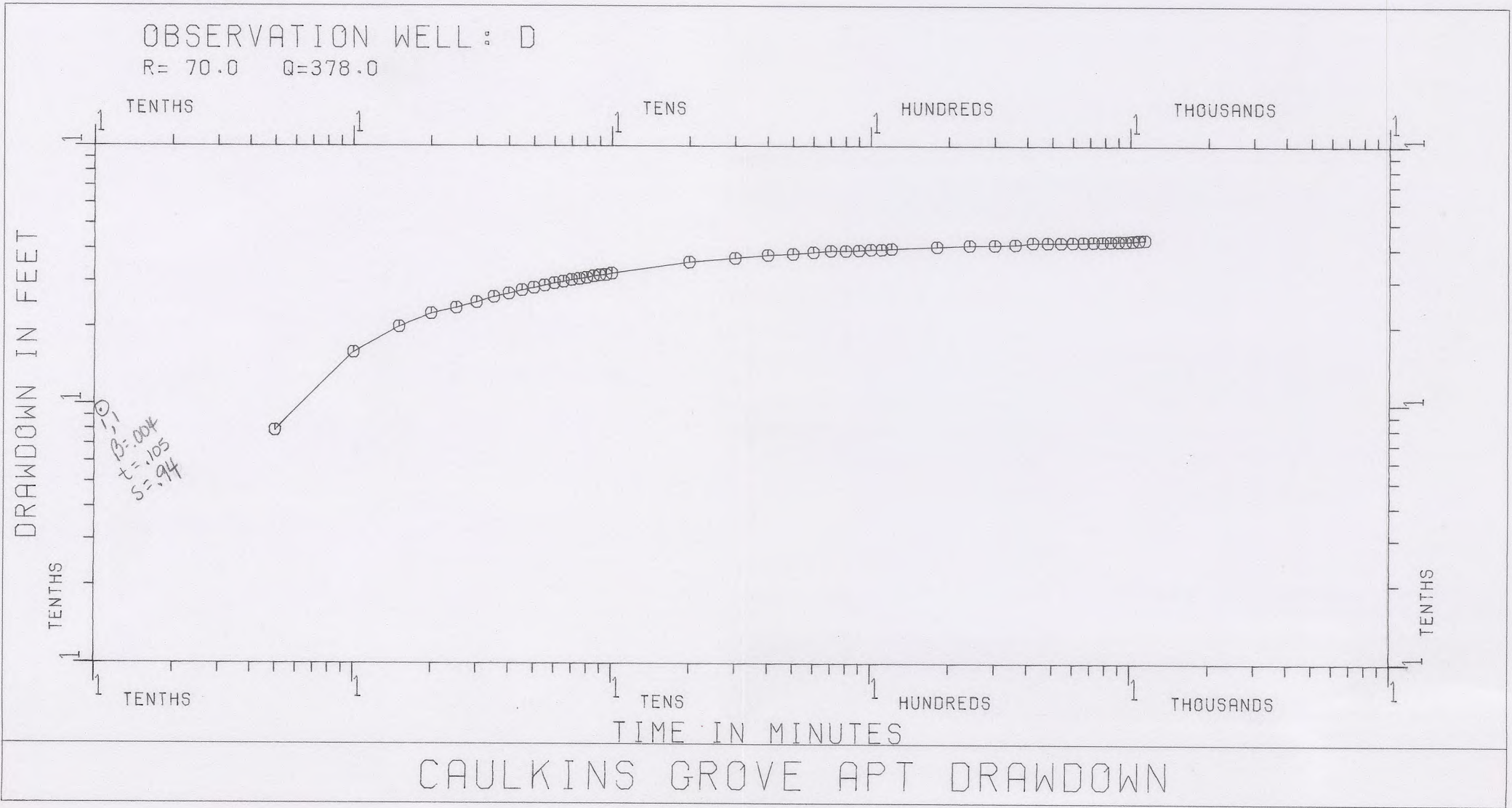


$$T = \frac{114.6 Q W(U_{AY}, \beta)}{S} = \frac{114.6 (378) (1)}{.94} = 46,084 \text{ gpd/ft}$$

