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AREA
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INTEROFFICE CORRESPONDENCE

date > March 31, 1982

to Brent Russell

from > P. A. Skiba *PS*

subject > ARTESIAN FLOW TESTS AT WENDEL-FIELD TRIP REPORT - PAS-05-82

From March 1 through 9, 1982, I assisted and helped in conducting artesian flow tests of the Geoproducts Wen-1 well. Testing activity included: temperature and spinner logs; step test; short duration constant rate flow tests; and a sustained constant rate flow test. The long-term constant rate flow test started before I left site.

The repair job on the broken casing was finished a week before flow testing started. During this week, the well was flowing on an irregular basis to allow the well to develop. The well site was prepared for testing better than for previous tests. The irrigation pump and generator were in good working condition and adequate for the job. The discharge line was well supported by wooden blocks and metal legs.

At the time of my arrival, LBL personnel were finishing preparation for conducting well logging.

The temperature log run on March 2, indicated maximum downhole temperature of 247.8°F at 5300 feet depth (see Figure 1). The spinner log indicated most of the flow into the well comes from above 5300 feet depth. Below 5300 feet, the spinner indicated zero flow (see Figure 2). During the spinner survey, the well was flowed at 480 gpm for about two hours. The well was shut in for approximately five hours between the spinner logging and flow testing.

The first flow test started at 20:37 on March 2 at a flow rate of 225 gpm. The flow rate was "stepped-up" to 455 gpm at 6:20 on March 3. Russell Juncal of Geoproducts decided to modify the test from a pulse type to step type. This change helped to save time and made it possible to conduct a longer duration test at the higher rate while collecting downhole and wellhead data. The Geoproducts personnel had authority to modify testing procedures according to their needs.

The step test ended on March 3 at 14:20. After five hours of recovery, the downhole probe was removed from the hole and the master valve was closed. The master valve had to be shut in to permit an exchange of the orifice plate from a 3 inch size to a 3.75 inch size. This change was necessary to decrease

Brent Russell
March 31, 1982
PAS-05-82
Page 2

the pressure loss across an orifice and provide higher flow rates for further testing. The pressure temperature probe was set back in the hole at 5200 feet depth.

The next short duration flow test started on March 3 at 23:00. The test was conducted with a flow of approximately 680 gpm and continued until March 4 at 12:30 hr. During this test, pressure on a downstream side of the orifice was close to the flashing point for the fluid at a temperature in excess of 240°F.

The next longer duration flow test had to be conducted at a lower flow rate to avoid flashing across the orifice. The three day flow test started on March 4 at 19:00. This time, the well was flowed at 610-620 gpm rate until March 7 at 23:00. The LBL downhole pressure temperature probe was removed from the hole on March 8 at 12:50.

Summary of the test data is presented in Table I.

The long duration flow test (two weeks or more) started on March 8 at 16:30. It was a constant rate flow test at approximately 620 gpm flow rate. This test ended on March 26. At the present time we are waiting for the data from this test.

I left the well site about one hour after the long duration flow test started.

Summary Comments

The well integrity seems to be sound, as the repair job apparently stopped the leak from the well. The tests conducted provided relatively good quality data sufficient to evaluate a well production capacity and some reservoir characteristics. The discharge line instrumentation and downhole probe worked well during testing. The flow rate was maintained reasonably constant for each part of testing. The downhole temperature build-up observed during 76 hour test suggests that the well is heating up. At the end of test, the temperature reached 250.2°F.

The evaluation of the test data will be the subject of a separate memo.

