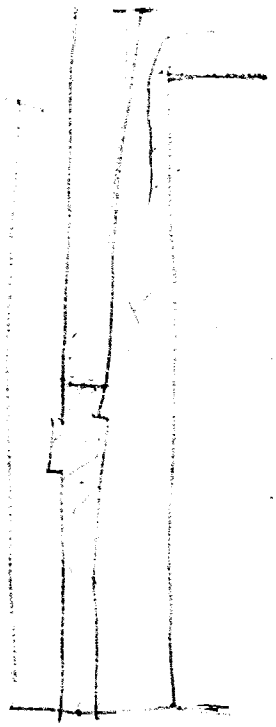
Ft.	From	To	Description	
	0	3	Topsoil	10" rotary hole
	3	19	weathered shale light brown - sandy	To 32½ feet
	19	24	grey shale - only seen in mud pit	set surface
	24	25	gray limestone - Hard drilling	casing of 8"
	25	25¼	smoother at 25¼	PVC
	25	32	grayish shale & limestone harder drilling	
	32		smoother drilling at 32'	

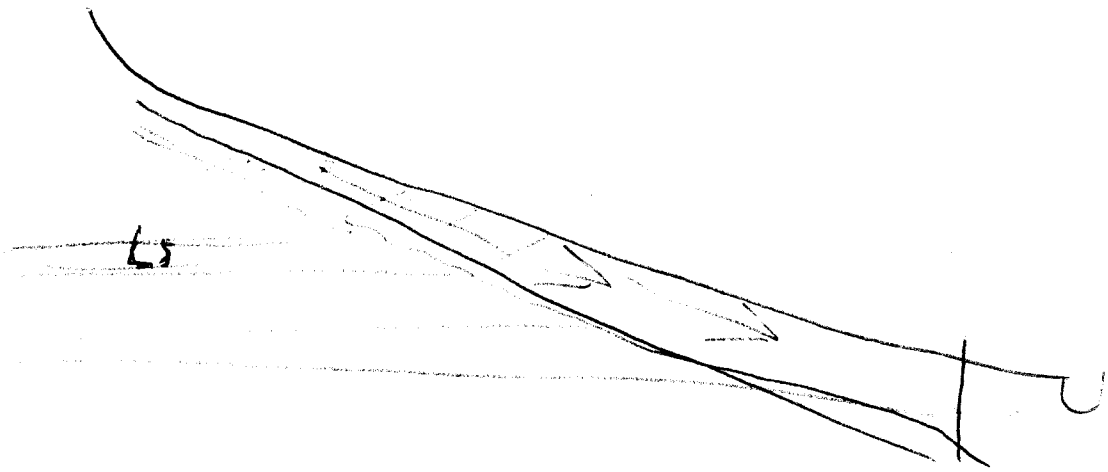
BS-19E-02 DAR el ~928

April 12, 85 (~~14~~ pluvieous)

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 mud pump 2nd gear
Rotation 140 RPM

12:20 at 33½

12:29 at 34½

12:43 at 36'

12:49 36.5' hit something hard for <30sec

12:53 at 37'

1:01 at 38'

(Mel's watch) 1:10 at 39' (1:12 my watch) turned very dark (shale)

1:19 at 40'

1:27 at 41

1:37 at 42 stop for core retrieval

~42 inches length of core → recovered ~3+ foot of core

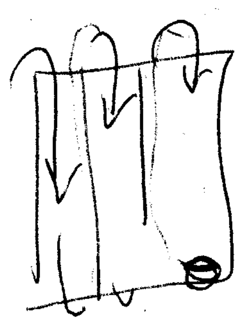
depth of hole from MP ≃ 35 ft.

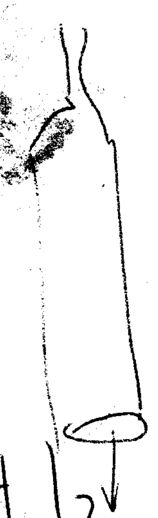
Mel went in again with the core barrel.

recovered something

Now the depth of hole ≅ 38' ft

Core not reaching to acid at all.





Measured to 38

Reamed to 37½ with 6¾ Roller

3:4 Coring Began at 38'

57"

4:11 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 cored 1.5' to 44.5
10:~~[illegible]~~ - 10:~~3~~6 to ~~[illegible]~~ 47.5
hard layer @ ~~[illegible]~~ 47' (brief)
hard layer @ 48 ~~[illegible]~~' smoothed out @ ~~[illegible]~~ 48.4 | progress slow
hard layer @ 49.5 smoothed out @ 49.7
11:~~2~~18 — cored to 50 ~~[illegible]~~
11:24 — cored to 51
11:30 cored to 5~~2~~2 ⇒ quit
51.75 mp pulled up to get core
reamed from 38 to 5~~2~~2
began coring using large barrel
1:24 began coring cored @ 1' per 4 min [illegible]
2:25 finished coring cored 7 ft in 50 minutes.
core recovery on the first try is zero

13 45 10 55 57 49 15 15 15 15 10 50 -51 9 -7 56

April 15 R. Miller
going down w/ large barrel to try & recover core
3:25 begin from 52' ~~goes down~~ ~~(5')~~ (5')
3:27 - begin coring (hard - rattling)
51' ~~[illegible]~~ 3:32 - 1' of coring (6') - smoother @ (6')
62' ~~[illegible]~~ 3:39 - rattling - stop - pull

4:20 April 15 85

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

4:22 - go down w/ large 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 ≠ some core
(Core Box not full yet)

April 16, 85 (MSophocleous)
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 corers 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

" " " ~63ft 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

Tmclair 4-16-85

11:08 started coring (small Barrel) - at 63½'
6½
8 min to 65½ ~4 mm/ft
65½ - 66½ 3½ mm
66½ - 67½ 5 mm

~~[illegible]~~ - 1'
69 - 69⅔' - 14 minutes - stopped drilling at 70½'
To clean Barrel -
Reamed To 70½ feet with Roller
started 4" Barrel at 70½'
72-73' 14½ min
73-74' 14 min
74-75 - 18 min
75-76
76-77
76-77½ 9:?? -
} 45 min (4')

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

(4-17-85 / 17 April 85) P. A. Macfarlane

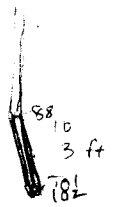
began @ 8:00 AM small barrel pick up some core pieces of core
began coring @ 76.5' below m.p.
cored 5 ft by 8:45 AM finished coring 9:15 AM
83.6 below m.p at the end of this coring
reamed to 83.0 ft. 11:00 AM
began coring @ 11:?? with big barrel. completed @ 12:40 PM
no recovery from the big barrel tried again got 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 stuck barrel. estimated depth from top 25 102 ft.

3 ft sub
10 ft small core barrel

April 18, 1985 Pam Chaffee

w/ Joe Anderson
Ron Johnson
& Don B.



Start reaming the hole at 9:22 am
Reamed to 93 ft 9:38 am
add a stem
Start reaming 9:41 am
noisey drilling at 100.3 ft
Stop reaming at 101. 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)

Kelly 15 ft

18 ft difference in elevation from hole vs. hole S of Foley (which we have log for.

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

Start coring at 10 10:42 am

Footage Marker	Depth
3	~~100~~
4	103
5	104
6	105

Time	
10:42	
10:55	mud pressure 100 psi
11:12	color change in foam on mud pit (dk gray-black) 102-103
11:40	mud pressure ~140 psi foam on mud black to pressure back down to 100 fine black film on top of water pulldown chain loose

continued next page

April 18, 1985 Pam Chaffee

Footage Marker	Depth (ft)	Time	Remarks
7	106	12:00 noon	Mud pressure ~ 100 psi. Sm. amt Black scum on top of water. pull down chain loose again
7.7	106.7	12:17 pm	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 marks ~7.07

Depth 106.7

4-19-85

From Mel's notes

Start at 106.7'
1:56 4.2' on Kelly
2:23 10' on Kelly
" 10½
3:00 11' on Kelly
3:28 11½ "
3:44 12' "
4:13 12½ " - pulled Barrel - full -

Drilled To ~ 116 - But did not pull all
2 Core - recovered ~ 9' Some Hashell
in Bottom

4-22-85

STarted 11:13

Footmade	Depth	Time	Remarks
7.7	~116	11:13	small Barrel in Hashell
8.7	~117	11:25	
9.0	~117.3	11:32	Drill quieter - Bottom of Hashell
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	↑ Smoother no chatter Fast drilling
15.0	123	11:47	
15.3	123.6	11:48	

recovered ~ 8' core

T. McClain

12:20 reamed from 116 to 122 at 2:10 pm

15.3'

Footmark	Depth	Time	
1.3	121	2:19	Big Barrel - smooth 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	6.8 " " 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
~~9.3~~	129	3:14	Stopped Drilling to pull core
6½	127	3:48	Small Barrel
7	127½		
7½			
8			
8½			
9		3:56	
9½			
10		4:00	
10½			Spinning Leak ↓ just before
11		4:07	11½ stops @ 4:20 = 11¾ To
11½	132	4:14	3 Breaks Worken leak. Began again after
~11¾		4:28	again - small leak again ~4:26 Big Leak @ 4:27 - Pulled Core

Jane Penne & P.A.M.

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

4/23/85

Started large Barrel

Footmark	Depth	Time	
1.0	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 core Sandstone coming up in cuttings
8.0		2:08	↓
9.0		2:19	
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

4-23

Started small barrel at

Footmark	depth	Time	
1	~~136~~ 138	3:13 pm	- chopped 1' in 1 minute
2	139	3:14 p	
3	140	3:15	← Caved 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

Foot Mark	depth	Time	
2	147	10:48	Big Barrel - hard drilling drill chattering in zones of 2 a 3 inches quartz - little sand
3	148	10:55	
4	149	11:01	
5	150	11:07	
6	151	11:14	
7	152	11:22	
8	153	11	missed
9	154	11:37	
10	155	11:45	

9 X 15 = 135
1 X 10 = ~~10~~
1 X 15 = 15
160
(2' mark) - 13
147

4-24 (cont)

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

pulled core Recovered ~9.3' (Whole core)

Small Barrel

Foot	Depth	Time
April 24, 85		
12:55	start from 154 ft	(Sophocleous)
12:57	155	
5	155'	12:57
6	156	01:02
7	157	01:07

before reaching 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. Marios attempted depth measurement. ~~He~~ came up with ~168 ft (2:25 pm)

Recovered about 7 ft. of core ⇒ 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
5:44pm cable broke
6:15 pm broken 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 core

135
17
10
162

at 162 - cored to 166 - plugged - pulled small barrel
and cleaned it out - Decided to ream to 168' and
start fresh - 11:14

3'	168'	1:13	started coring with 13 lg barrel
4'	169	1:25	smooth to 3½ - rough - harder drilling
5'	170	1:36	hard and soft zones —
6'	171	1:48	
7'	172	2:02	← Cool pieces in cuttings @ ~ 172-172½
8'	173	2:14	Lower 5, 0 lg Core
9'	174	2:30	
10'	175	2.48	
11	176	3:06	- stopped Coring

Pulled barrel - recovered 5.3' core
Lower 5, 2 lg coal at bottom of Core
Put in small Barrel - Plugged - put at 4 pm Friday

4-26-85

Put on 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 - shell 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) Core out in order. 176-182 Blew out and is not in good order except for ~ 180-182 which is probably good. Recovered about 6-7' core in pieces. Stopped - drilling due to Rain -

James McClinton

MONDAY 4-29-85

9.45 - REAMING of HOLE BEGINS
STARTED 7/68 at one ft

10.10 - REAMING DOWN TO 10 ft. MARK

10.22 - Reaming 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 (= 182.5 ft)

182.5
9.8
192.3

QUICK ROTATIONS

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~~ sandlenses. Lower part is sandstone (TONGONOXIE)

12.51 - RESUME COKING, SMALL BORE, 0 FT. 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

1.09 - 8 ft

1.12 - 9 ft MARK

1.13 - 9.2 ft - core retrieved

0.5 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 BORE
2.22 - 7 ft MARK
2.25 - 8 ft MARK
8.5 - BUCKING for a ½ 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 stringers, 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 @ ~~2~~ 205

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 to clear bit because of slow progress

12 - 1:05

Stopped coring and pulled out @ 219

5-2-85 - Tues

Reamed to 218- put on Big Barrel- started coring @ 10-21

Foot	Depth	Time	
8	218	10:21	Drill chattering - no pulldown
9	219	10:24	" " pressure -
10	220	10:26	" only weight of
11	221	10:27	" Stem + Barrel
12	222	10:30	" on bit.
13	223	10:32	" easy smooth
14	224	10:34	" drilling
15	225	10:36	"

Pulled barrel - recovered 2.8' 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 is 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 more and started at

Foot	Depth	Time	
			3' mark
3	~~225~~ 225	11:29	Smooth Drilling
4		11:32	
5		11:35	
6		11:39	

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

Harder @ 6½'

Stopped drilling @ 9½'

by 3:34 we succeed in plugging small barrel and finding a tool that was causing a clutch. No core. Reamed to so we can start fresh Tomorrow.

234 ft

MAY ~~1~~ 3 1985 (FRIDAY)

CORING - USING 16 BORE

9.13 - START at 234 ft, about 1 ft above Zero MARK
0 MARK = 235

9.16 - 2 foot MARK

9.18 - 3 foot MARK

HARD zone 23

9.25 4 foot 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 - PUT IN 3 Boxes

Core IS SANDSTONE w/ Shale and IN MIDDLE. Shale INTERCLASTS ARE PRESENT IN S.S, some coal streaks & [illegible] in of retrieved core

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

243.5
9
252.5

10.5
1.5
9.0 INTERVAL

ca 2.5 ft CORE RECOVERED

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

INTERVAL CORED ⇒ 243.5 - 252.5

[illegible]: Core recovered at 12:00 noon.

Left margin: 234 / 10.5 / 244.5 ; 18.5 / 17.5 / 10.0 / 18.0 / .5 / .0 / .5 / .25 / 16.0 / 38. / 103.25

Mark	Depth	Time	
5	252'	12:45	
6	253'	12:49	
7	254	12:58	← felt crunchy
8	255'	1:04	
9/8.5	255.5	1:09	stop to recover core

~~12.47~~

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'

~1^{50} pm – Recovered only ~1 ft. of core. Most in small pieces. Longest is 2½ in. Box label calls this "#2".

Broke bit

Core s/have been 246–255.5',
so return = 246–247???

Jane Donne

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

Also cracked econo shoe, badly, so stopped coring. (or could have lost new bit!)
There is already a new " " ordered, so s/b here p.m.

Ream hole to 247 – Begin putting stem back in ~2^{30} pm

5 – 6 – 85

Big Barrel run down to 247' Started 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
15½	255½	10:28

Pulled Barrel up - lost most of core - 2' of big pieces with small barrel core out of them. Cleaned big Barrel and put back in hole to core more & try to recover lost core

15x15 = 225
1 x 10 = 10
1 x 15 = 15
250
+5 on kelly 5
255

Foot	Depth	Time	Did not Ream
5	255	11:35	No pull down pressure - only wt. of Stem & Barrel
6	256	11:37	
7	257	11:44	
8	258	11:56	
9	259	12:00	pull down on
10	260	12:05	

pulled up at 12:05 - forgot to put steel ball in Top of Barrel - Core washed badly - recovered about 3½ feet - core in 3" diameter - Did not ream - put Big Barrel back in to core more -

Foot	Depth	Time	
5	260	1:10	pull down on - Drill quiet
6	261	1:12	
7	262	1:15	
8	263	1:18	Drill chattering at 263¼ ↓
9	264	1:21	
10	265	1:25	

stopped @ 265 - pulled Barrel - no core !!

Started drilling with 4 3/4" Bit at 265' -
Took samples every foot - No Core

265 - SS
266 SS
267 SS + coal
268 LS ———— South Bend
269 LS
270 LS - Ending Stem
271 LS new Stem 3:37 pm
272 LS
273 LS
↓ all LS
281 1/4 - Drills quiet ——→ Rock lab
285 Stopped drilling (in shale) 4:11 pm

5-7-85

Started with 4 3/4 Bit at 286 - Samples only - No Core

6	286	10:39	sh	
7	287	10:43	sh	Black shale
8	288	10:49	sh	} Not much pressure on drill down; very little cuttings
9	289	10:59	sh	
10	290	11:07	sh	
11	291	11:13	sh ↓ stone	291 1/2 harder - chatter - limestone chips
12	292	11:17		hard drilling -
13	293	11:29		chatter -

293 Bottom of Hole

Drilled ~ 2' into Top of Stone Limestone -
Stopped and pulled stem up a few feet.
Flushed Hole with ~ ____ gallons of Fresh water.
Then pulled all stem out and started logging.
Ran gama & caliper - looks good - quit for the Day -

5-8-85

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

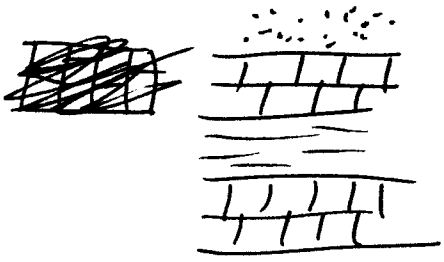
5-9-85 -

no loggers - poured concrete for pad around well.

5-10-85

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

S Tanton Ls.



Tonganoxie

South Bend 1.5'-5'

Rock lake 2'-14' (av. 8) shales, silts.

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	4/10/85
0-33'	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'.

Tom: 2/27/85

measured Depth of holes south of Foley

SW Hole with Bailer in it - 138'

Hole with 3" PVC & with T - 235'

Hole with 1½" steel pipe - 7'

Hole with 1¼ galvanized pipe at an angle 25'

Drill Crew

	DEPTH	TIME	
4/12/85 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'
	38'	3:41	with 6 3/4" roller bit.
	43.5'	4:11	Started coring at 38' with small barrel - stopped at 43 1/2. Retrieved about 57" of core.
4/15/85 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 - NO CORE
		3:25 pm	Went in with large barrel to try and recover core from last run. (52'-59') 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') - got 1' of core from 52' - 62' 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). 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	-	Stopped drilling on big barrel at
77-77.5		4:38. Total of 7' - recovered?

4/17
P.A.M.

		8:00 a.m. started coring with small barrel began at 76.5' - cored to 83.6 by 9:15 recovered _____
76.5-81.5	45	
81.5-83.6	30	Reamed to 83.0 with Roller by 11:00 - began coring with big barrel from
83-89.4		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	
			102'-103' mud press. 100 psi - color change in foam on mud pit (dark gray to black).
3	102	10:42	
4	103	10:55	
5	104	11:12	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.
6	105	11:40	
7	106	12:00	
7.7	106.7	12:17	
	Stopped		

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	Pulled barrel at 116' - full - drilled
12.5	115.0	4:13	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 - Big
9.5			leak at 4:27 - pulled core -
10		4:00	recovered approximately 4' core from
10.5			small barrel approximately 2' 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
T.J.M.