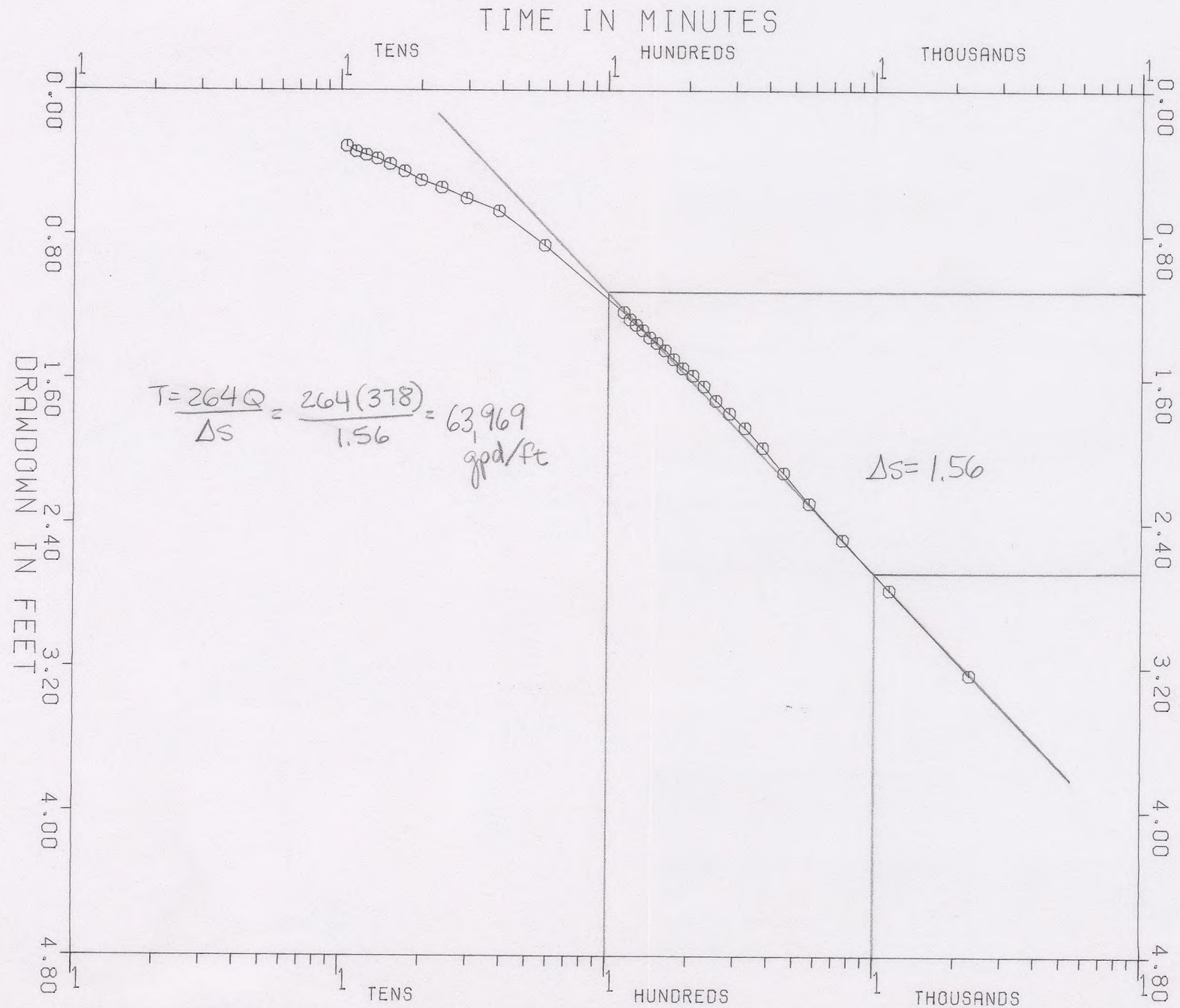
$$S = \frac{Tt}{2698 r^2 (U_{AY})} = \frac{46084 (.105)}{2693 (70)^2} (1) = 3.67 \times 10^{-4}$$