mo

cc: M. R. Dolenc
D. Goldman
G. B. Wiersma
Letter File
Central File

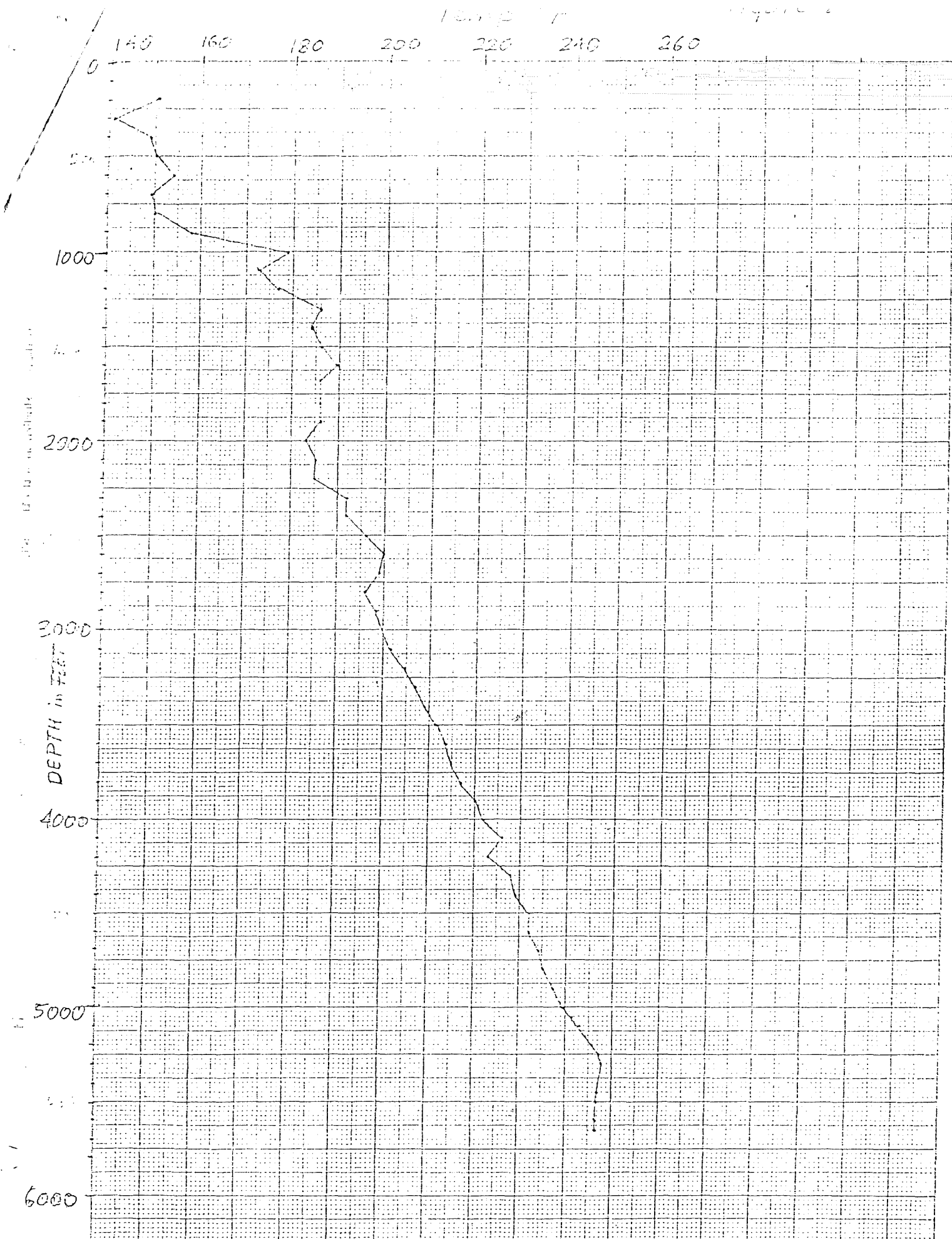
TABLE I. TESTS DATA SUMMARY

Date	Tests		Downhole Data ¹			Wellhead Data		
	Flow rate gpm	Duration time min.	Pressure ² PSIA	Temp ² °F	Recovery ³ PSIA	Pressure ² PSIA	Temp ² °F	Recovery ³ PSIA
3/2	Step 1 225	583	2203.5	247.1	-----	65.35	232.8	-----
3/3	Step 2 455	480	2191.7	247.4	2208.2	52.3	240.1	71.1
3/1- 3/4	Pulse 680	810	2176.2	248.0	2207.5	33.9	242.0	70.7
3/4- 3/7	Sustained 620	4560	2179.5	250.2	2207.5	37.7	242.5	69.9

¹ Downhole probe set at 5200 feet depth

² At the test end

³ Maximum stabilized pressure after recovery.