Started coring with large barrel.

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	7.5 harderzone - sandstone coming up
8	137.5	2:08	in cuttings.
9	138.5	2:19	
10	139.5	2:28	10.0 harder -
10.5	140	2:33	stopped drilling - pulled core recovered 6.8' lost approximately 2.2' - good coal at bottom of core.
1	138	3:13	- started coring at 138 (small barrel?)
2	139	3:14	
3	140	3:15	- cored fast to 3' - probably 2'
4	141	3:18	piece of big core left in hole from
5	142	3:23	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
T.J.M.

FOOT	DEPTH	TIME	
2	147	10:48	Started with big barrel - hard
3	148	10:55	drilling - chattering - zones of 2
4	149	11:01	or 3 inches.
5	150	11:07	
6	151	11:14	
7	152	11:22	Started with big barrel - hard
8	153		drilling - chattering - zones of 2
9	154	11:37	or 3 inches.
10	155	11:45	
11	156	11:53	
11.5	156.5	11:57	Stopped - pulled core - recovered approximately 9.3' - whole core!!

4/24			put on small barrel
M.A.S.			
FOOT	DEPTH	TIME	
4	154	12:55	
5	155	12:57	
6	156	1:02	
7	157	1:07	
8	158		
9	159		Much discussion about how deep is
10	160	?	hole! Pulled barrel - recovered
11	161	?	approximately 7' of core 156 + 7 = 162.
12	162	?	Mel reamed to 162 +/- with roller.
2	162	4:11	Started coring with big barrel @ 162'.
3	163	4:24	
4	164	4:40	
5	165	4:55	
6	166	5:10	
7	167	5:26	Stopped coring - 5:44 cable broke
8	168	5:40	6:15 broken cable taken out of
			system - pulled barrel NO CORE 162-168.
4/25			Fixed cable - went in with small
T.J.M.			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.
3	168	1:13	11:14 - cored with big barrel - smooth to
4	169	1:25	3.5 - chatter and quiet after that
5	170	1:36	(alternating) hard and soft zones
6	171	1:48	coal pieces at 172-172.5 (lower
7	172	2:02	sibley)? Stopped - pulled barrel -
8	173	2:14	recovered 5.3' of core with lower
9	174	2:30	sibley at bottom of core - lost
10	175	2:48	lower part of coal and underclay.
11	176	3:06	Put in small barrel - plugged it - quit for day.
4/26			
T.J.M.			
7	174	8:50	Put on small barrel to 174' - went
8	175	8:51	down fast to approximately 175.5
9	176	8:54	then slower.
10	177	9:00	
11	178	9:06	Drill smooth and quiet.
12	179	9:11	Drills smooth and quiet; shale.
13	180	9:18	Drills smooth and quiet; shale.
14	181	9:24	Drills smooth and quiet; shale.
15	182	9:28	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
5		2:16	coring
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 T.J.M.			Reamed to 218 (6 3/4 roller) - put on big barrel - started coring at 10:21.
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
6	253	12:49	feet) to try to recover more core
7	254	12:58	from the partial recovery from 243.5
8	255	1:04	to 252.5.
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
8	248	10:15	coring at 10:14 - new bit on big barrel.
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
6	256	11:37	stem & barrel - 5' - 8'
7	257	11:44	Pulldown on 9' - 10'
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
7	287	10:43	SH	286 - samples only no core - black and
8	288	10:49	SH	gray shale down to 291.5 not much
9	289	10:59	SH	pressure on pulldow very little cuttings.
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.

(0)

Test Hole KU Fish Ponds #3

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

T 13S - R 19E - 02 DAB - El 922.

4-10-85

4-10-85 Tom

0-33' Drilled with 10" roller bit - samples collected - no cores. - upper ~~part~~ of Holt weathered Lawrence shale - lower - gray shale calcareous - hard. Hole drilled to 33' and 8" PVC surface casing? 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

MAS

4-12-85	0-1	0 - 31.5		Drilled with 10" bit - 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 "	hard zone at 36.5
	6-7	36.5-37	4 "	
	7-8	37-38	8	
	8-9	38-39	9	- mud Turned very dark -
		39-40	9	
		40-41	8	
		41-42	10	~~[illegible]~~ core recovery ≅ 3' - measured depth of Hole 35' - went back in + recovered ~3 more feet - meas. Depth = 38' - Reamed to 37½' with 6¾ bit. Started coring @ 38' ~~stopped at 43.5~~ with small bit - stopped at 43½
		8		
~~4-15-85~~		38-43½	30	
4-15-85		43-44½	10	started at ~10AM - small barrel
		44.5-47.5	21	hard layer @ 47
				" " @ 48 - 48.4
P.A.M.		47.5 - 50	42	" " @ 49.5 - 49.7
		50 - 51	6	
		51 - 52	6	Pulled barrel / To retrieve Core - reamed from 38 to 52 with 6¾"
		52 - 59	50	started coring with large barrel / Pulled barrel - <u>no core</u> -

4-15 (cont)
Rachat/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 - Taped measured to 49' (barrel was down to 62') - got 1' of Core from 52'-62' 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 53 to 63' (recovered ~ 80%) - 2 boxes marked 53' To 63' - Boxes 1 & 2 of 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	-
69-69⅔	14

- stopped to clean plugged barrel - Core recovery?

Reamed to 70.5 with 6 3/4 Roller
Started 4" barrel a 70.5

70.5 - 72 -

72 - 73 14.5

73 - 74 14
74 - 75 18
75 - 76 -
76 - 77 -

73'-77' Took 45' to drill

77 - 77.5

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

4-17
PAM

8:00 Am started coring with small barrel

76.5 - 81.5 45
81.5 - 83.6 30

began at 76.5' - cored to 83.6 by 9:15
Recovered ____?

Reamed to 83.0 with Roller by 11:00 -

83 - 89.4

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 ____?

4-18
P.K. Chaffee

9:22 - started reaming - went to 93' @ 9:35
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	← mud Press. 100 psi - Color change in foam on mud Pit (dark gray To black) 102-103
5	104	11:12	
6	105	11:40	← mud pressure 140 psi - Black foam on Pit. Pressure dropped back To 100psi - Fine black film on PiT - Pull down chain loose -
7	106	12:00	
7.7	106.7	12:17	
	Stopped		

106' - mud Press. 100psi - Small amt Black Scum on PiT - Pull down chain loose

Recovered ~ 5' core (shale + mud). Core 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 mol K's notes

Started coring @ 106.7

Foot	Depth	Time
4.2	106.7	1:56
10	[illegible]	2:23
10½		
11		3:00
11½		3:28
12		3:44
12½	115.0	4:13

4:13 - pulled barrel - Full - Drilled To ~116 - but didn't pull all of Core - Recovered ~9' - some Haskell Ls in Bottom -

4-22
Thu

started coring ~11:13 am w/ small barrell in Haskell Ls

Foot	Depth	Time	
7.7	116	11:13	
8.7	117	11:25	
9.0	117.3	11:32	- Drill quarter quicker - 13 Ham & Haskell
~~11.0~~	~119	11:38	- much chatter @ 119
12.0	120	11:40	
13.0	121	11:43	121 Top of sandstone? - smoother sandstone
14.0	122	11:45	drilling - no chatter - fast drilling foot
15.0	123	11:47	
15.3	~~123.6~~	11:48	- stopped - pulled Core - recovered 8'
~~18~~	~~119~~		

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	5.5 chattering slightly
6.0		2:43	5.8 " more
7.0		2:52	6.5 smoother 5.5-6.5 harder
8.0		3:00	
9.0		3:09	9.0 Harder Drilling
~~9.3~~ 9.0	129	3:14	stopped Drilling to pull Core recovered ___?

JED
+
1PAM.

Foot	Depth	Time	
6½	127	3:48	3:48 started coring w/small barrel
7			
7½			
8			
8½			
9		3:56	
9½			
10		4:00	
10½			
11		4:07	sprung leak (last) before 11½ - stopped at 4:20 (= 11 ¾) 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 - quit for day - get rest out tomorrow -
11½	132	4:14 Break	
~11¾		4:28	

4-23

tfm

Foot	Depth	Time	
1.4	131	12:53	started coring w/ longer Barrel
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	

4-23 (cont) TJM

Foot	Depth	Time	
8	137.5	2:08	7.5 hard zone - sandstone coming up in cuttings
9	138.5	2:19	
10	139.5	2:28	10.0 harder -
10.5	140	2:33	stopped Drilling - pulled core

recovered 6.5' lost ~2.2'
good coal at bottom of Core
coal?

Foot	Depth	Time	
			-started coring @ 138 (small barrel?)
1	138	3:13	
2	139	3:14	
3	140	3:15	foot? - cored foot to 3' - probably 2' piece of big Core left in hole from last Try.
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	3:48 stopped Drilling - pulled Core

recovered 8' of Core -
Reamed to 147 - End of Day

4-24 TJM

Foot	Depth	Time	
			started with Big Barrel - Hard drilling - chattering - zones of 2 or 3 inches -
2	147	10:48	
3	148	10:55	
4	149	11:01	
5	150	11:07	

4-24 (cont)
TJM

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
~~12~~ 11½	156½	11:57

stopped - pulled core - Recovered ~ 9.3' - Whole Core —!!

4-24 (cont)
MAS

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 ?	

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

Coring with big Barrel

4-24 (Cont) MAS

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

5:44 Cable Broke - 6:15 Broken cable
Tatton out of system - Pulled Barrel
NO Core 162-168

4-25 TJM

Fixed Cable - went in with small barrel to Try to get yesterday's Core - started @ 162' cored to 166' + plugged bit - Pulled barrel and cleaned 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	Cored with big barrel - smooth to 3½ - chatter
8	173	2:14	and quiet after that (alternating hard & soft zones
9	174	2:30	hard and soft zones
10	175	2:48	coal pieces @ 172-172½ (lower Sibley)?
11	176	3:06	- Stopped - pulled barrel - recovered 5.3' of Core with lower Sibley at bottom & Core - lost lower part of Coal and underclay

lost underclay

Put in small barrel - plugged it — quit for day.

4-26 TJM

7	174	8:50	put on small barrel to 174' - went down
8	175	8:51	fast to ~175½ Then slower
9	176	8:54	
10	177	9:00	
11	178	9:06	Drill smooth & quiet

4-26 (cont)	Foot	Depth	Time	
Tfm	12	179	9:11	Drills smooth + quiet - Thin 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
James mccallister

9:43 - 10:30 reamed hole with Roller To 182.5'

2.2	182.5	11:	put on long Barrel
3.0		:23	
4.0		:31	
5		:35	
6		:39	
7		:43	
8		:46	
9		:48	
10		~~:50~~	
11		:50	
12	194.3	11:52	- Stopped coring - pulled barrel -

4-29 (cont)
James
M°Callisten

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

Foot	Depth	Time	
			start coring with small barrel
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	Put small barrel back in - started coring
5		2:16	
7		2:22	
8		2:25	hard zone @ 8.5 - (chatter)
9		2:28	
10		2:30	
11		2:32	
12		2:35	
13.2	210.5	2:38	- pulled barrel - retrieved ~5' core - sandstone w/ minor organic streaks

End of Day

4-30
P.A.M.

started coring @ 10:37 ≅ ~~210'~~ 205' (cor. by PAM

Foot	Depth	Time	
1		10:41	
2		10:44	
3		10:49	chattering @ 1.8'
4		10:53	Slight " Then quiet
5		10:58	quiet
6		11:03	some chattering
7		11:07	" "
8		11:11	" "
9.5		11:13	Cored To 215'? - pulled barrel
			Retrieved _____' core
7.0		12:25	started coring again @ 12:25
10.		12:31	
11		12:46	
			stopped Temporarily @ 11 to try To clear bit -
12		1:05	slow Progress - bit plugged
			stopped coring and pulled out @ 214'
			Samples in bags - core in pieces -
			bags?

5-2
Tm

(6¾ roller)
Reamed to 218 - put on big barrel - started coring @ 10:21

Foot	Depth	Time	
8	218	10:21	Drill chattering - no pulldown pressure - only weight of stem and barrel on bit.
9	219	10:24	Easy smooth Drilling.
10	220	:26	"
11	221	:27	"
12	222	:30	"
13	223	:32	"
14	224	:34	"
15	225	:36	"

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' core of last run. - cored thru that foot (<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

harder @ 6'

stopped drilling @ 9.5

pulled barrel - recovered ~ 3' core - by 3:34pm we succeeded in plugging small barrel and finding a bad thrownout 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	
-1	234	9:13	Coring with big barrel -
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	pulled barrel - retrieved 8'7" of core - Put in 3 boxes - Core is sandstone w/ shale bed in middle. Shale (interclasts) are present in 5.5 - some coal stringers.
~~4~~		~~:56~~	
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 - $\frac{10.5}{1.5}$ / 9.0 (inboard) - recovered ~2.8' core - all 5.5. 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~~ so return was 246-247 ??? material is grey 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 ~~doing~~ putting stem back in ~2:30 pm.

5-6
Thm

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 part 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 pulldown pressure - only (wt) of stem & barrel

pulldown on

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

put big barrel back in to 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 core !!#?
made decision to Core no more - finish hole with 9 7/8" roller. - Take samples every foot.

265	5S	
266	5S	
267	5S & coal	
268	LS	chatter
269	LS	
270	LS	End of stem
271	LS	new stem 3:37
272	LS	↓
273	LS	chatter
↓	all LS	↓
281¼	Sh	quiet at 281¼ - Top of Rocklake shale
285	Sh	Stopped Drilling for day - Shale 4:41

5-7-85 Foot Depth Time Started Drilling with 4¾" bit @ 286

Foot	Depth	Time	
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	291½ harder - chatter - limestone
12	292	:17	(Stanerbs.) chips -
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 Caliper) - looks good quit for day.

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

5-9 No logging - poured concrete ~~pad~~ pad around back -

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

June 03, 85

PERMEABILITY TEST

SITE 13-19-2 DAB
Fishponds #3

SS. sample
SAMPLE # _____

DEPTH INTEVAL 201.5 To 210.5

Sample diameter (D) = ~~5.90~~ 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) = $\frac{\pi}{4} D^2$ = ~~6.47 cm²~~ = 15.55 cm²
Sample volume (V) = $\frac{\pi}{4} D^2 * L$ = 66.169 cm³.
Hydraulic Head (H) = 20.1 cm.

Permeability Data

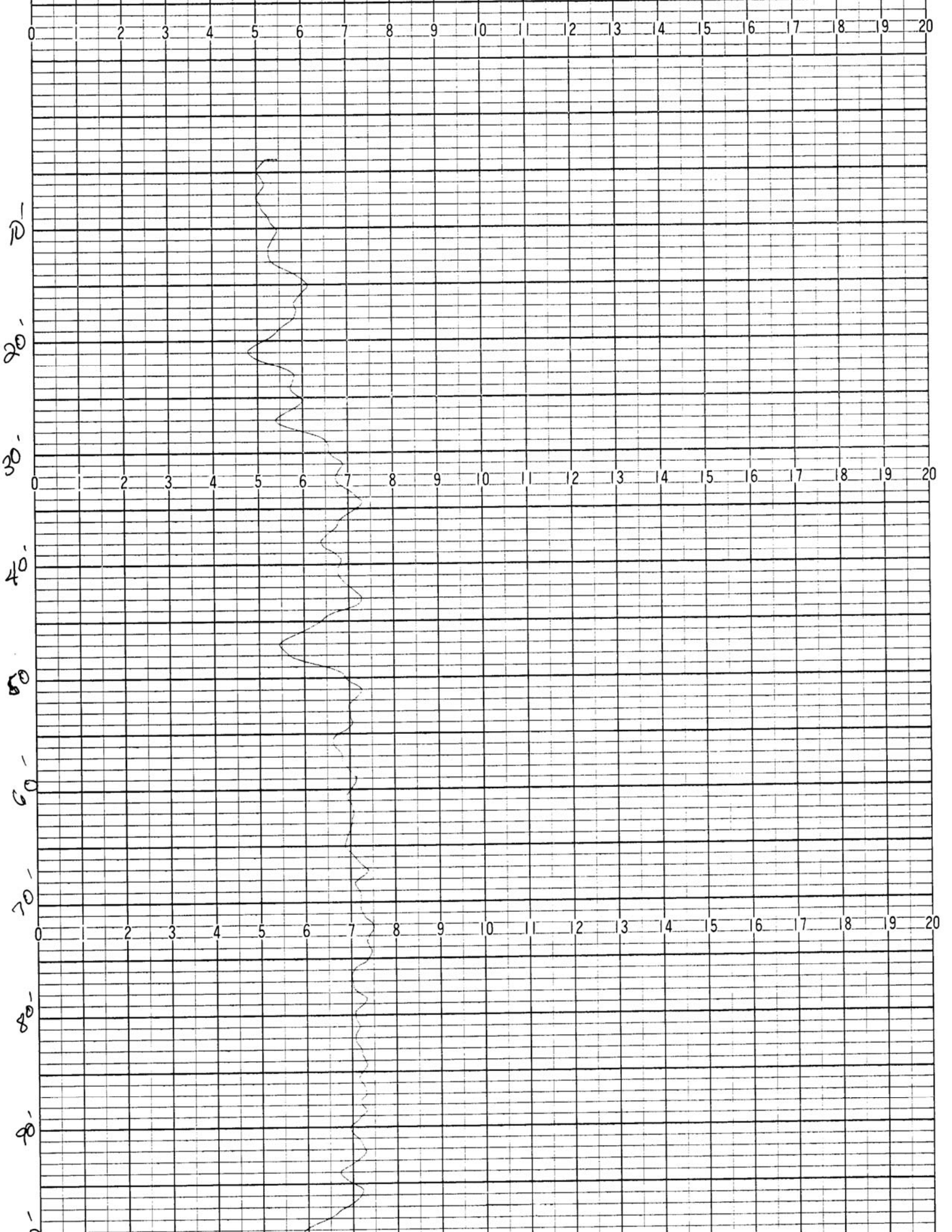
Run #	Time (min)	Volume of Water collected (ml or cm³)	$Q = \frac{\text{vol. of water}}{\text{Time}}$	$K = \frac{Q}{A} * \frac{L}{H}$ (cm/min
1	3'-01"	10	3.33	3.09276 x 10⁻²
2	3'-00"	10	3.33	
3	3'-00"	10	3.33	
4	3'-00"	10	3.33	
5	3'-00"	10	3.33	
6	3'-01"	10	3.33	
7	3'-00"	10	3.33	