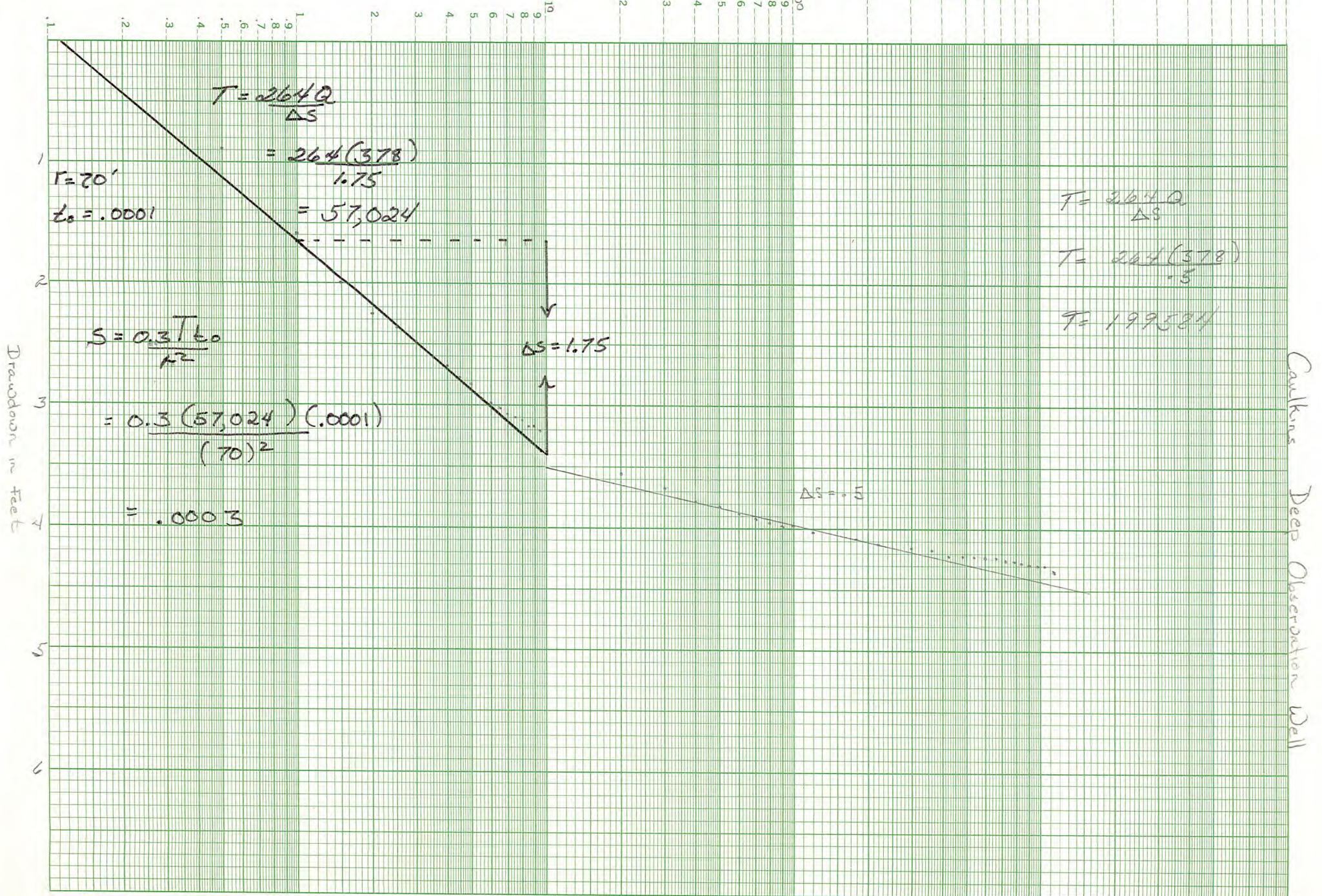
CAULKINS GROVE APT RECOVERY

OBSERVATION WELL : D

R= 70.0 Q=378.0



Time in Minutes



$$T = \frac{264Q}{\Delta S}$$

$$= \frac{264(378)}{1.75}$$

$$= 57,024$$

$r = 70'$
 $t_0 = .0001$