WEN-1 TEMPERATURE LOG BEFORE FLOW TESTING, WELL SHUT-IN
MARCH 2/82

2471

11/11/82

50 70 90 110 130 150

5100

5200

5300

5400

5500

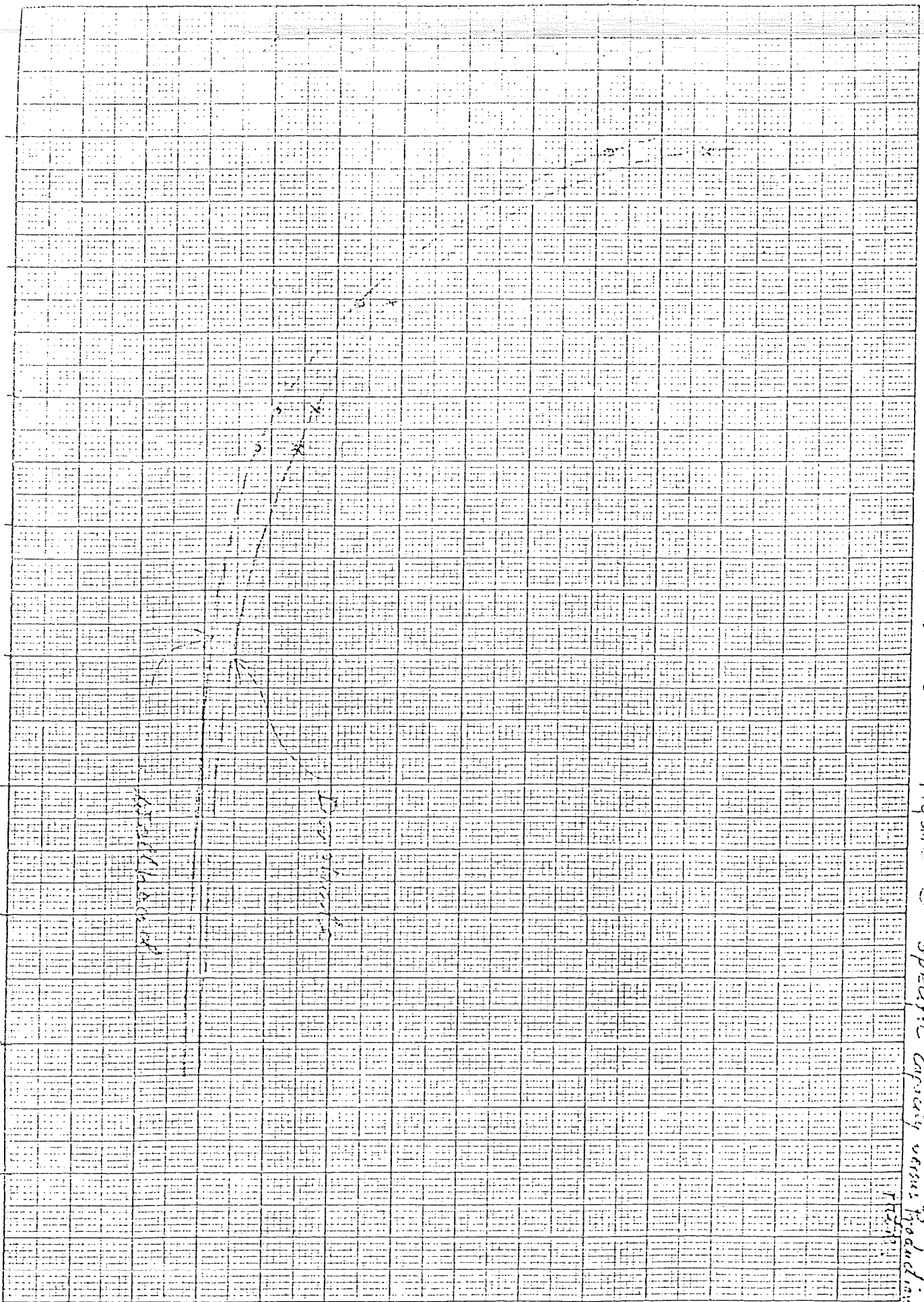
5600

DEPTH IN FEET

To 2070 depth 5355

March 2/82 WEN-1 SPINNER LOG WELL FLOWING AT 450" / min