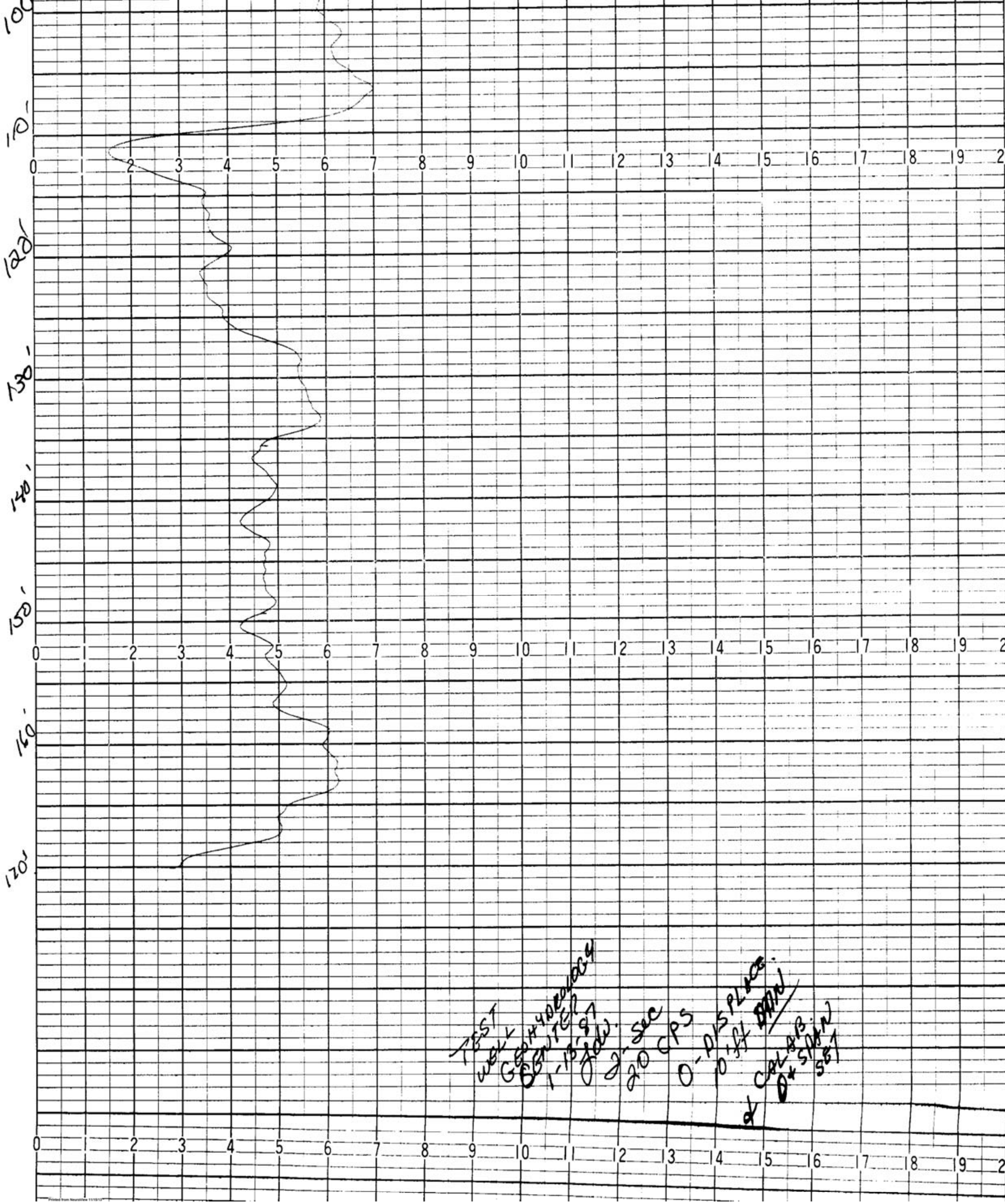
Water Temp = 24°C.

Avg K = $\frac{K_1 + k_2 \cdots + kn}{n}$

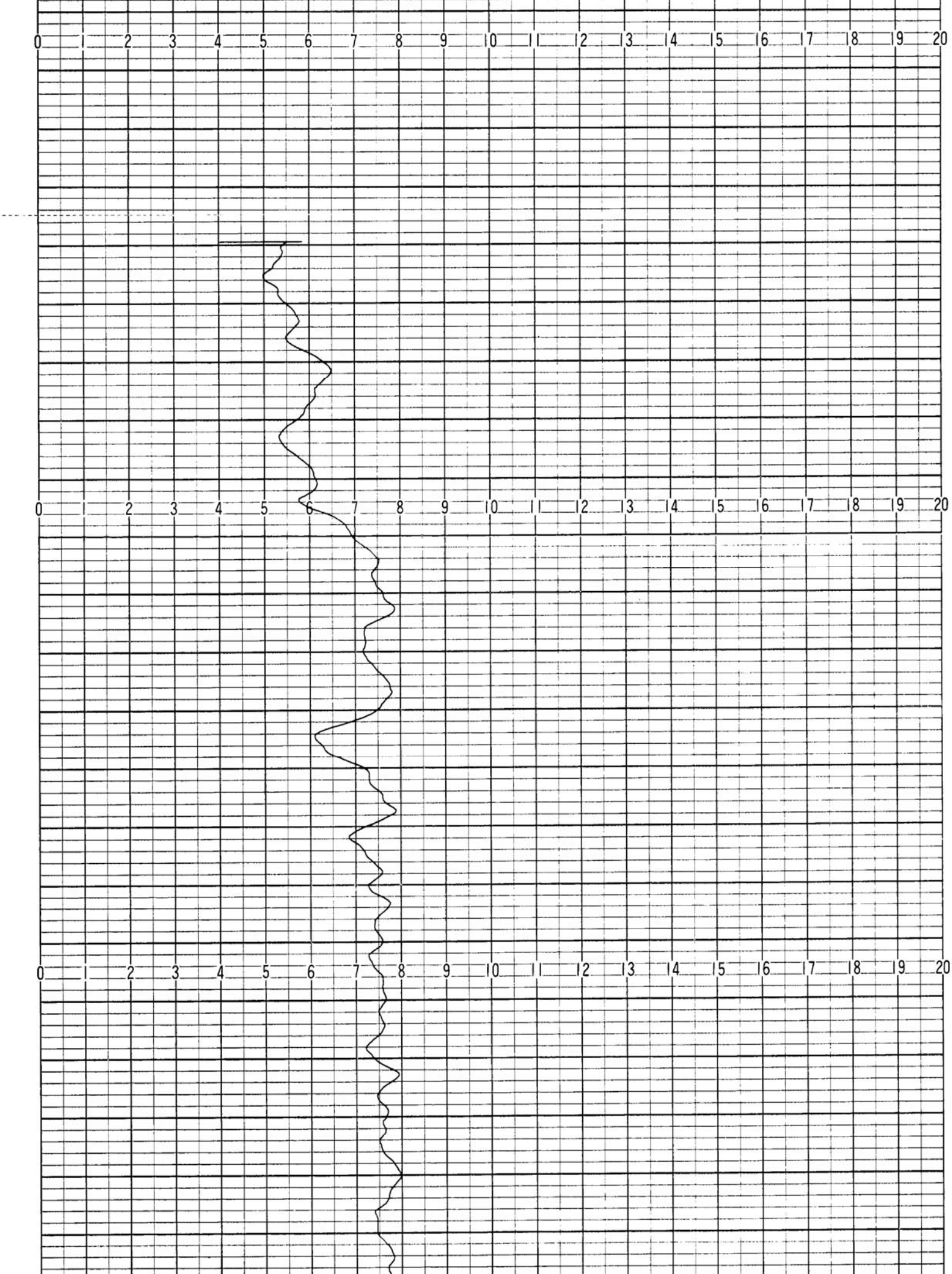
Avg K = 3.09276 x 10⁻² cm/min.
= 5.1546 x 10⁻⁴ cm/sec.
= 1.85 cm/hr = 44.5557 cm/day
= 1.46 ft/day

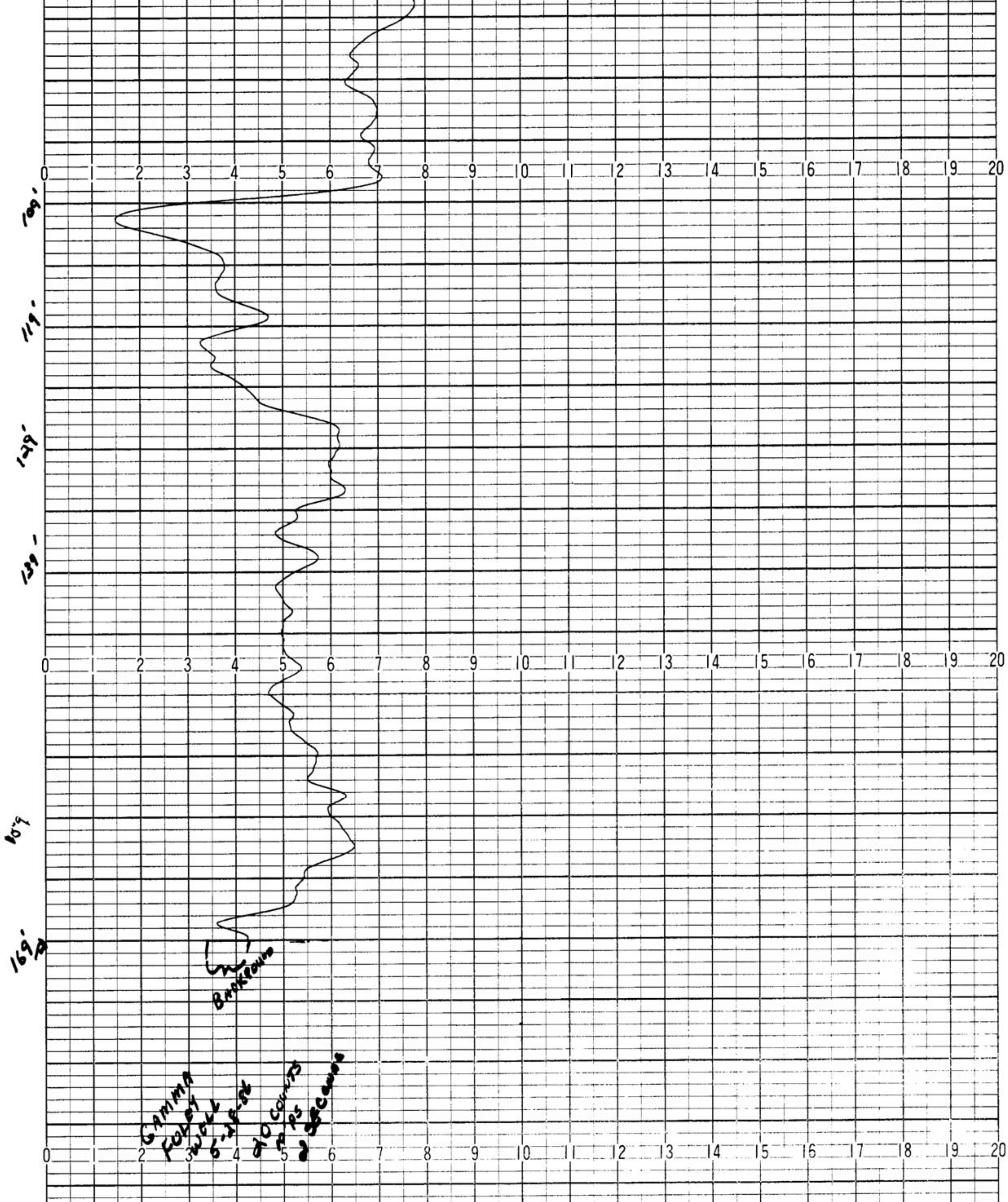
1 cm/day = .2454 gal/day/ft²
44 cm/day = 10.8 gal/day/ft²

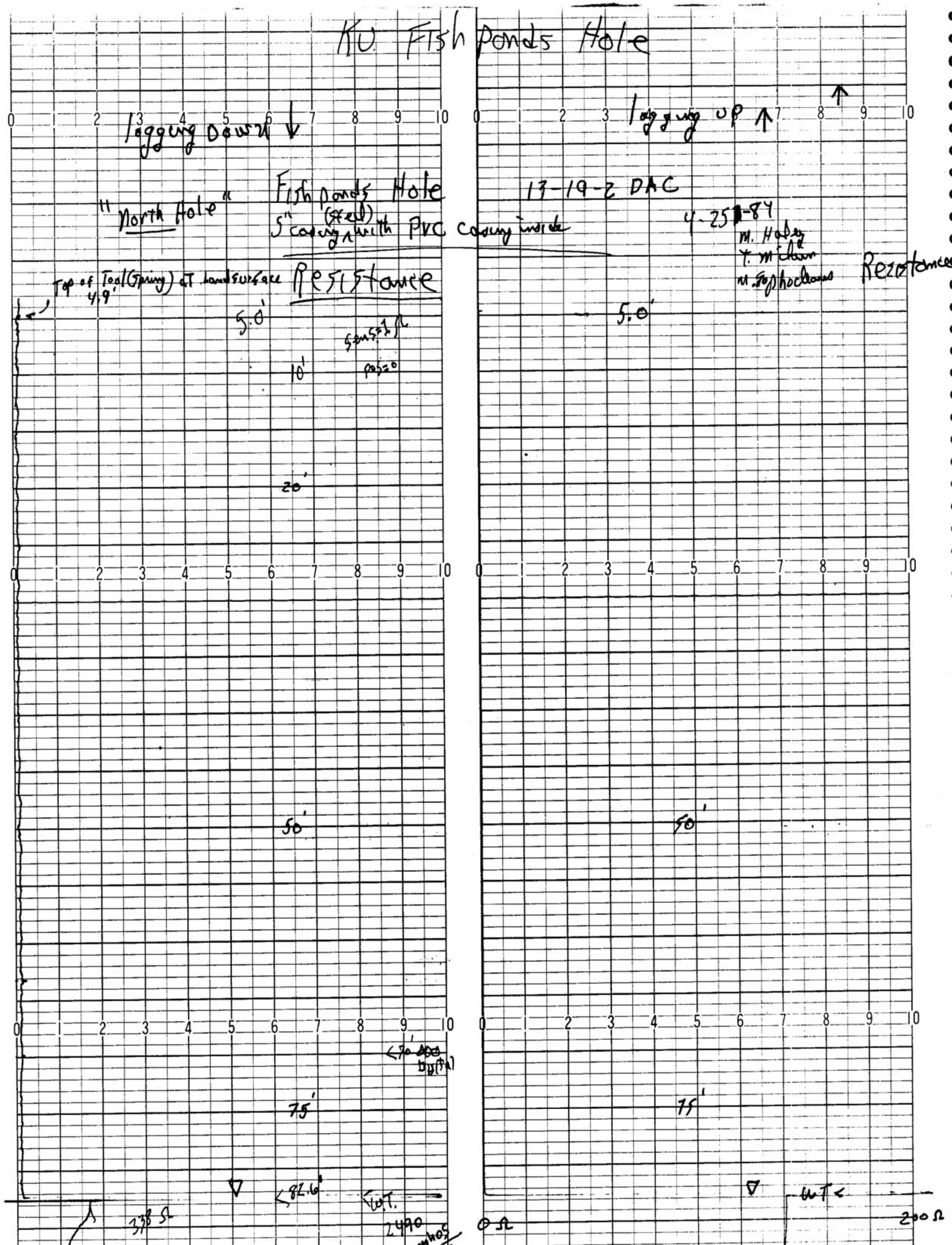

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
10'
20'
30'
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
40'
50'
60'
70'
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
80'
90'