$$S = \frac{0.3Tt_0}{r^2}$$

$$= \frac{0.3(57,024)(.0001)}{(70)^2}$$

$$= .0003$$

$\Delta S = 1.75$

$\Delta S = .5$

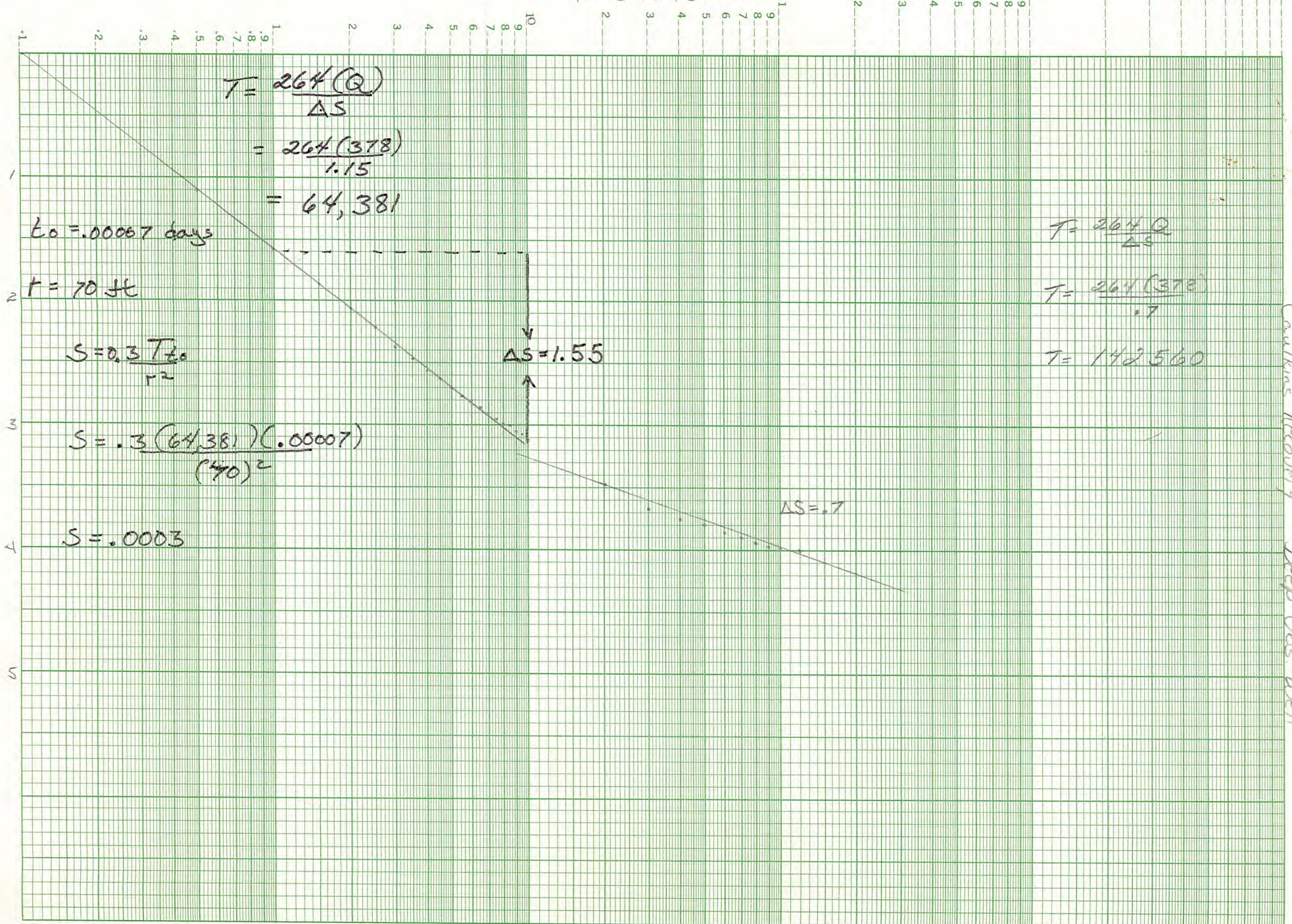
$$T = \frac{264Q}{\Delta S}$$

$$T = \frac{264(378)}{.5}$$

$$T = 199,584$$

Calkins Deep Observation Well