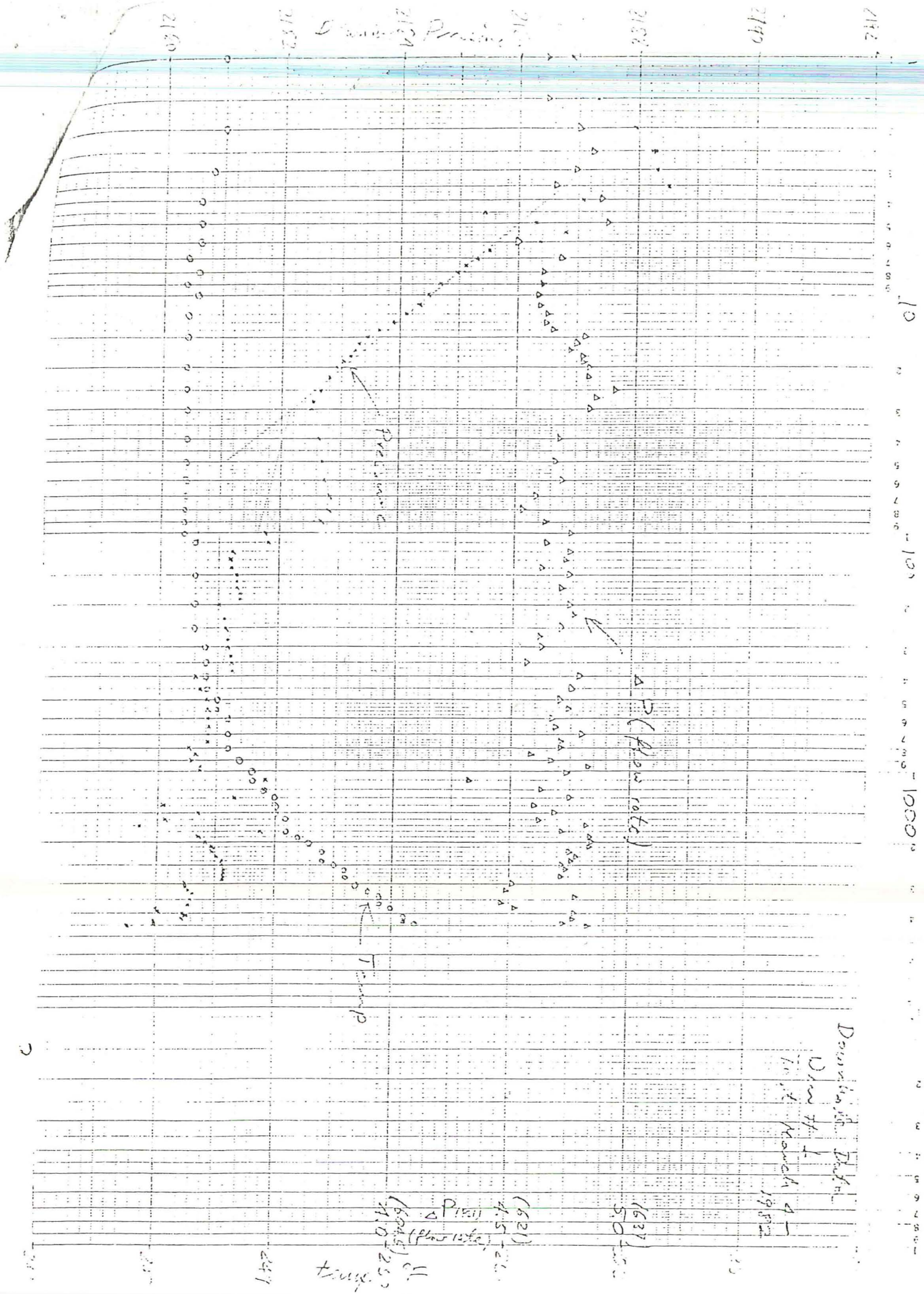
Spring Capacity, April



Wender - 1 Figure 5 Specific Capacity versus Production

200
 100
 0
 0
 100
 200
 300
 400
 500
 600
 700
 800
 900
 1000
 1100
 1200
 1300
 1400
 1500
 1600
 1700
 1800