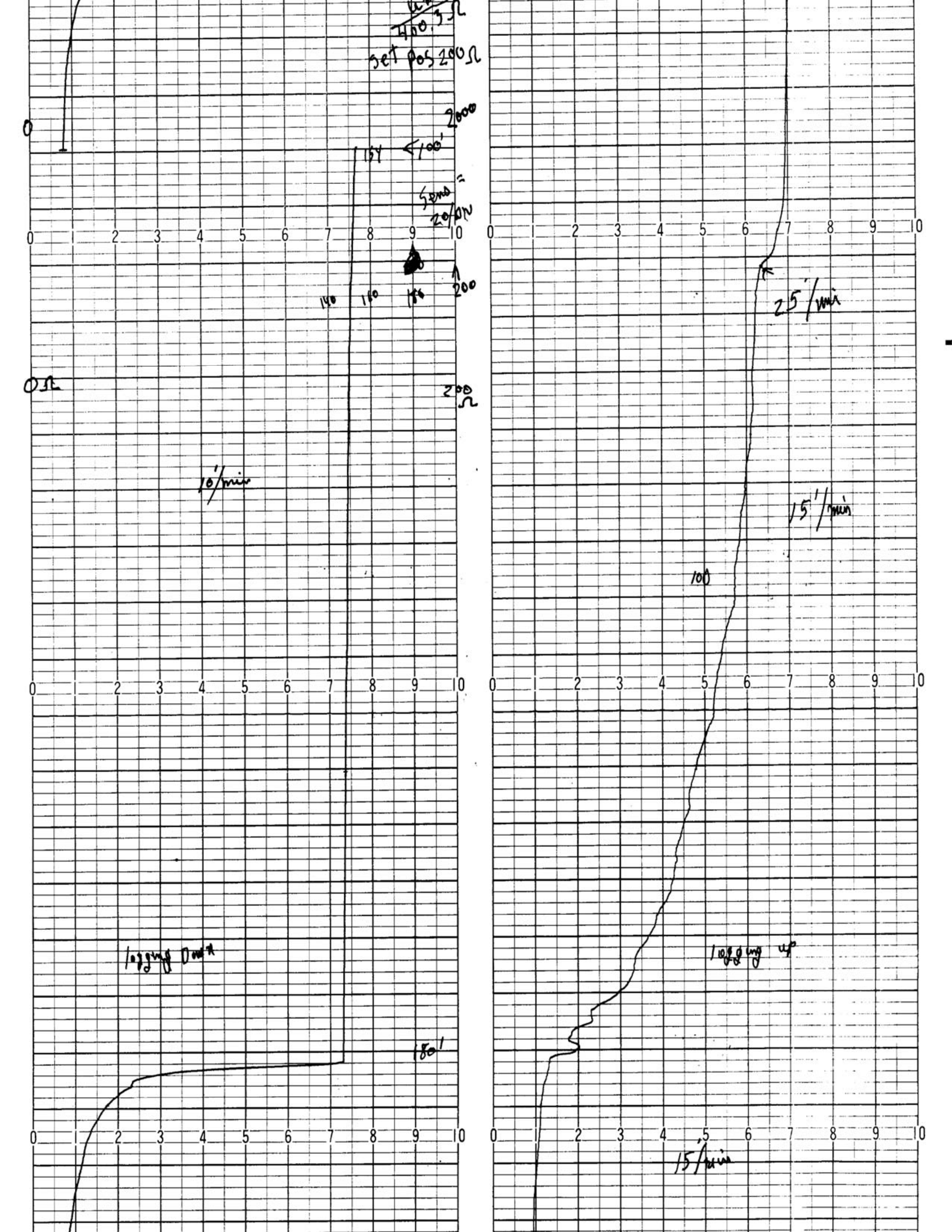


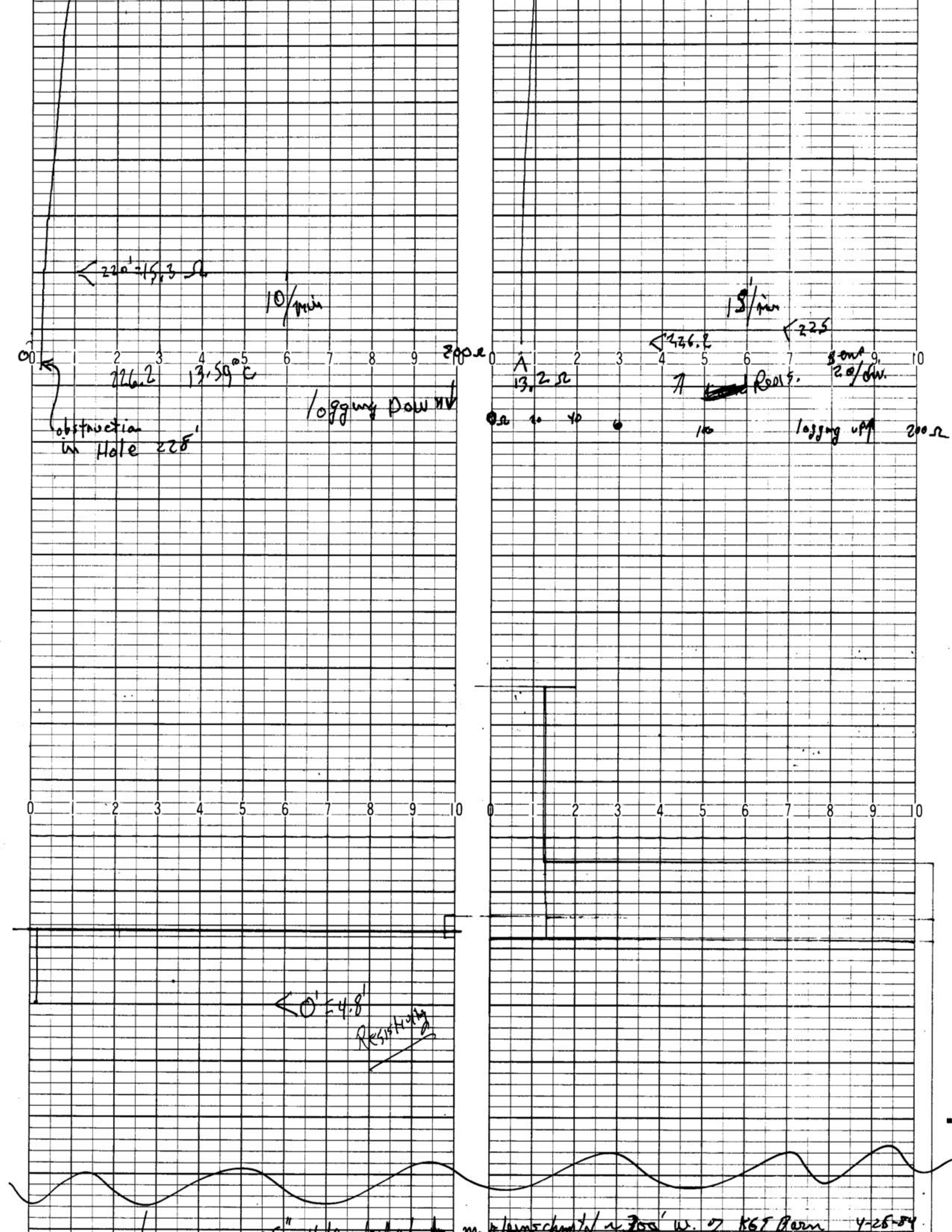
100'
110'
120'
130'
140'
150'
160'
170'
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
TEST WELL
GEOHYDROLOGY
CENTER
2-Sec
20 CPS

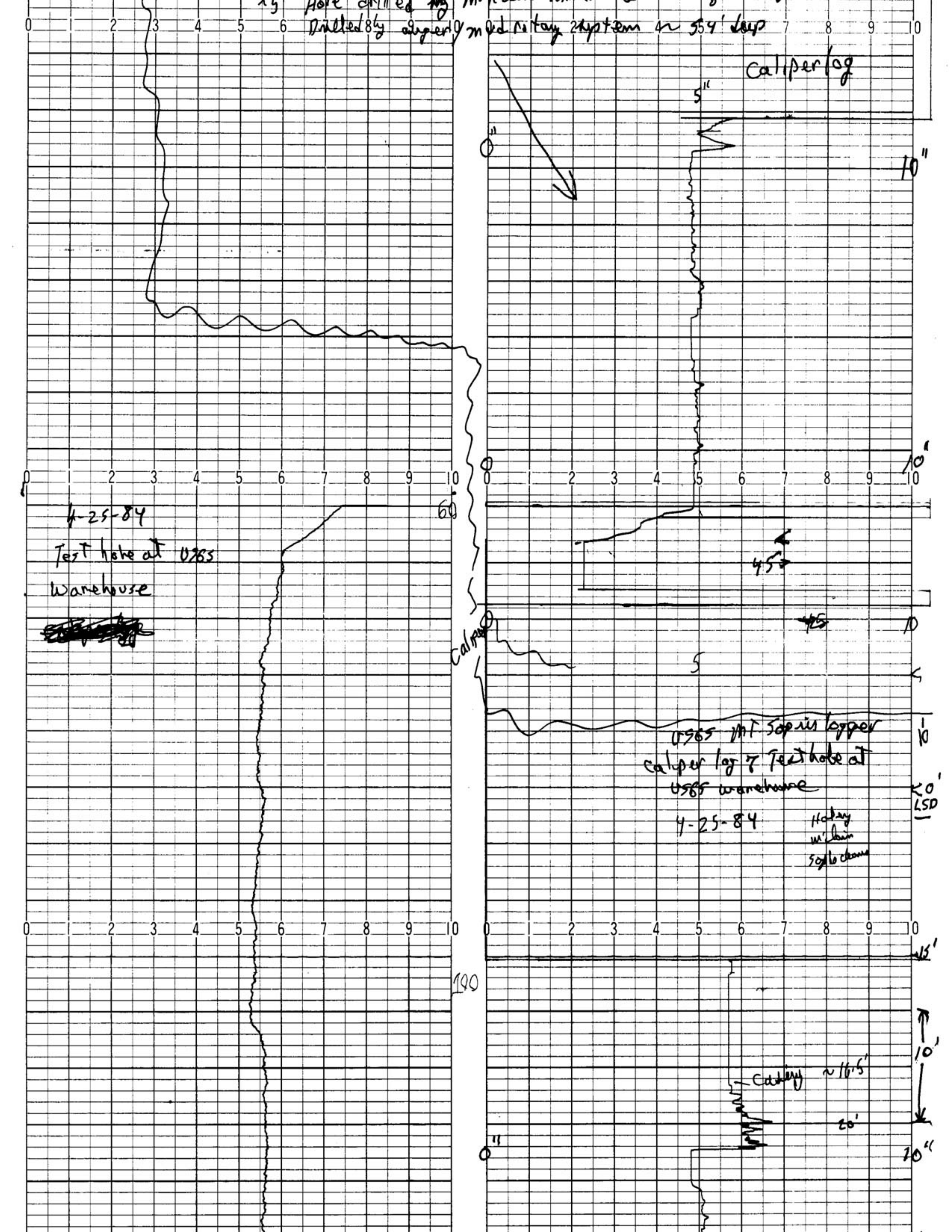

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

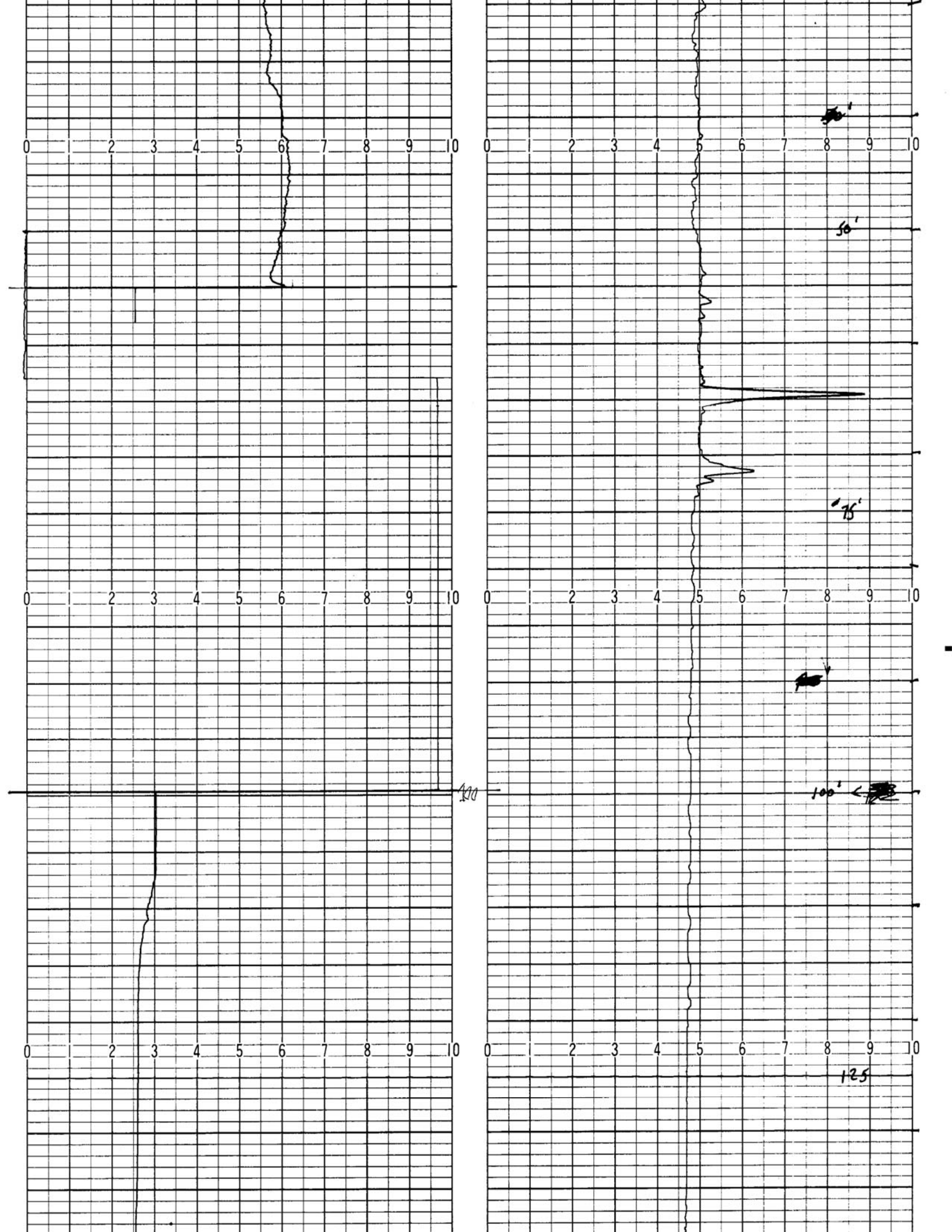

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
109'
119'
129'
139'
169'
BACKGROUND
GAMMA
FOLEY
WELL
6-28-86

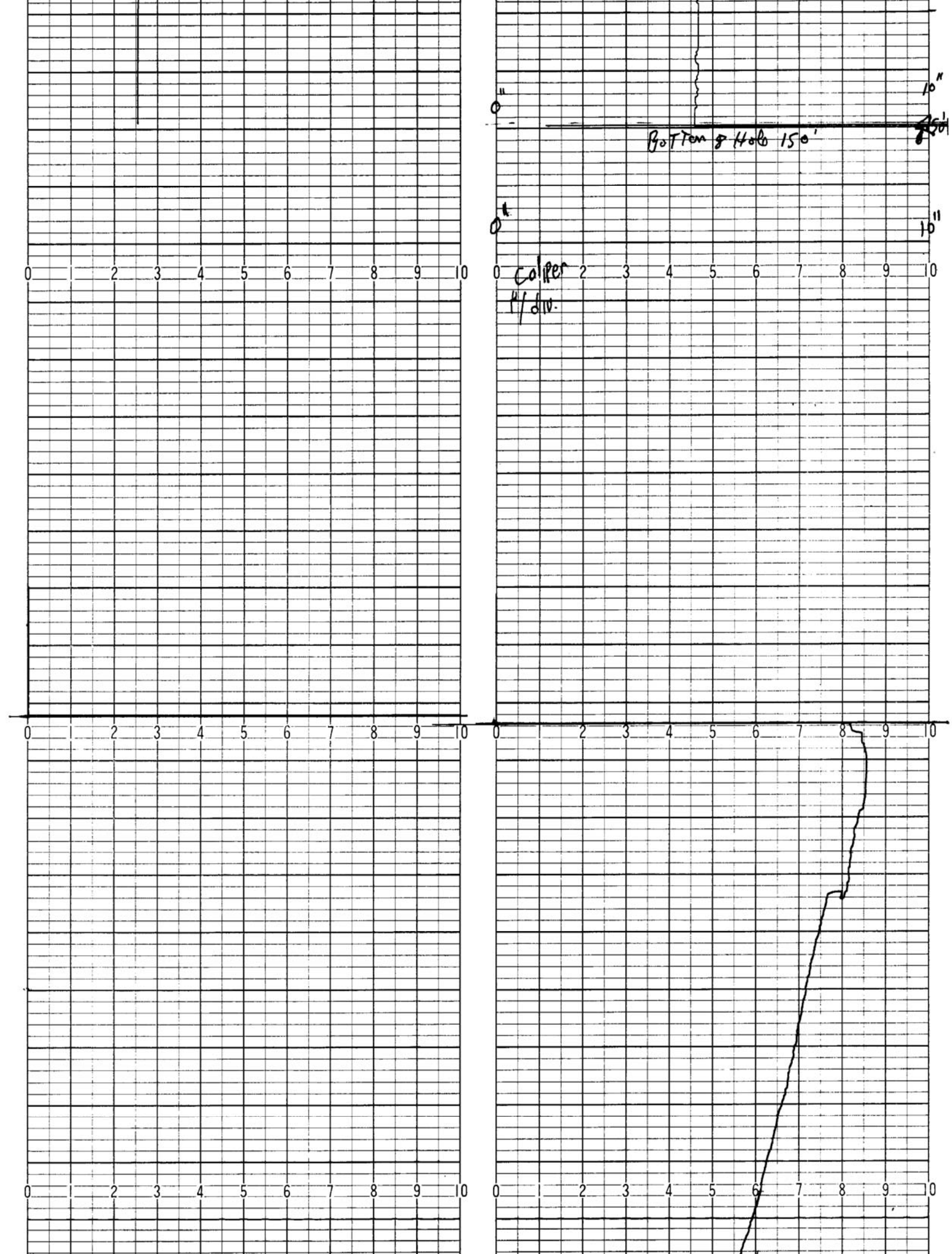

KU Fish ponds Hole
logging down ↓
logging up ↑
"North Hole"
Fish ponds Hole
5" (steel) casing with PVC casing inside
13-19-2 DAC
4-25-87
M. Haley
T. McClain
M. Sophocleous
Resistance
Top of Tool (Spring) at land surface 4.9'
5.0'
sens=1 Ω
pos=0
10'
20'
50'
<70' 400 Digital
75'
<82.6'
W.T.
338 Ω
2490 mhos
0 Ω
200 Ω
0 1 2 3 4 5 6 7 8 9 10

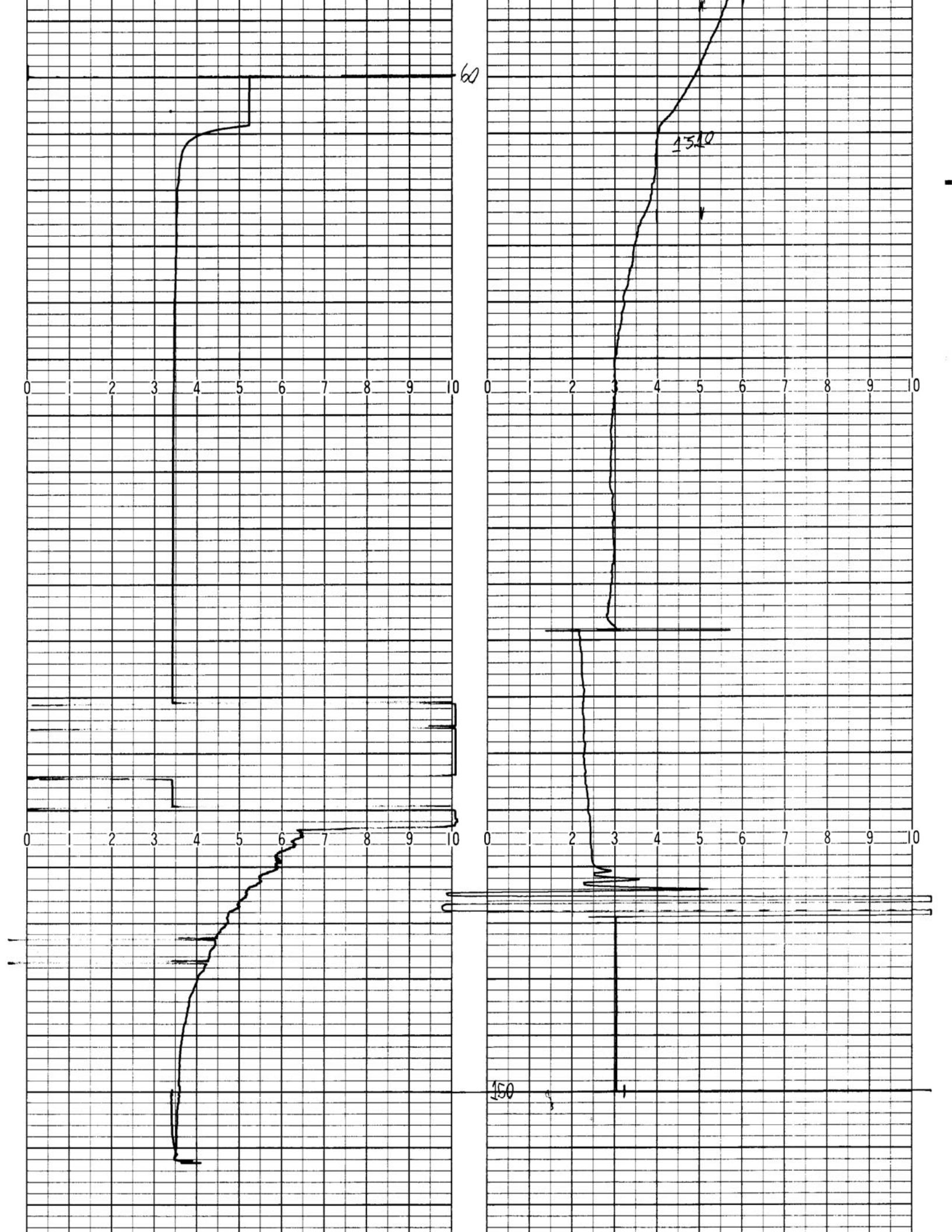

set pos 200Ω
2000
154
<100'
200
140
160
180
0Ω
200 Ω
10'/min
logging Down
180'
25'/min
15'/min
100
logging up
15'/min