Time in Minutes



$$T = \frac{264(Q)}{\Delta S}$$

$$= \frac{264(378)}{1.15}$$

$$= 64,381$$

$$L_0 = .00007 \text{ days}$$

$$t = 70 \text{ hr}$$

$$S = 0.3 \frac{T L_0}{r^2}$$

$$S = .3 \frac{(64,381)(.00007)}{(40)^2}$$

$$S = .0003$$

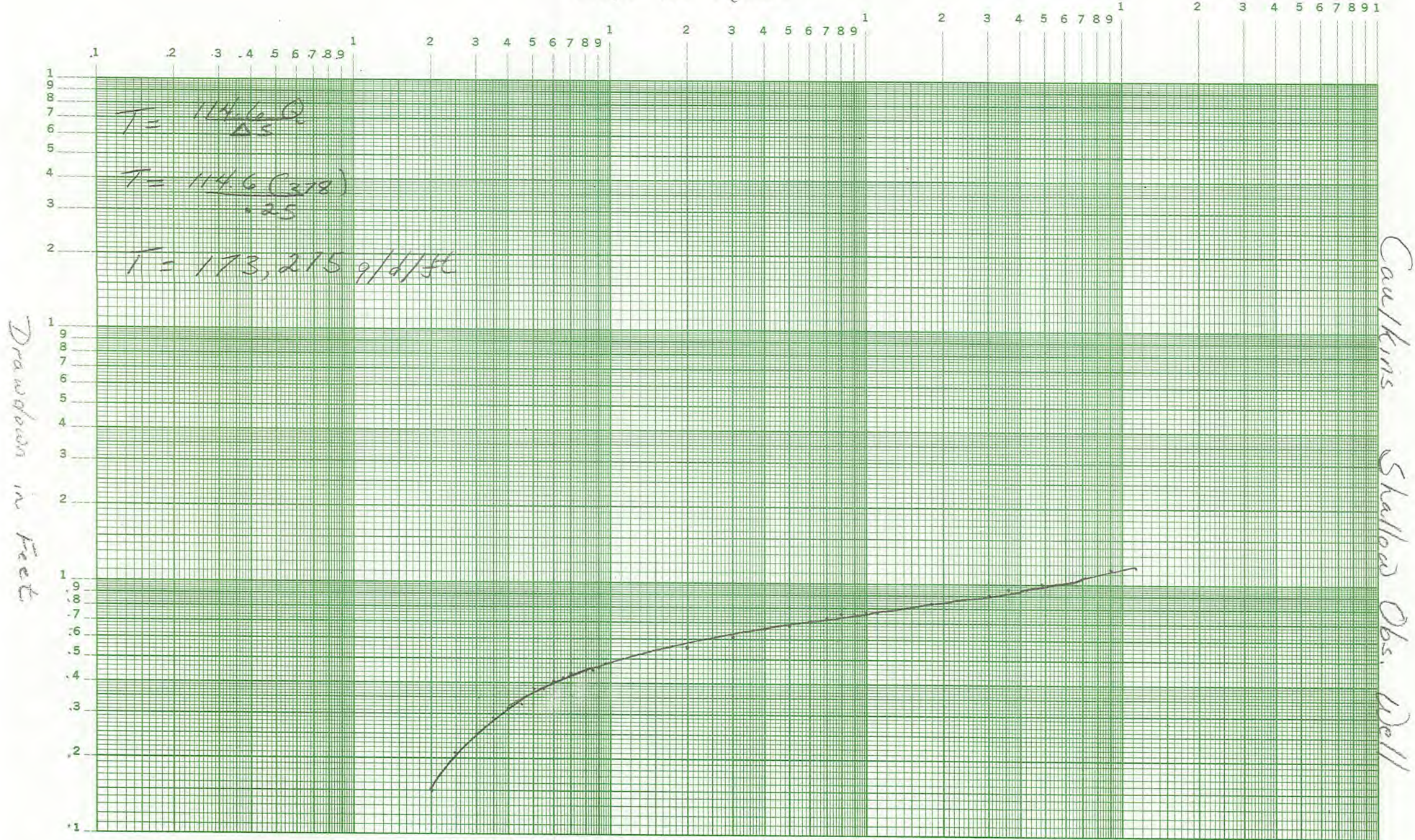
$$T = \frac{264(Q)}{\Delta S}$$

$$T = \frac{264(378)}{.7}$$

$$T = 142,560$$

Caulkins Recovery - Deep Obs. Well

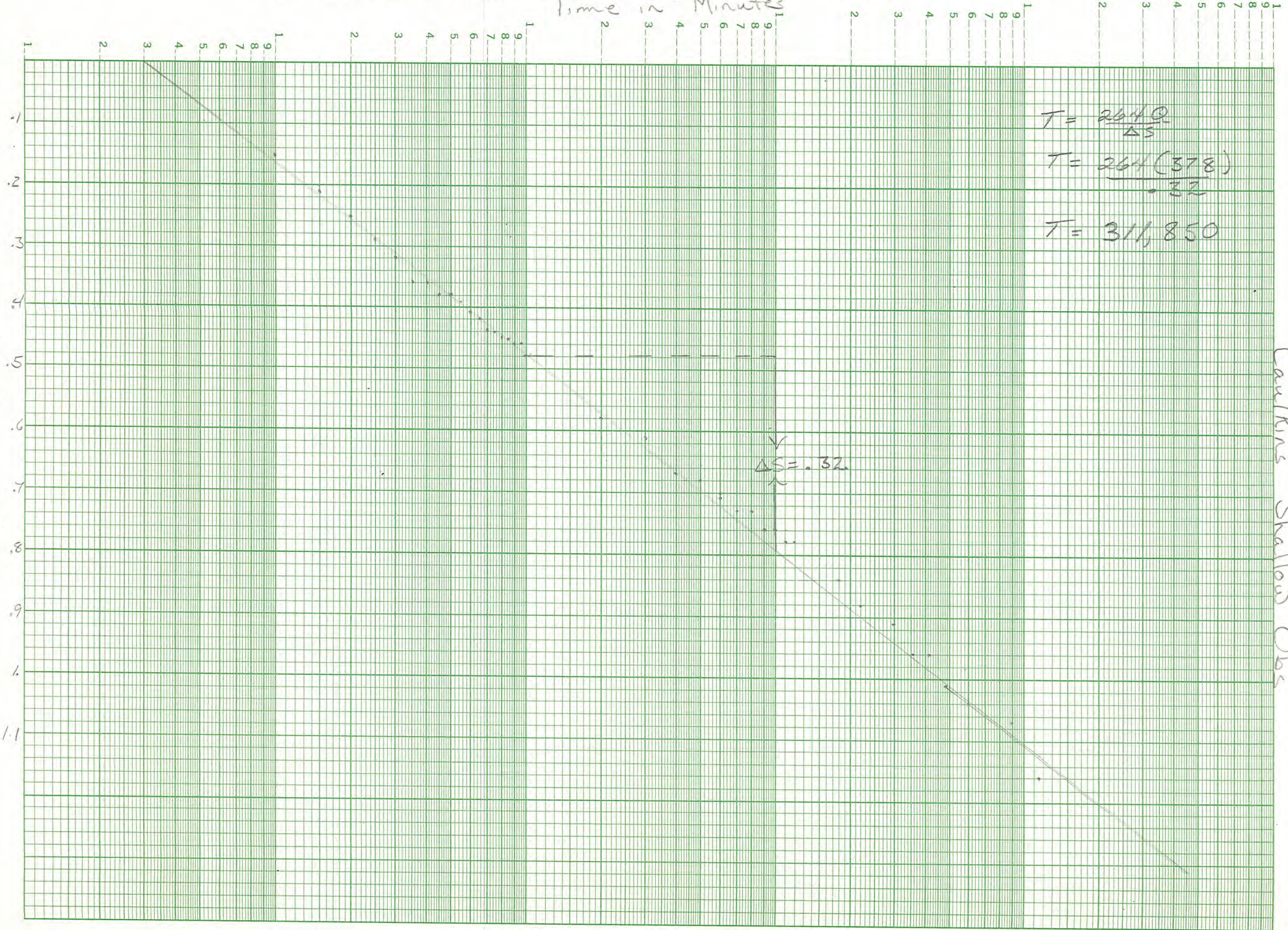
Time in Minutes



Time in Minutes