KEUFFEL & ESSER CO.
 100 N. 10th St.
 ST. LOUIS, MO. 63101



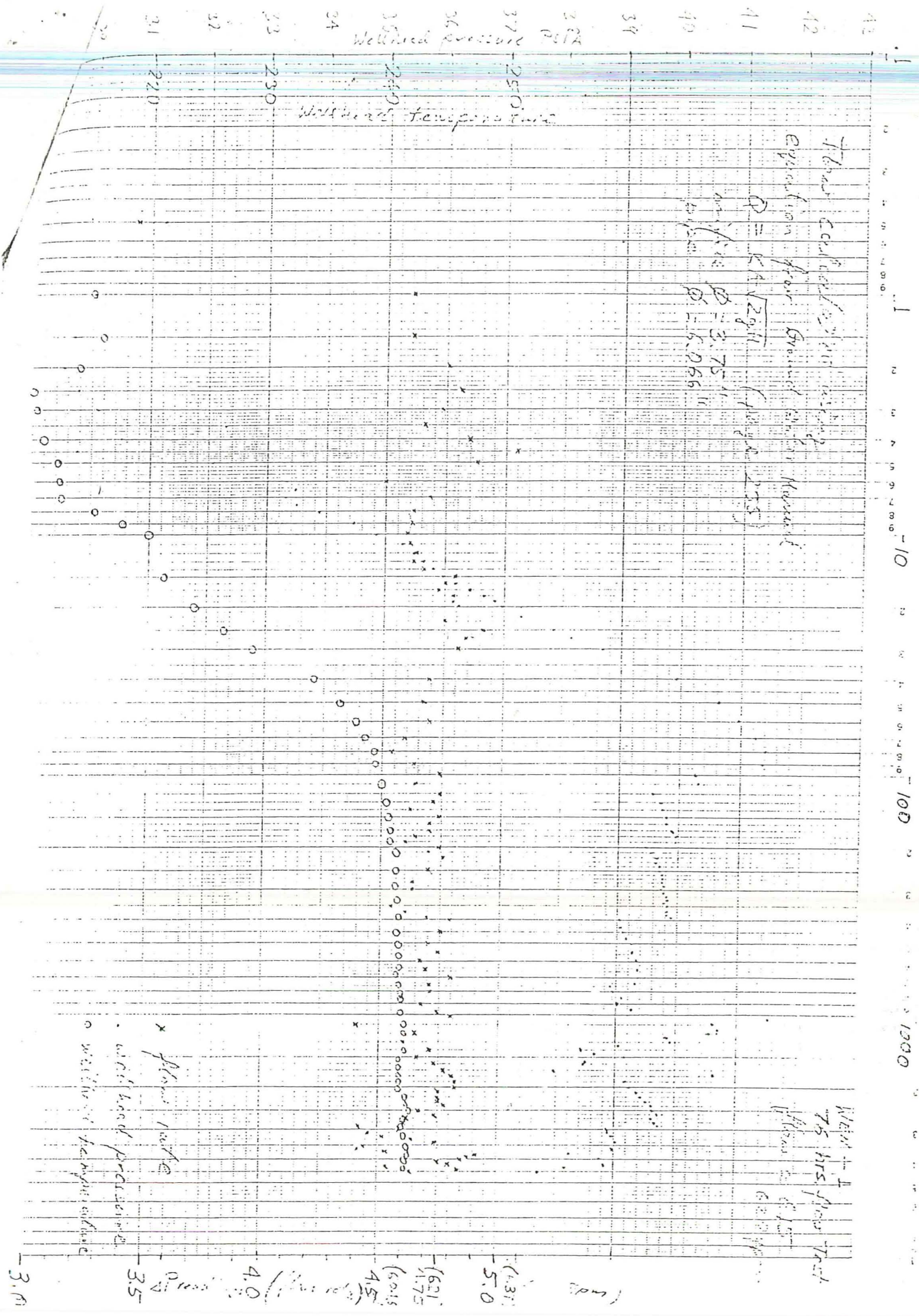
Damping in Dept.
 Drawn by T.
 Kowalski
 19 June