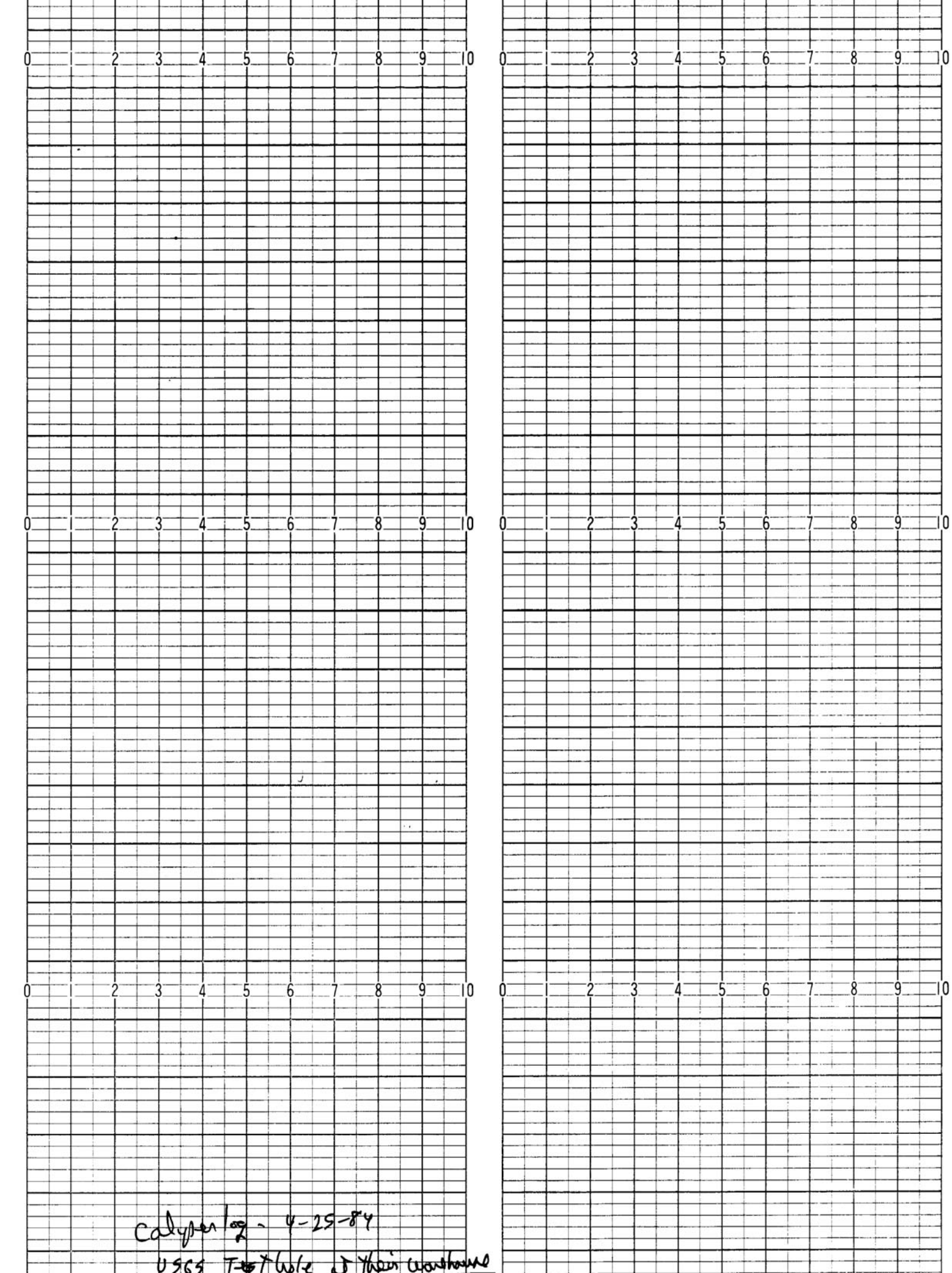

220' = 15.3 Ω
10'/min
0 1 2 3 4 5 6 7 8 9 10
226.2
13.59 °C
200 Ω
logging Down
obstruction in Hole 228'
15'/min
226.2
225
13.2 Ω
Revs.
20/div.
0 Ω
10
logging up
200 Ω
0 1 2 3 4 5 6 7 8 9 10
0' = 4.8'
Resistivity
4-25-84

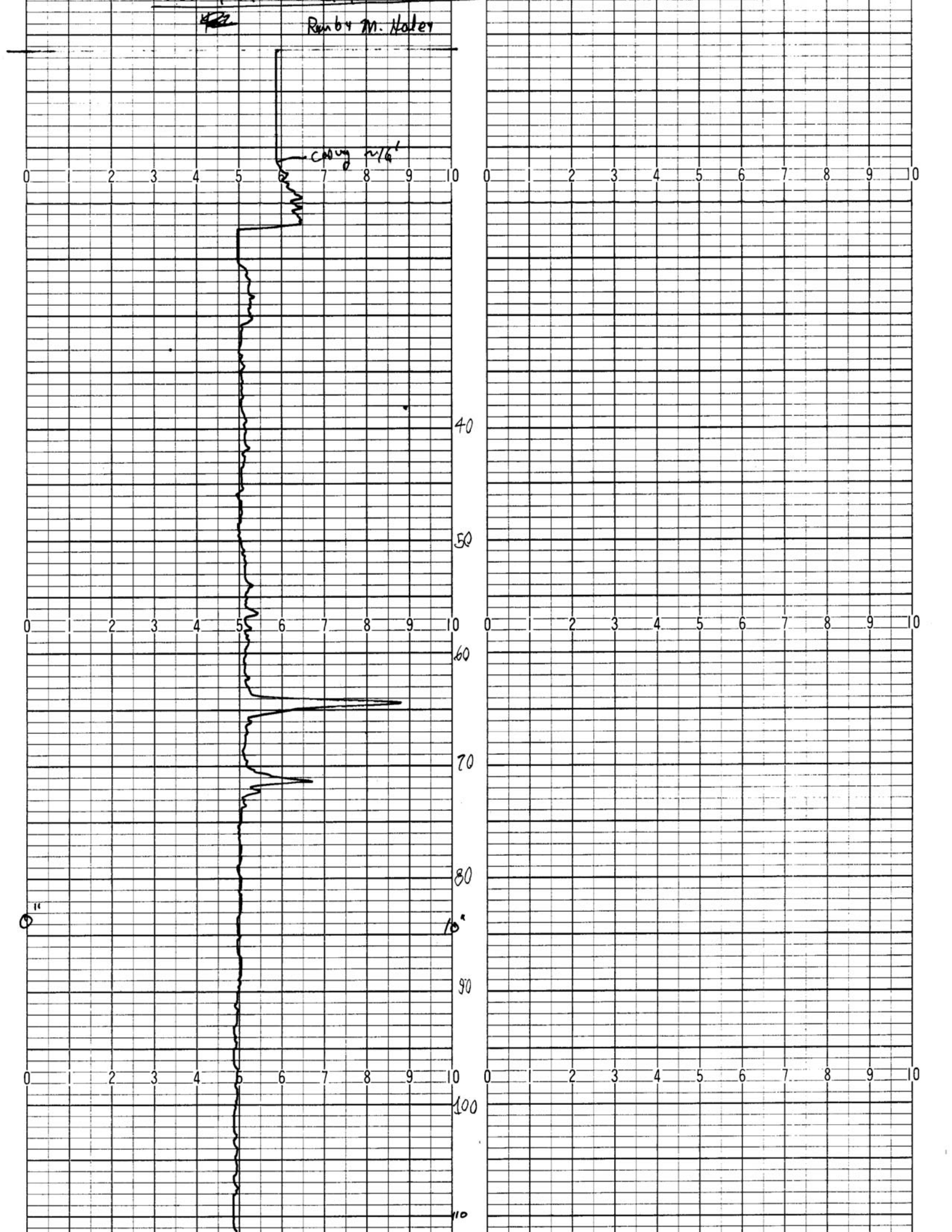

Drilled by auger/mud rotary system to 554' deep
Caliper log
5"
0"
10"
4-25-84
Test hole at USGS
Warehouse
60
Caliper
45
USGS Mt Sopris logger
caliper log of Test hole at
USGS warehouse
4-25-84
0'
LSD
100
15'
10'
Casing ~16.5'
20'

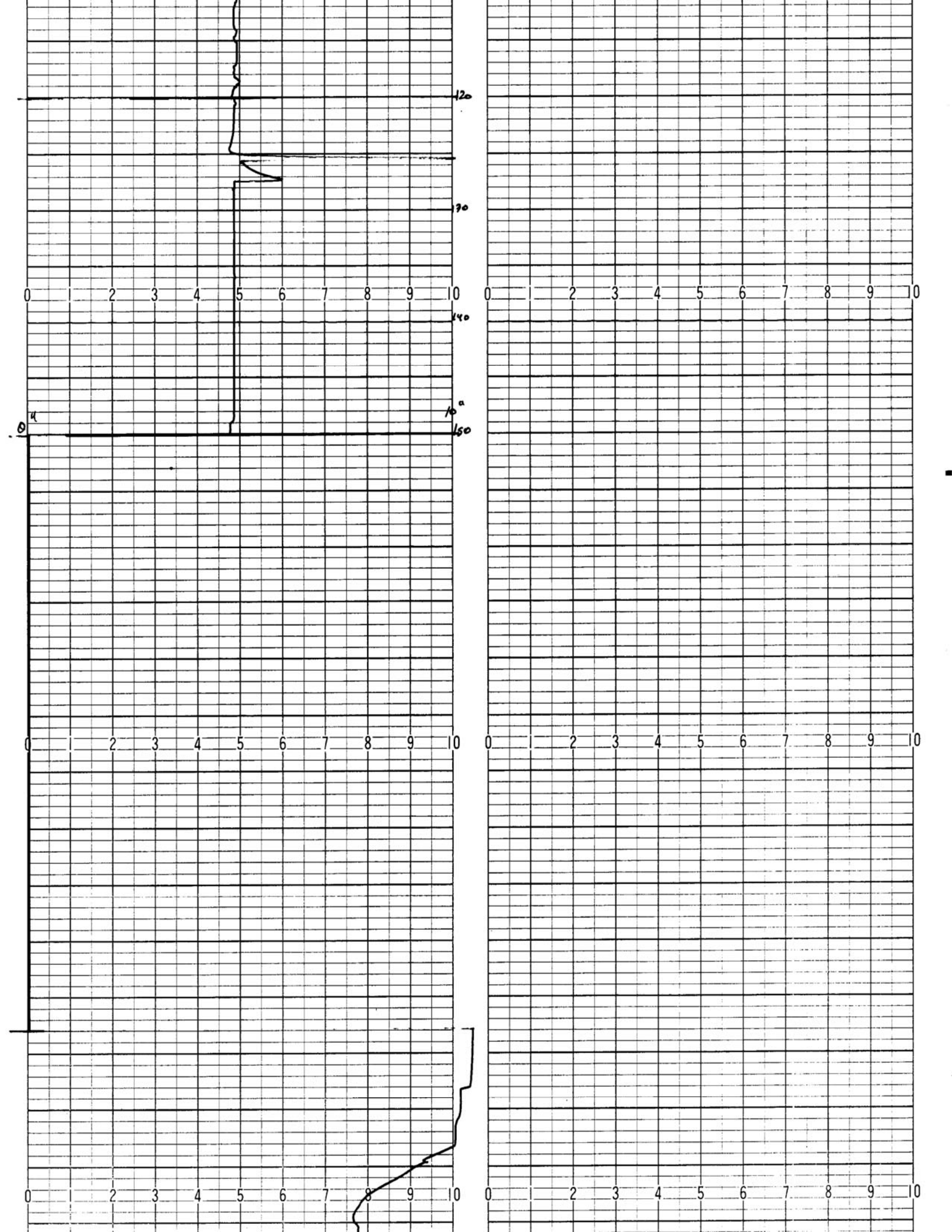

0 1 2 3 4 5 6 7 8 9 10
50'
75'
100'
125

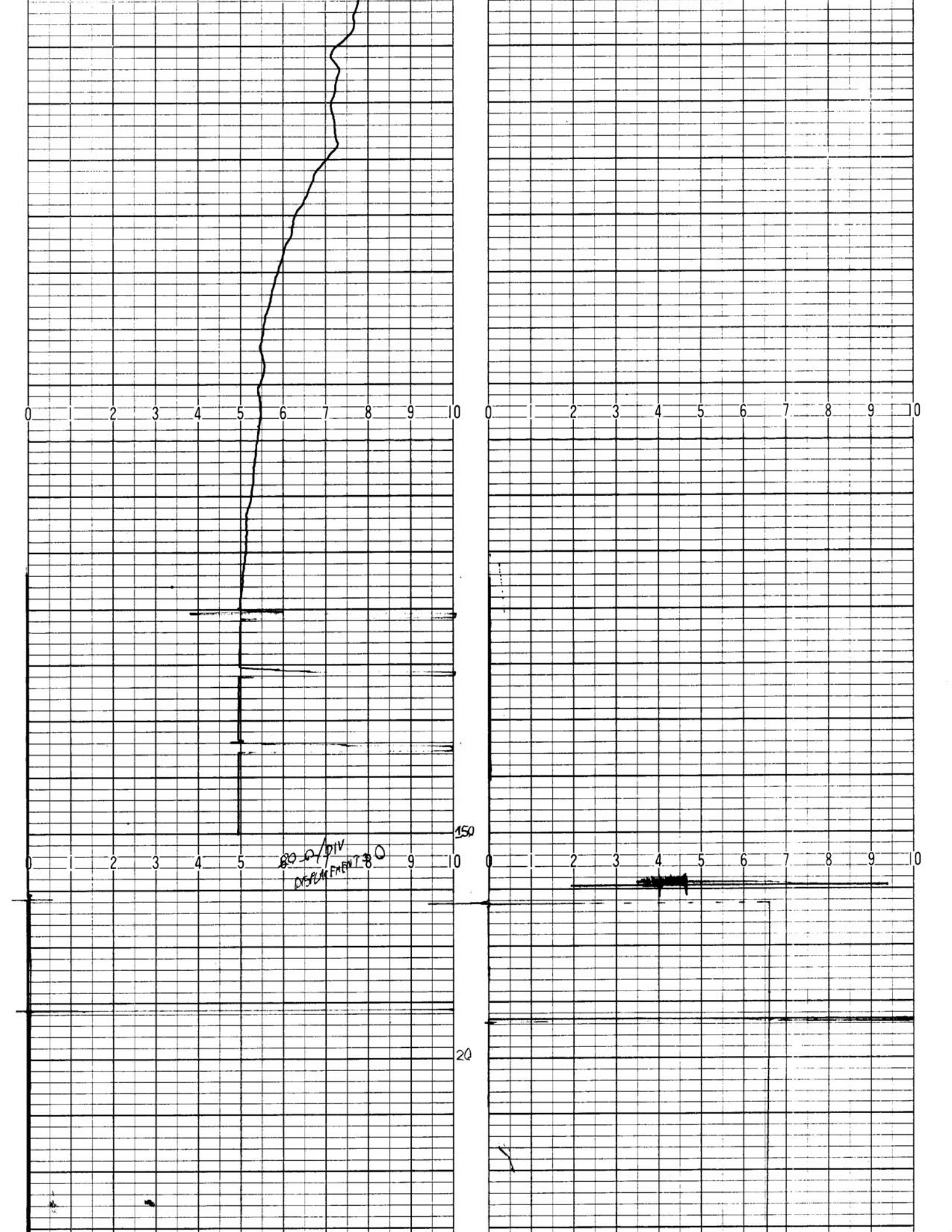

0"
10"
Bottom of Hole 150'
0"
10"
0 1 2 3 4 5 6 7 8 9 10
0 Caliper
1"/div.
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10

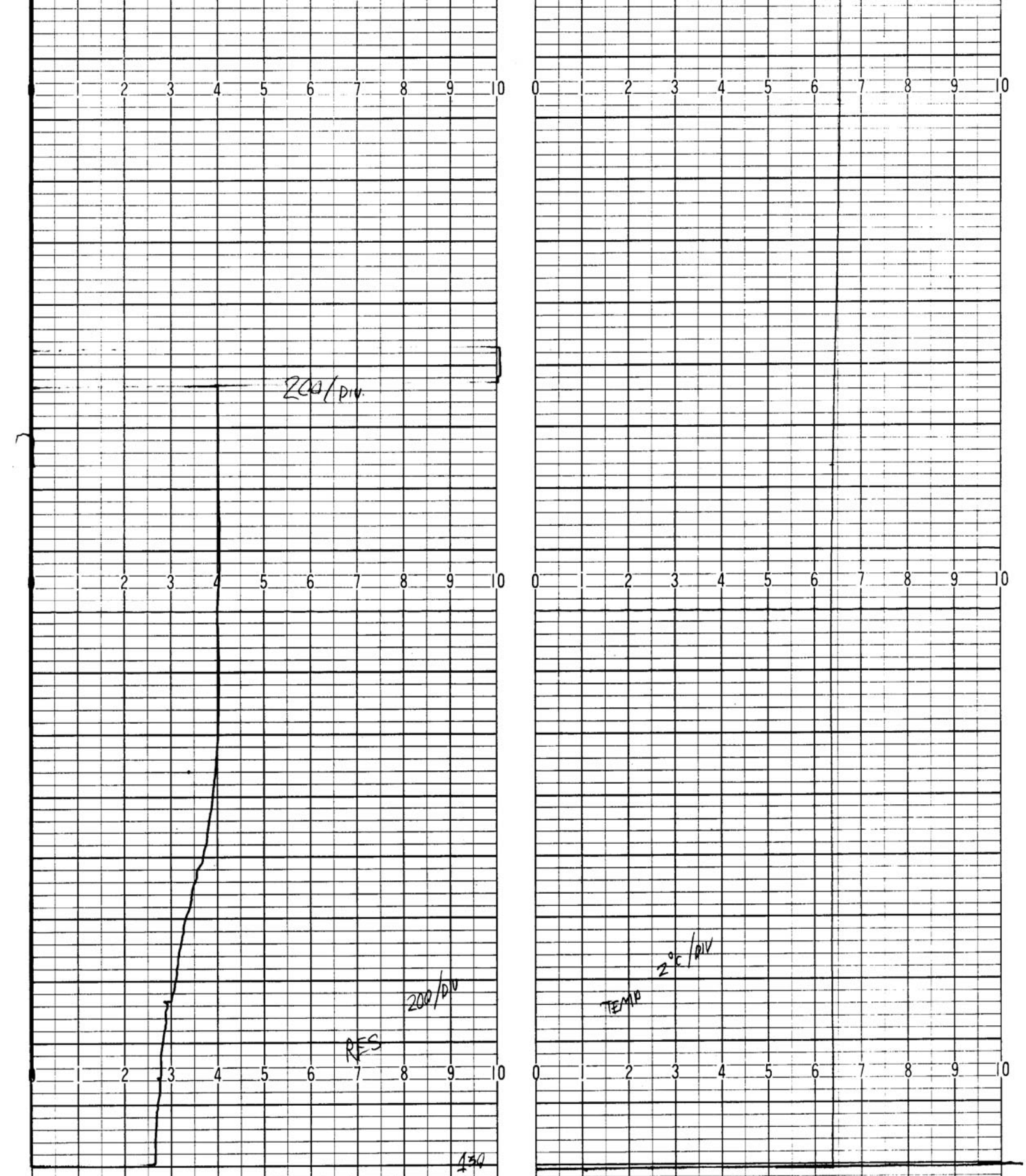

60
1540
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10
150


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
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10
Caliper log - 4-25-84
USGS Test Hole at their warehouse