Drawdown in Feet

Caulkins Shallow Obs



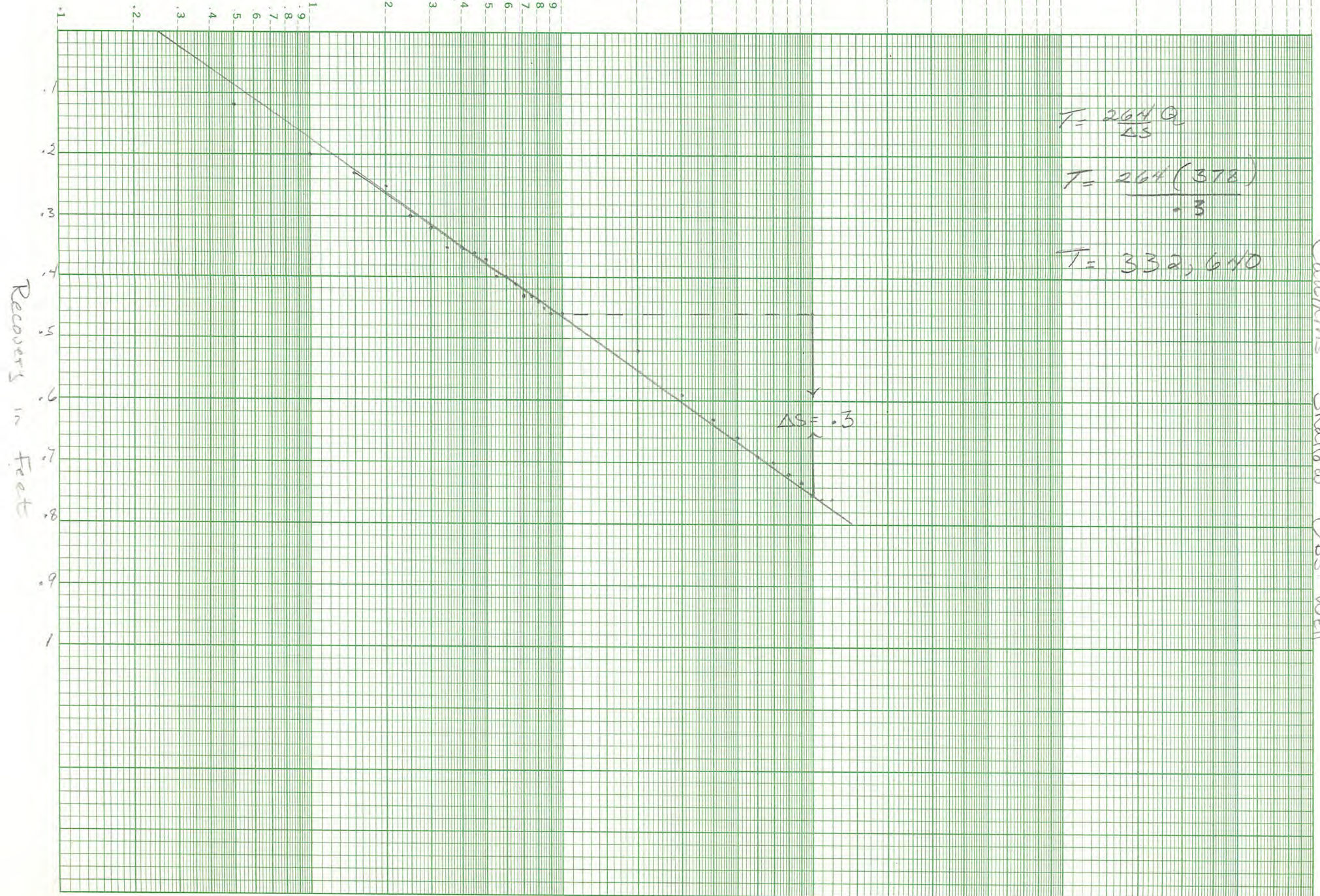
$$T = \frac{264Q}{\Delta S}$$

$$T = \frac{264(378)}{.32}$$

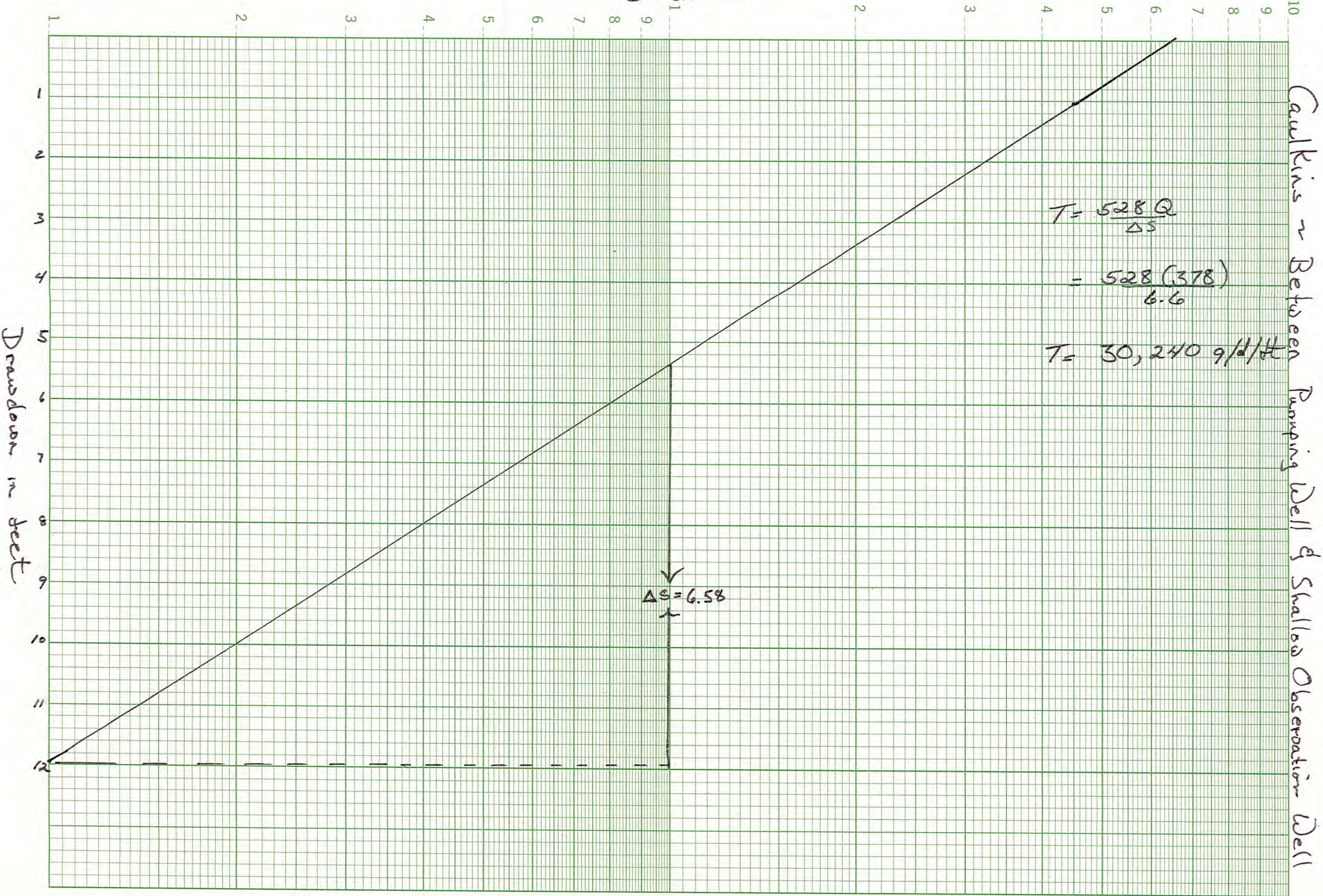
$$T = 311,850$$



Time in Minutes



Distance