(1621)
 5.0
 (1627)
 4.5
 (1604)
 4.0
 2.5

T ramp

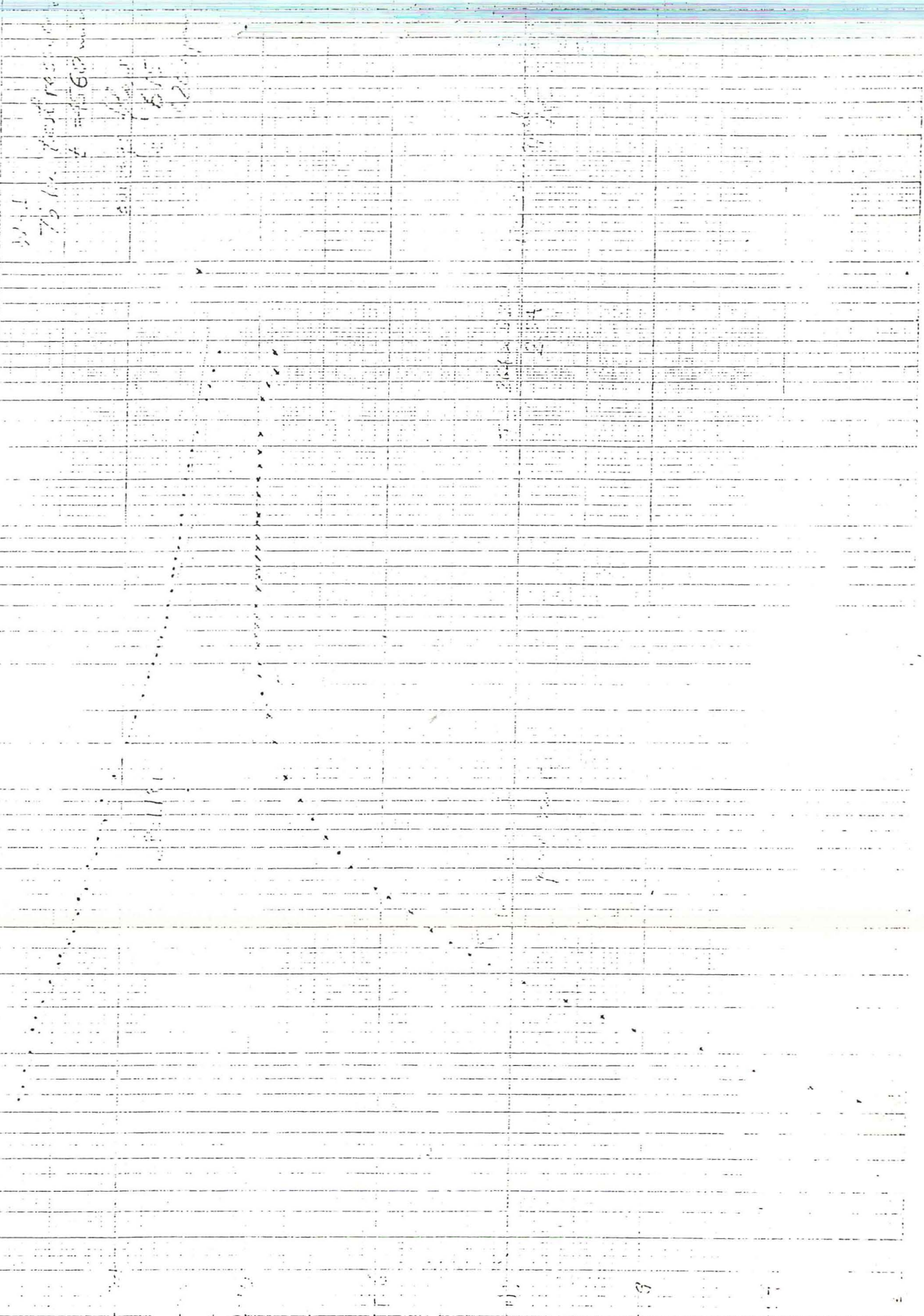
(Flow rate)