Ruby M. Haley
casing w/16'
0 1 2 3 4 5 6 7 8 9 10
40
50
60
70
80
90
100
110


120
90
0 1 2 3 4 5 6 7 8 9 10
140
10
150
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
0 1 2 3 4 5 6 7 8 9 10
150
20
0 1 2 3 4 5 6 7 8 9 10
0 1 2 3 4 5 6 7 8 9 10

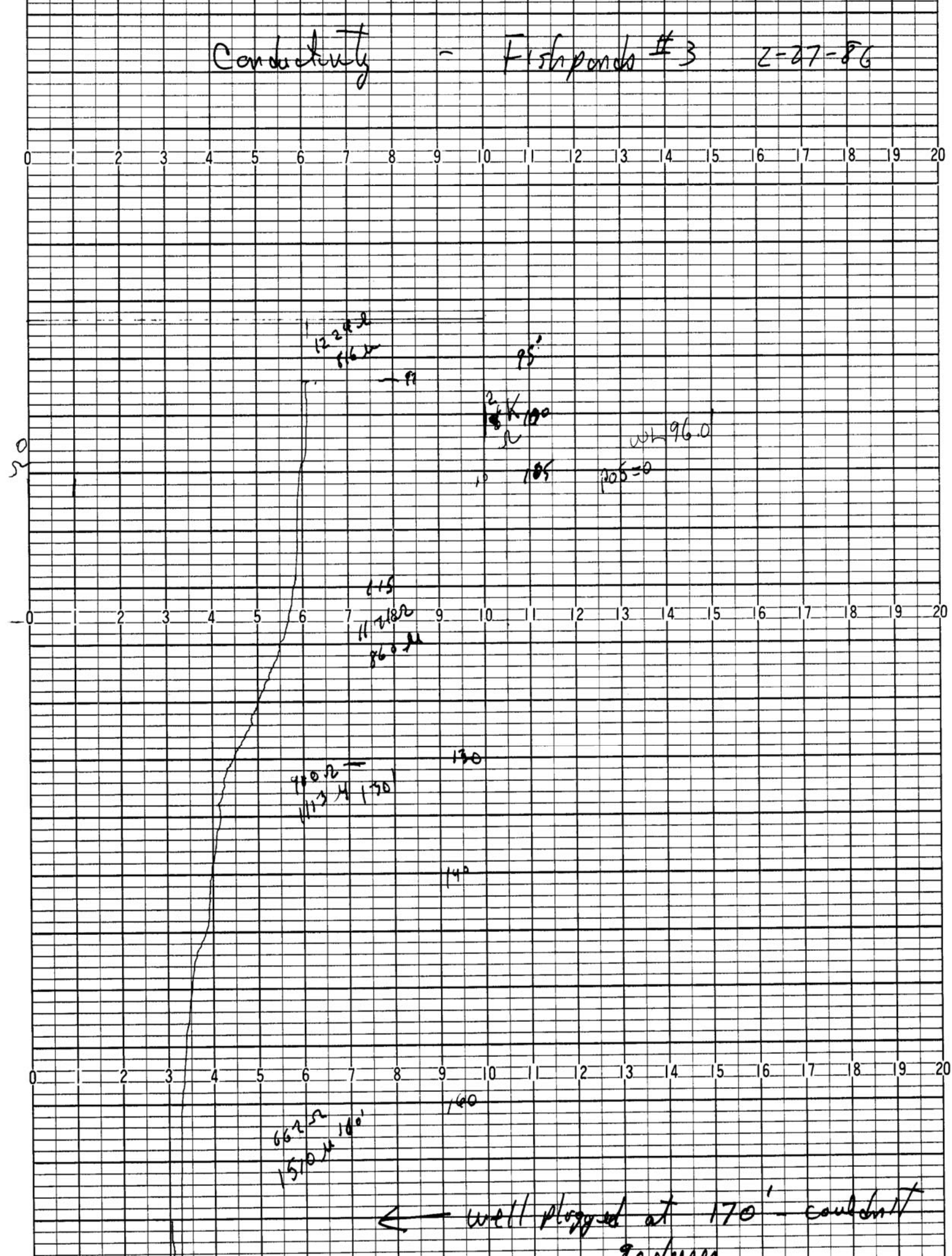


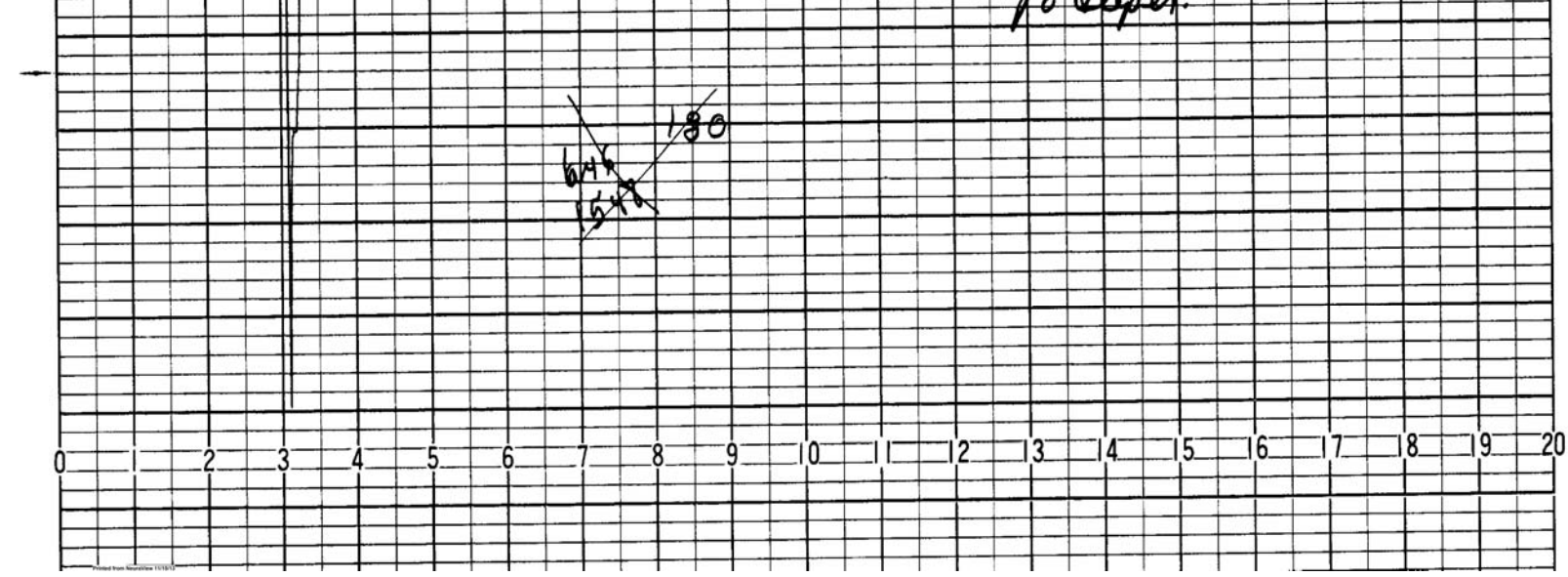
Charts-Inc
P.O. BOX 49

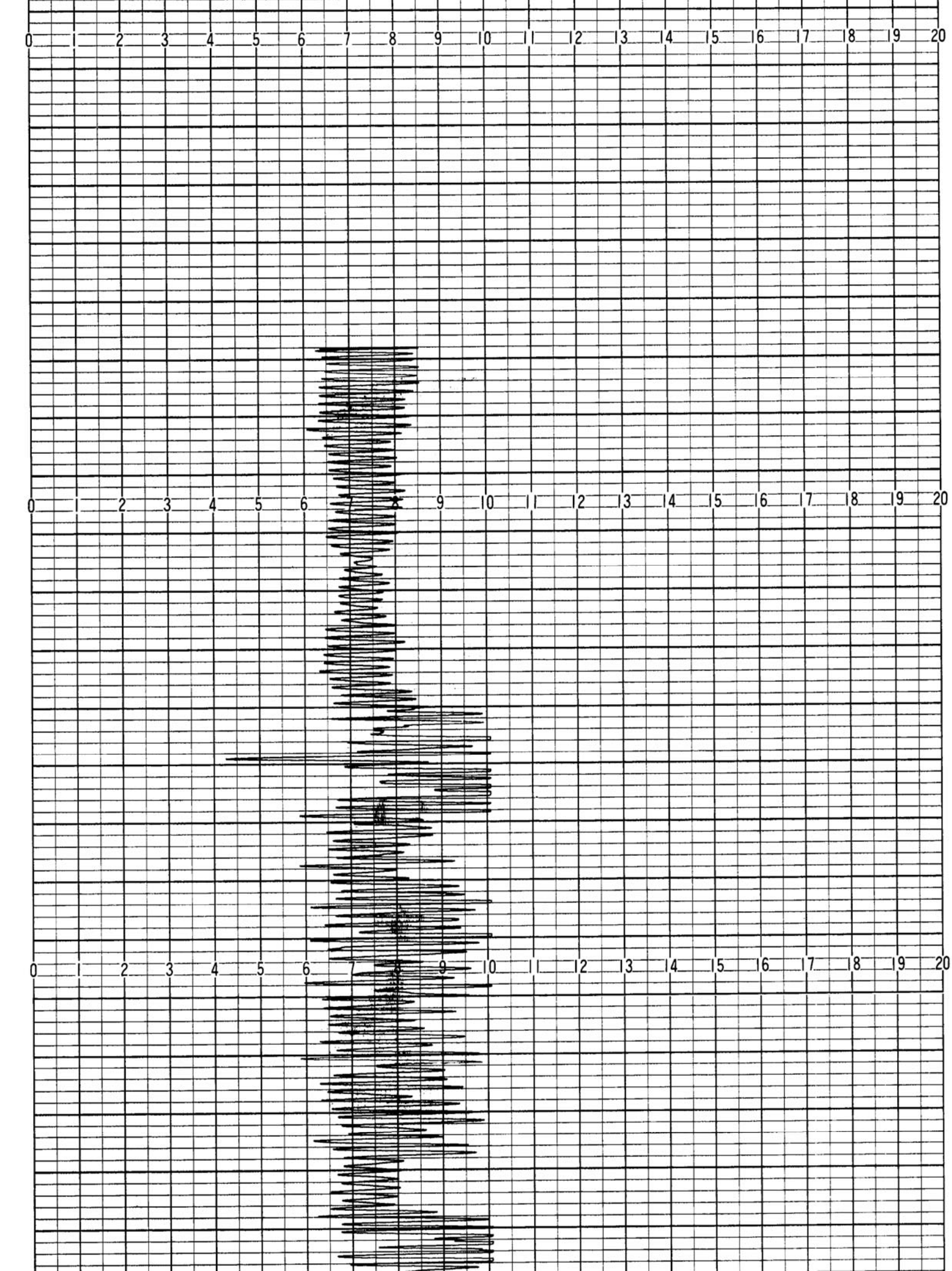
P. O. BOX 49
SUN VALLEY, CA 91352
(213) 767-0068

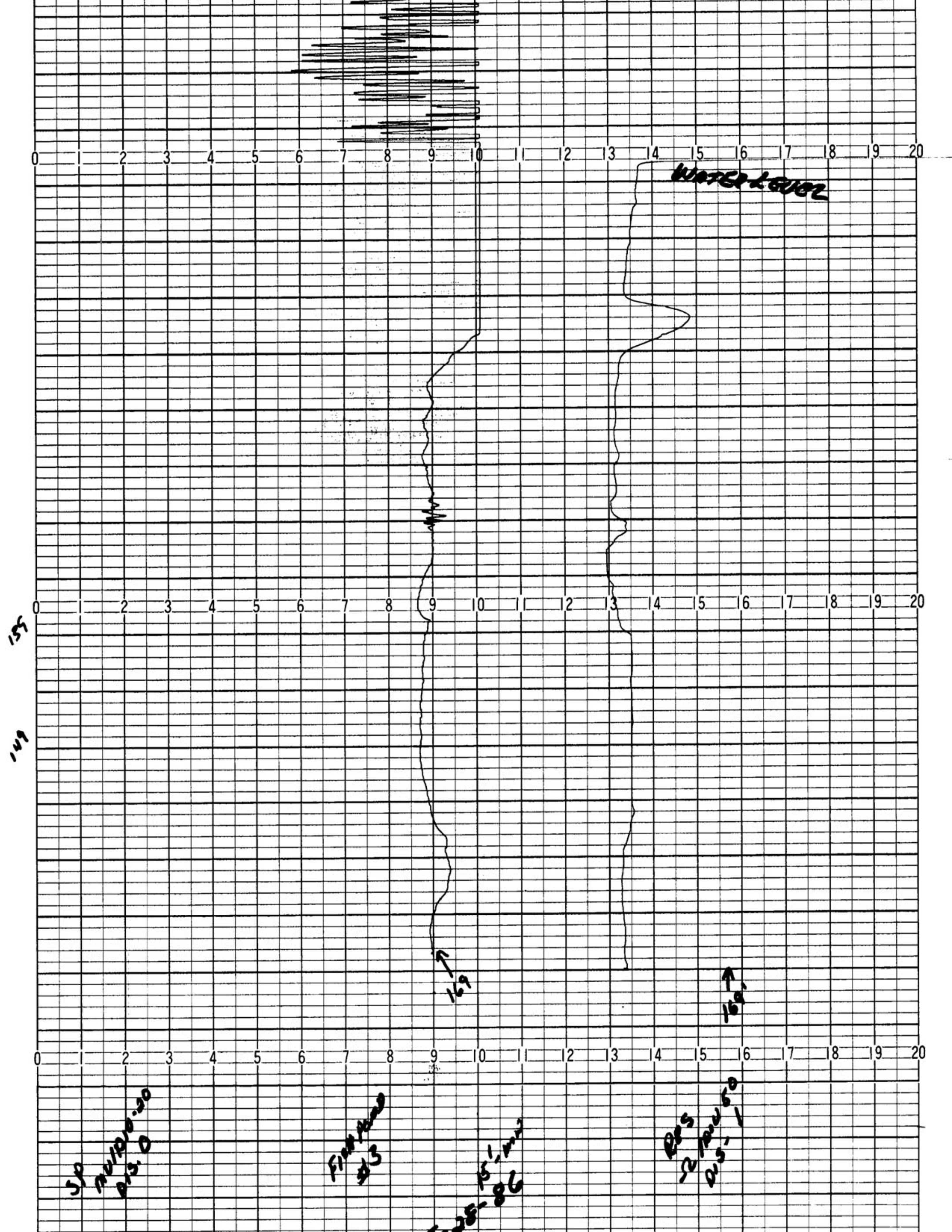
CHART NO. ENG–2

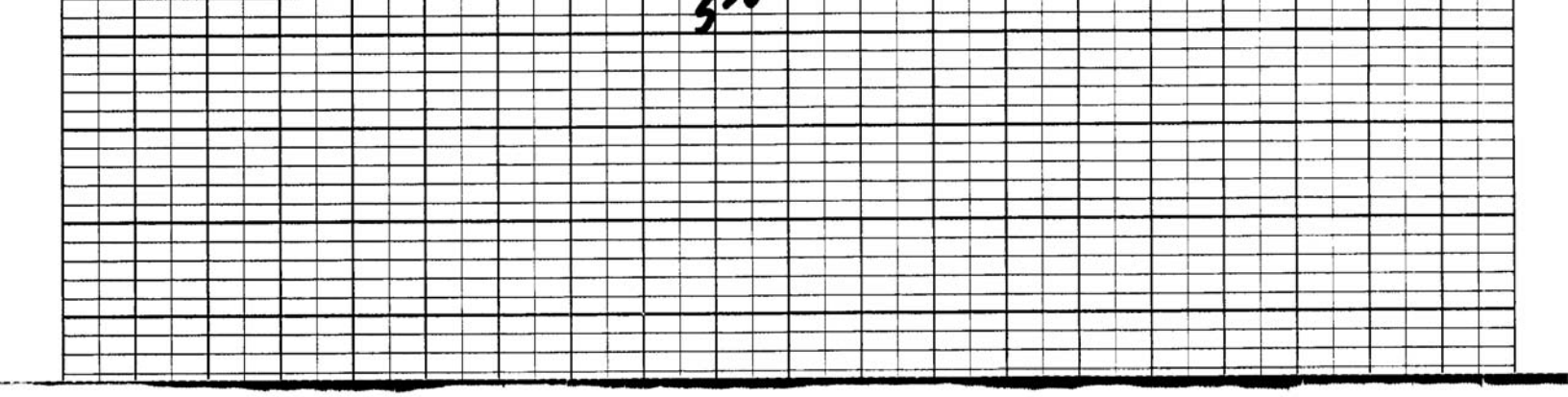
Printed from NauticView 11/10/13


Conductivity - Fishpond #3 2-27-86
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
95°
105
130
140
160
← well plugged at 170' - couldn't

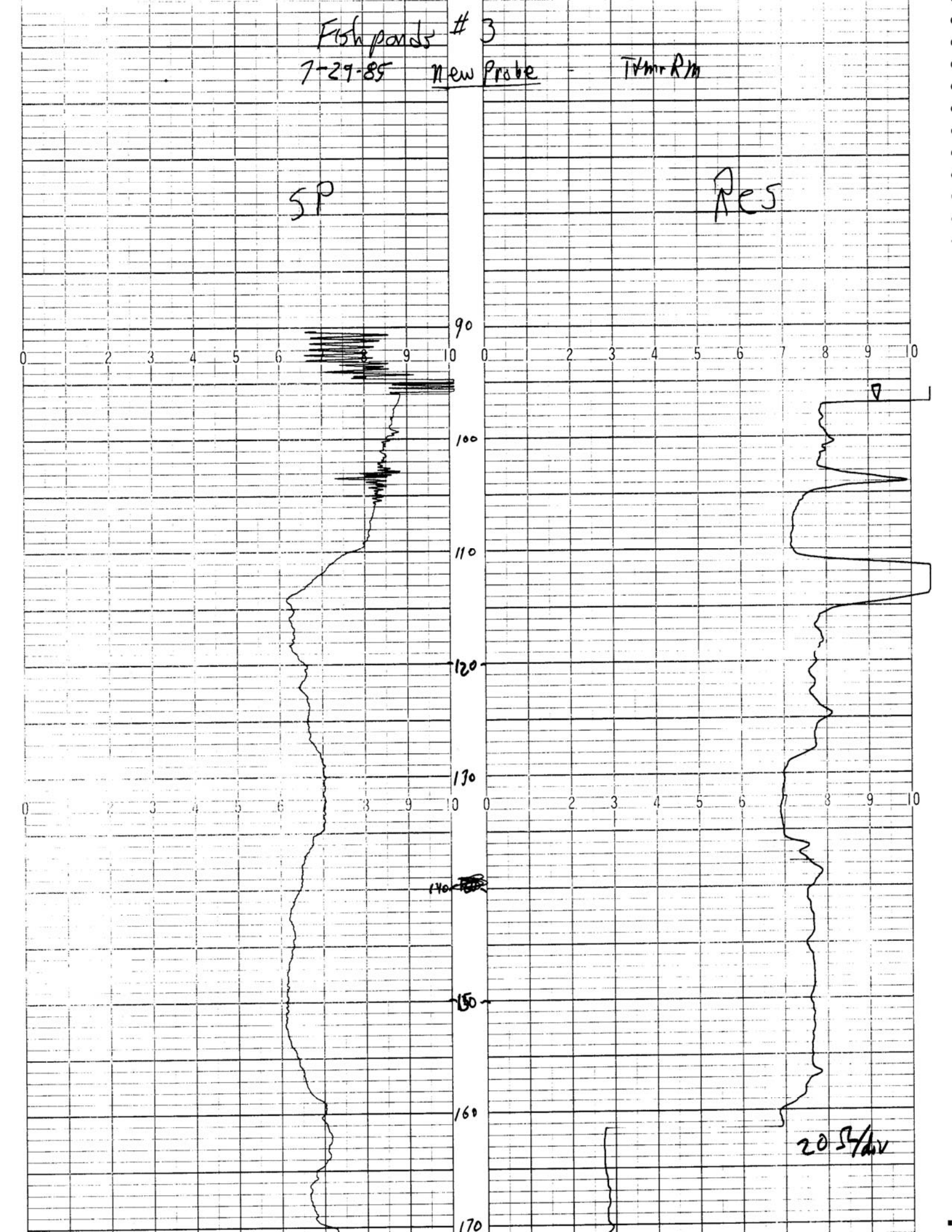

180
0
2
3
4
5
6
7
8
9
0
1
2
3
4
5
6
7
8
9
20

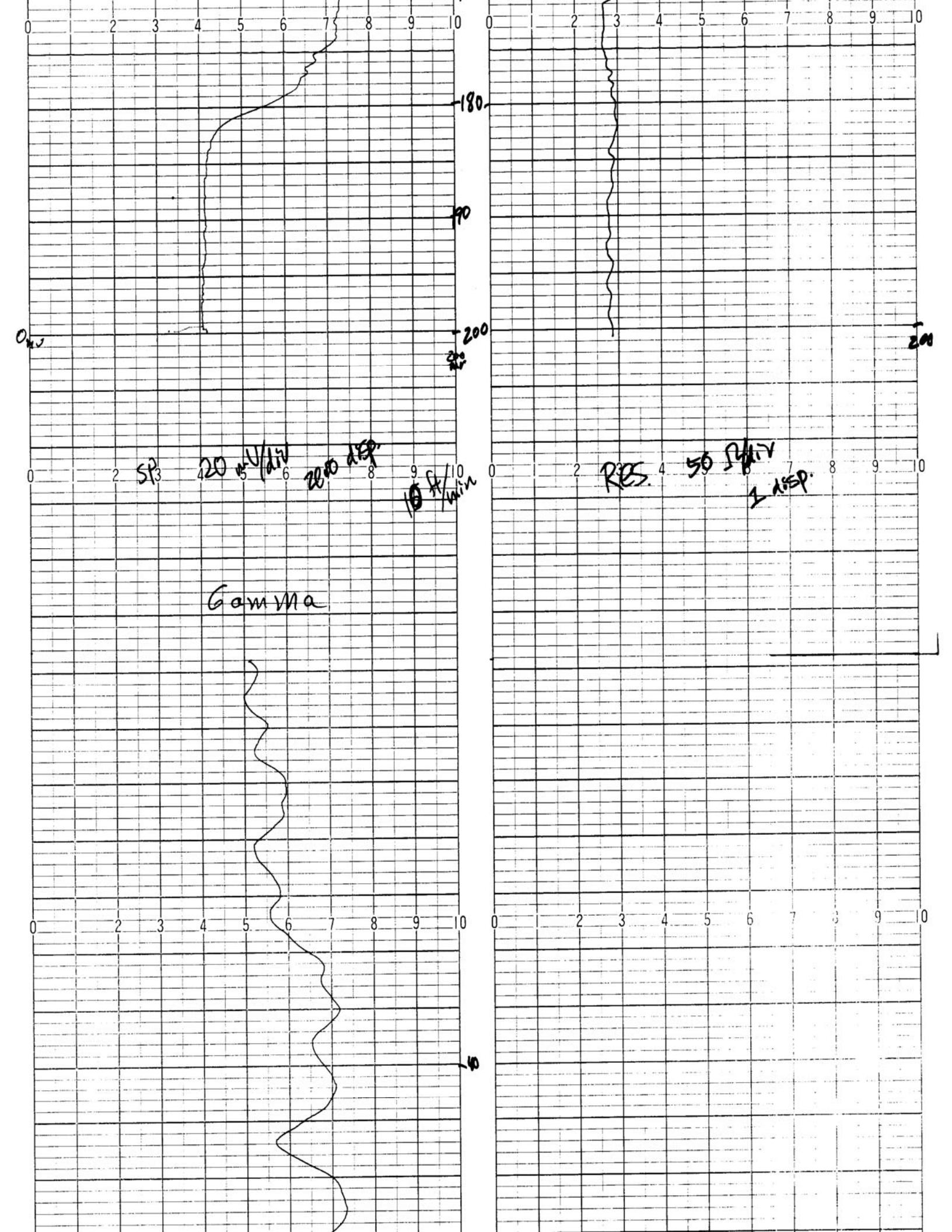

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

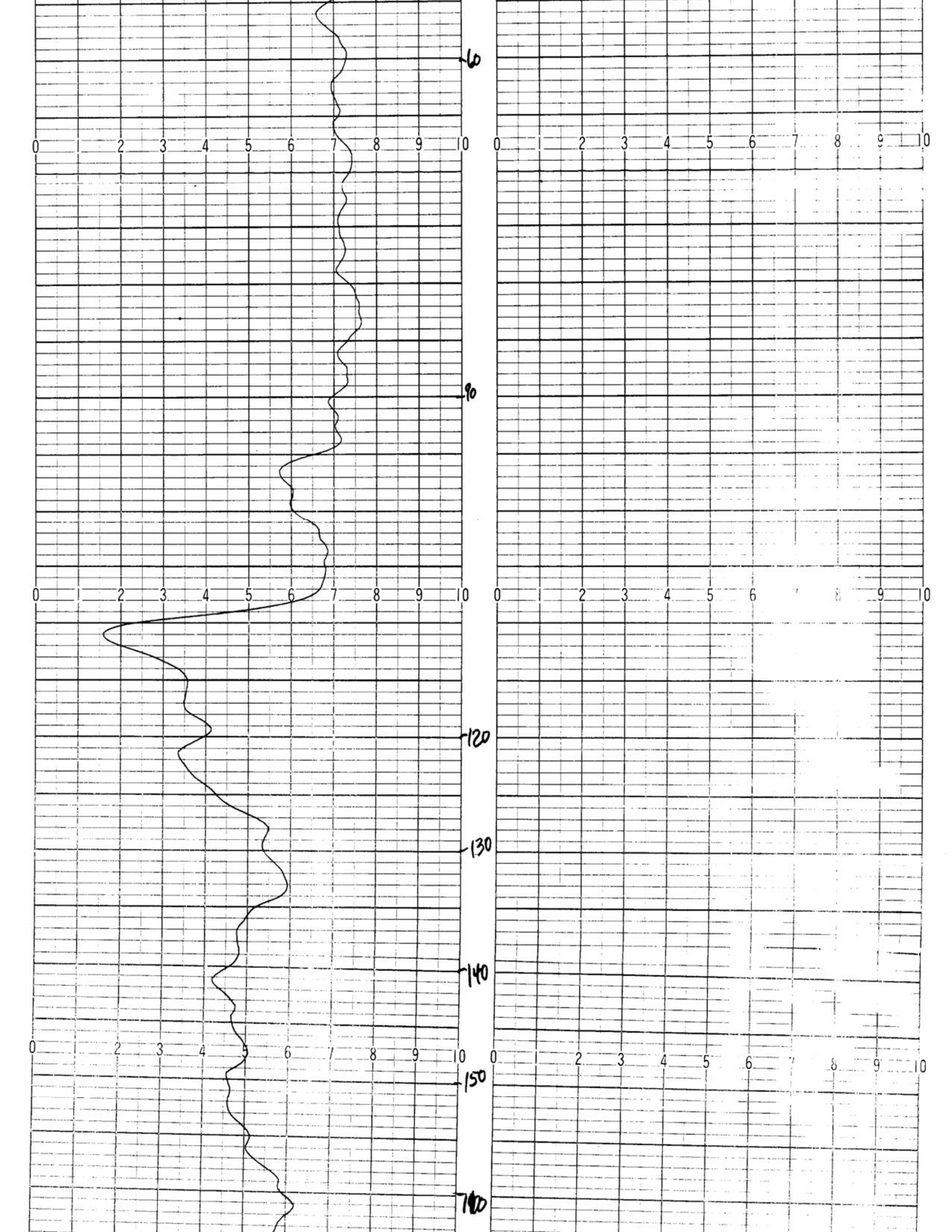

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
WATER LEVEL
155
149
169
169'
SP
#3
86

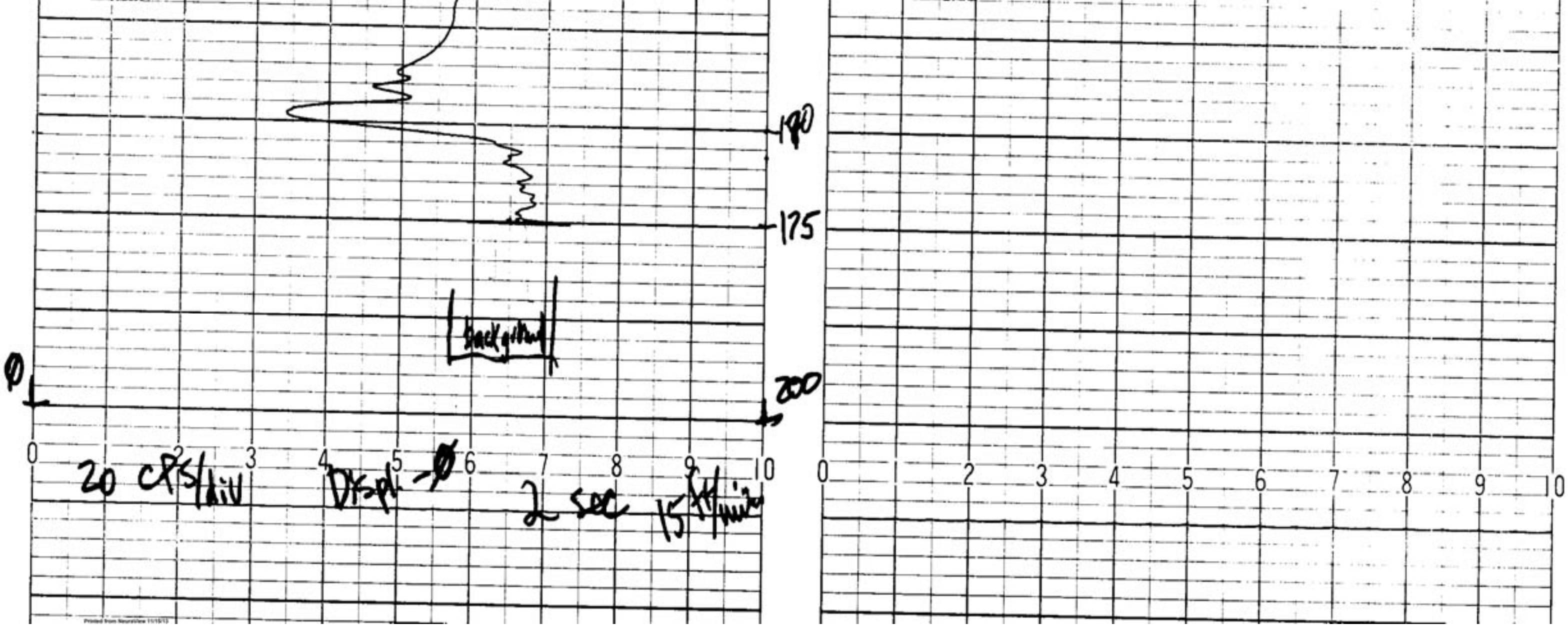


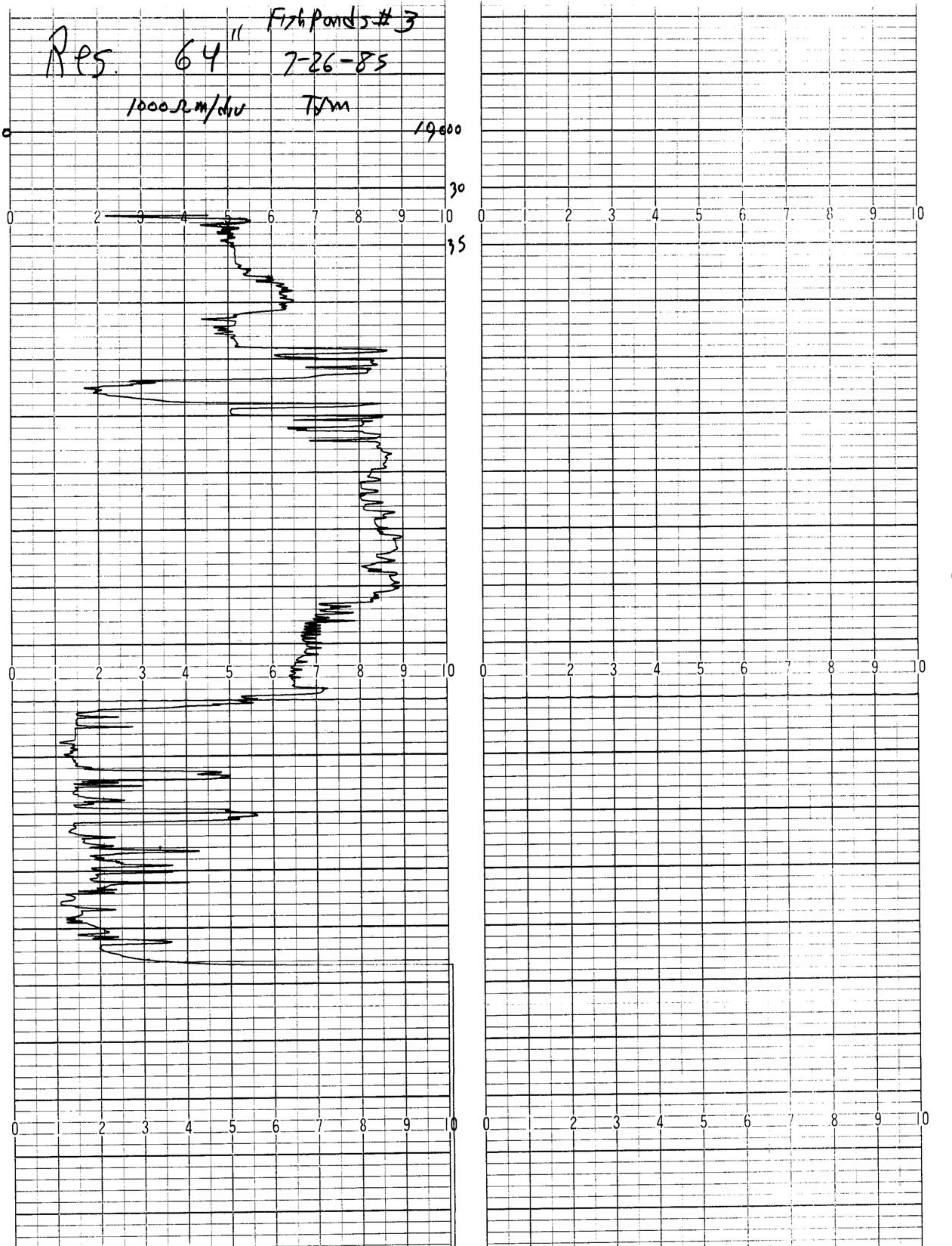
Printed from NeuroView 11/15/12

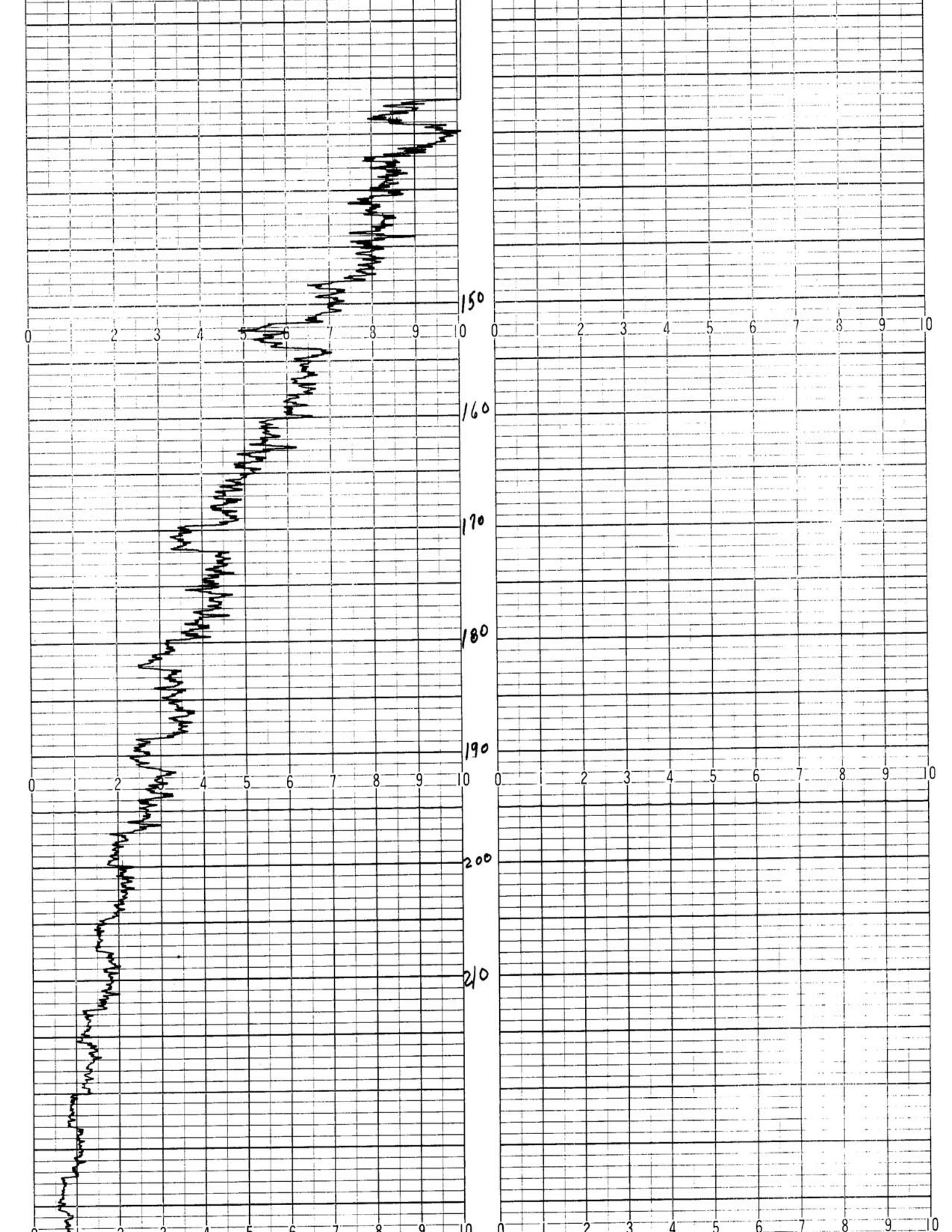

Fishponds #3
7-29-85 New Probe - TVmr RM
SP
Res
90
100
110
120
130
140
150
160
170
0 2 3 4 5 6 7 8 9 10
20 Ω/div