Preliminary

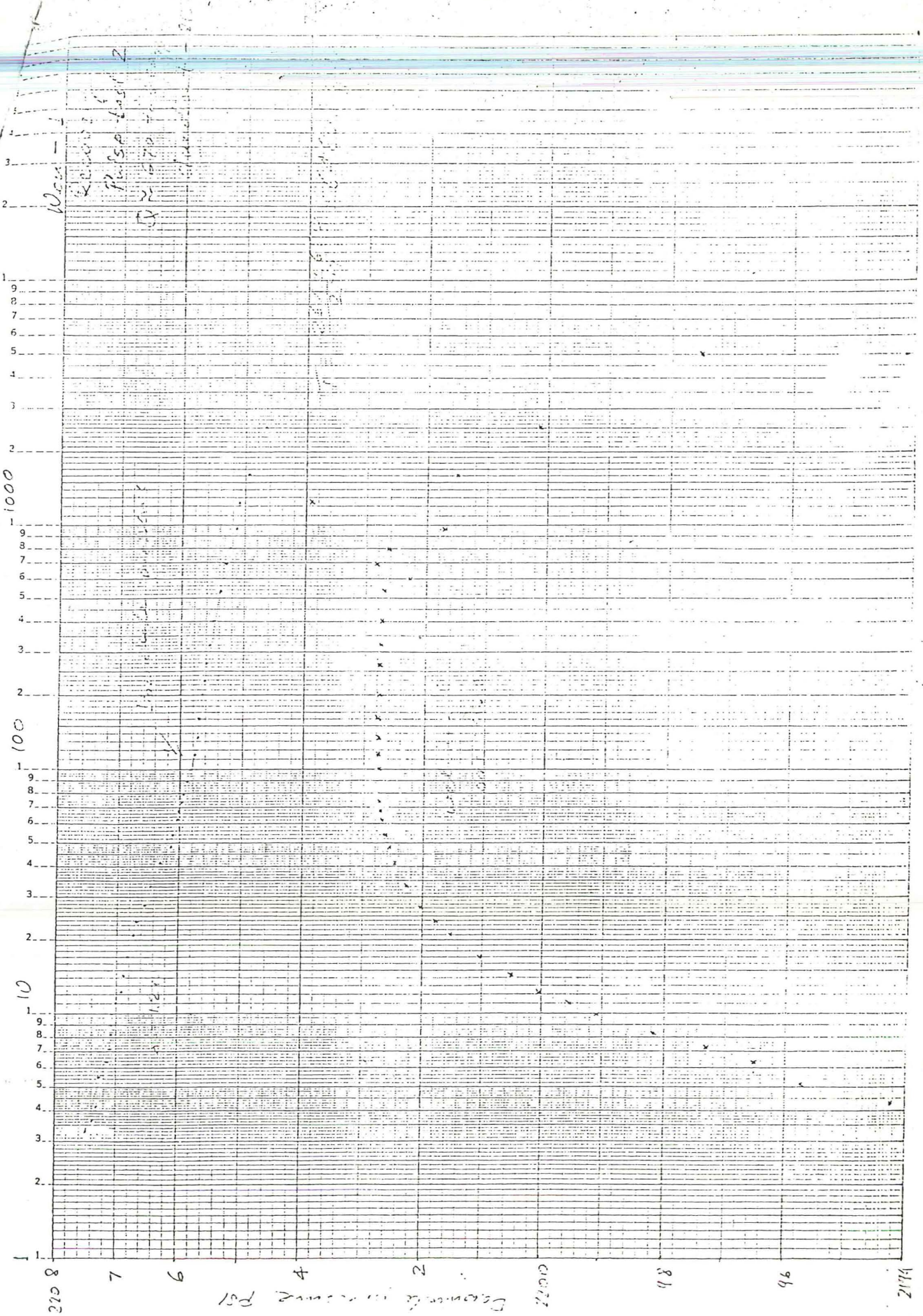


10-10-13

307



10-10-13



210 8 7 6 4 2 1000 100 10 1 9 8 7 6 5 4 3 2 1 2100 98 96 2174