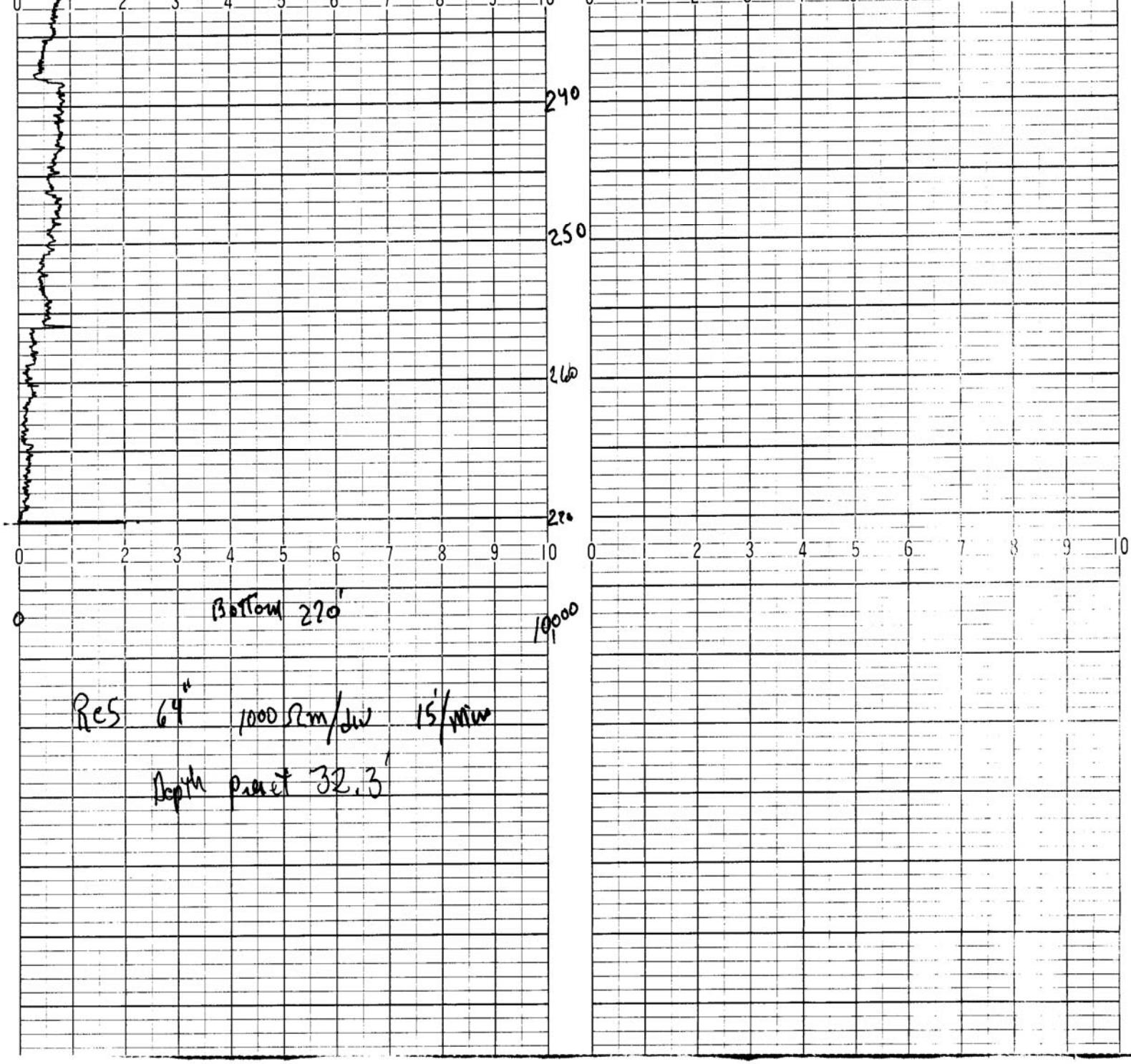

0 2 3 4 5 6 7 8 9 10
180
190
200
SP 20 μV/div 2000 disp. 10 ft/min
RES. 50 Ω/div 1 disp.
Gamma
40


60
90
120
130
140
150
160
0 2 3 4 5 6 7 8 9 10

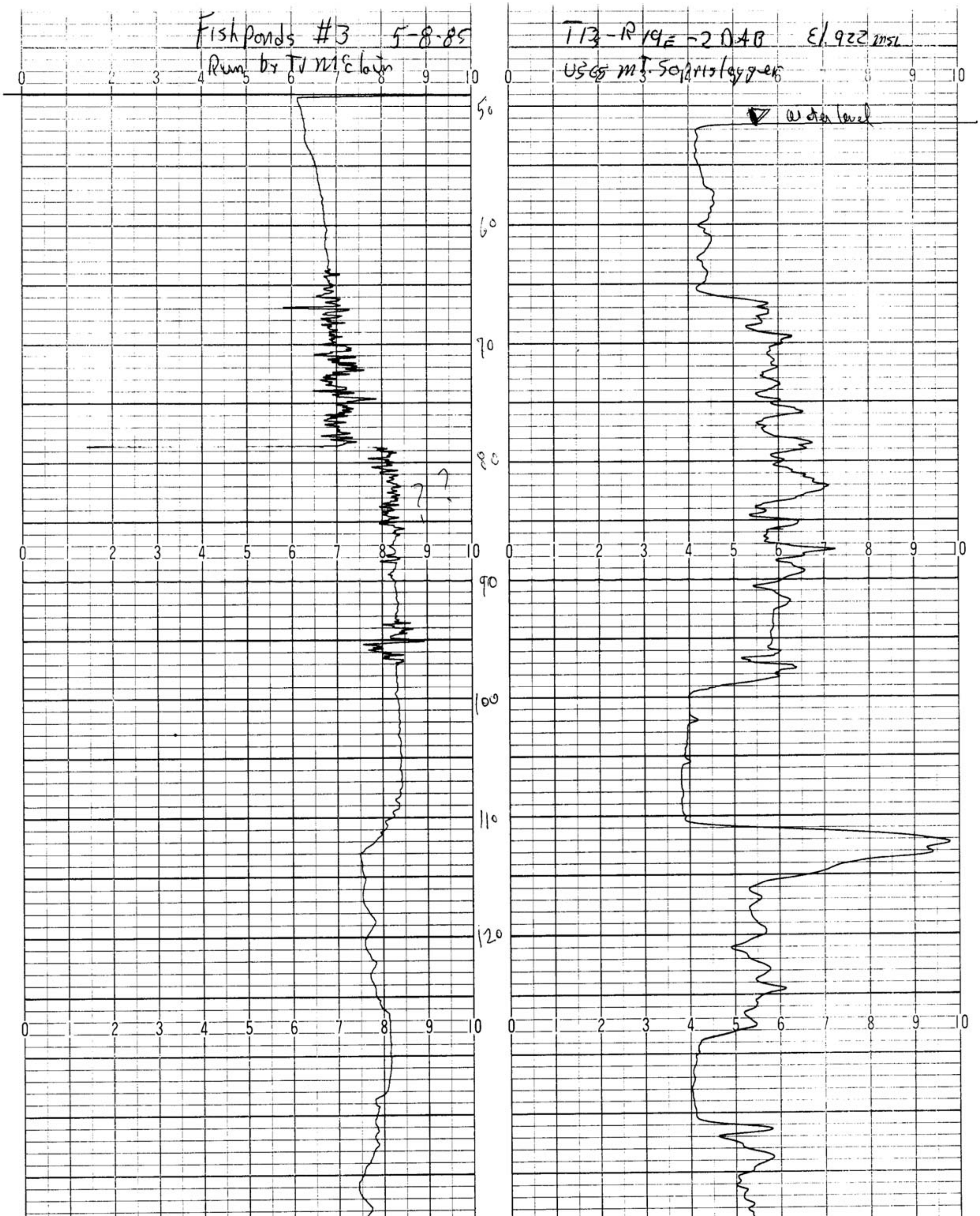

180
175
background
Ø
200
0 1 2 3 4 5 6 7 8 9 10
20 CPS/div
Displ - Ø
2 sec
0 1 2 3 4 5 6 7 8 9 10


Res. 64"
Fishponds #3
7-26-85
1000 Ωm/div
0
10000
30
35
0 2 3 4 5 6 7 8 9 10

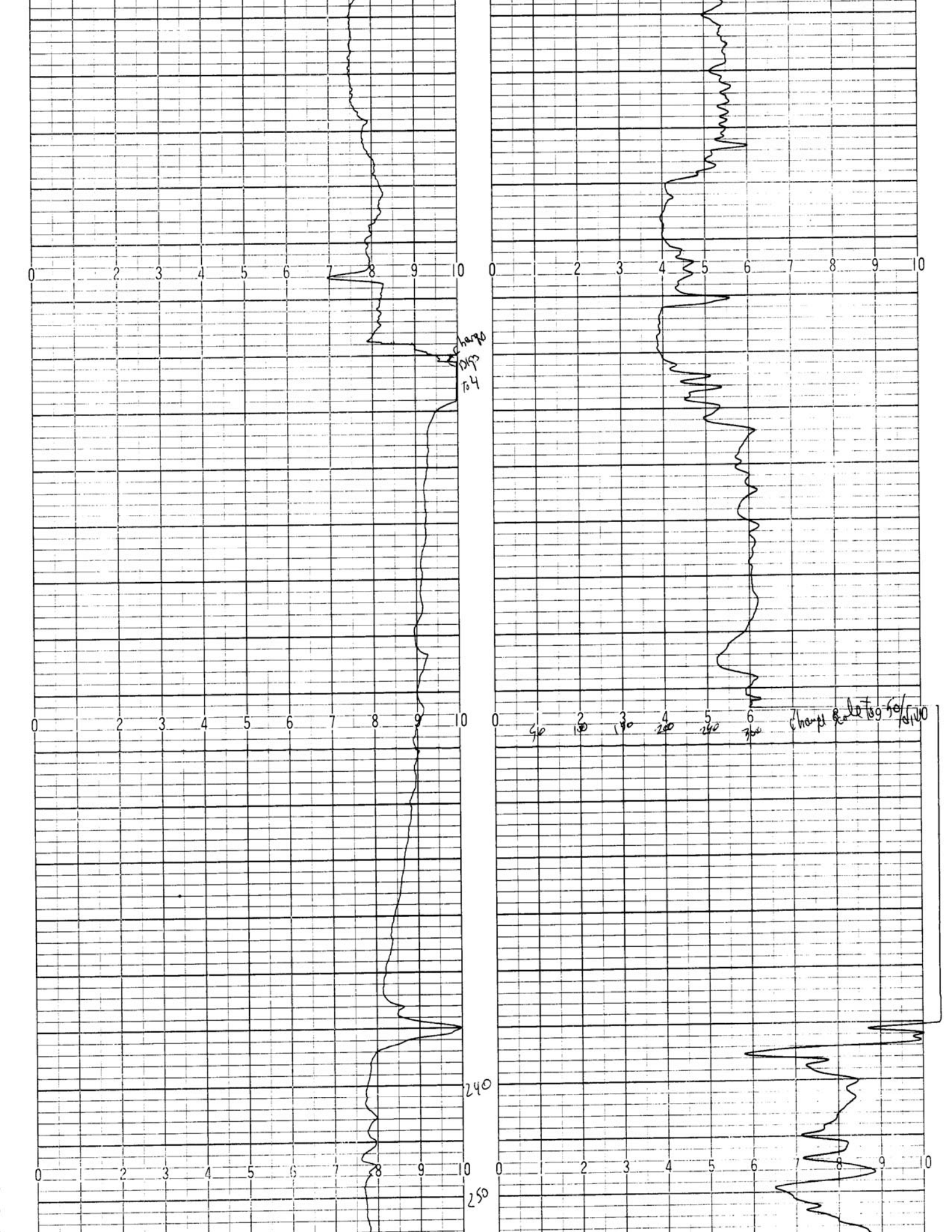

150
160
170
180
190
200
210
0 2 3 4 5 6 7 8 9 10

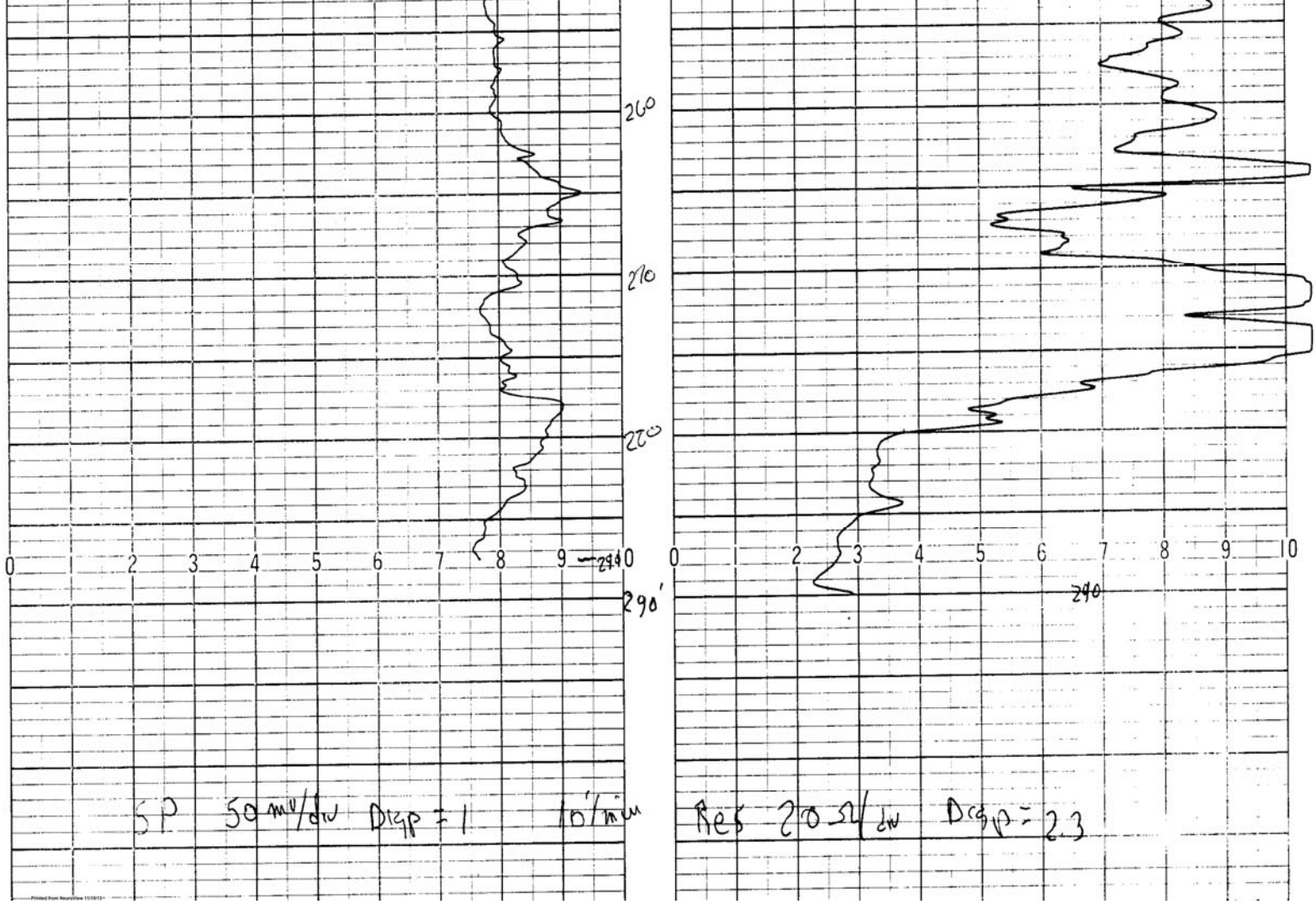


Printed from NeuralView 11/15/13



Fishponds #3 5-8-85
water level
50
60
70
80
90
100
110
120


0 2 3 4 5 6 7 8 9 10
Charge Days to 4
0 2 3 4 5 6 7 8 9 10
0 2 3 4 5 6 7 8 9 10
Charge Scale 50/100
240
0 2 3 4 5 6 7 8 9 10
250


260
270
280
290'
0 2 3 4 5 6 7 8 9 10
240
0 2 3 4 5 6 7 8 9 10
240
SP 50 mv/dw Disp = 1 10'/min
Res 20 Ω/dw Disp = 2.3