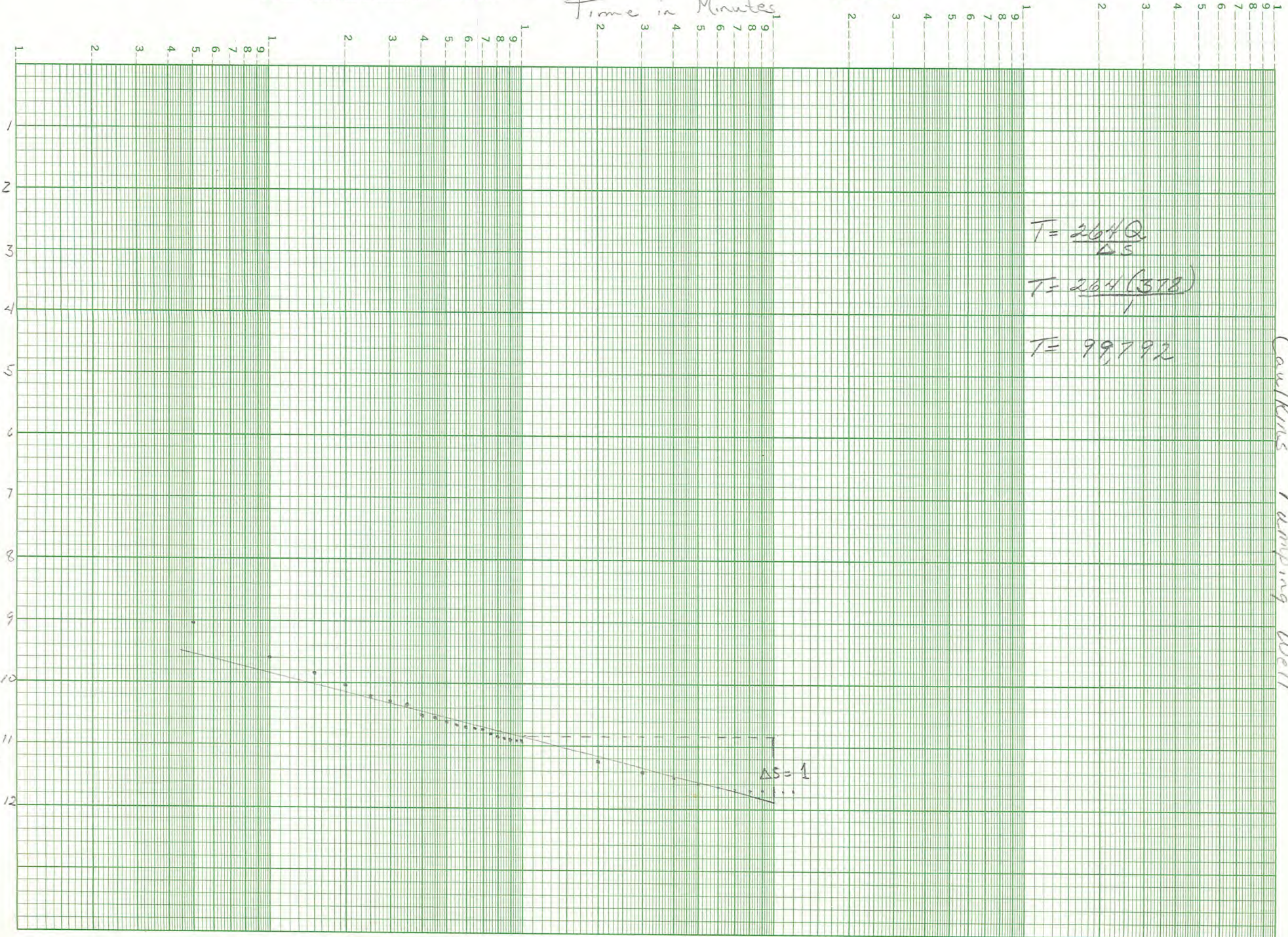


600 minutes after pumping

Time in Minutes

Calculated Recovery in Feet

Caulkins Pumping Well



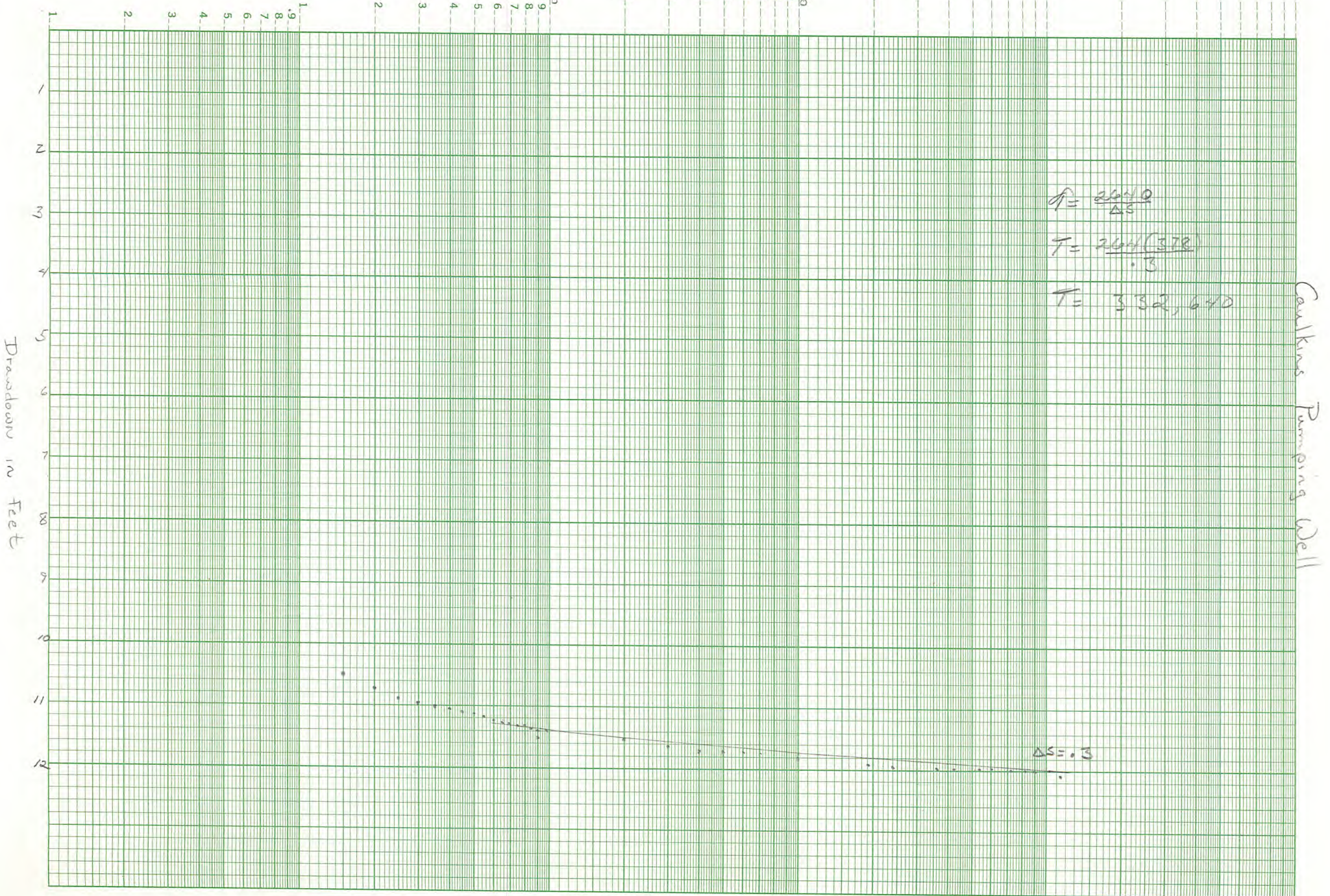
Time in Minutes



Drawdown in feet

Caulkins - Pumping Well

Time in Minutes



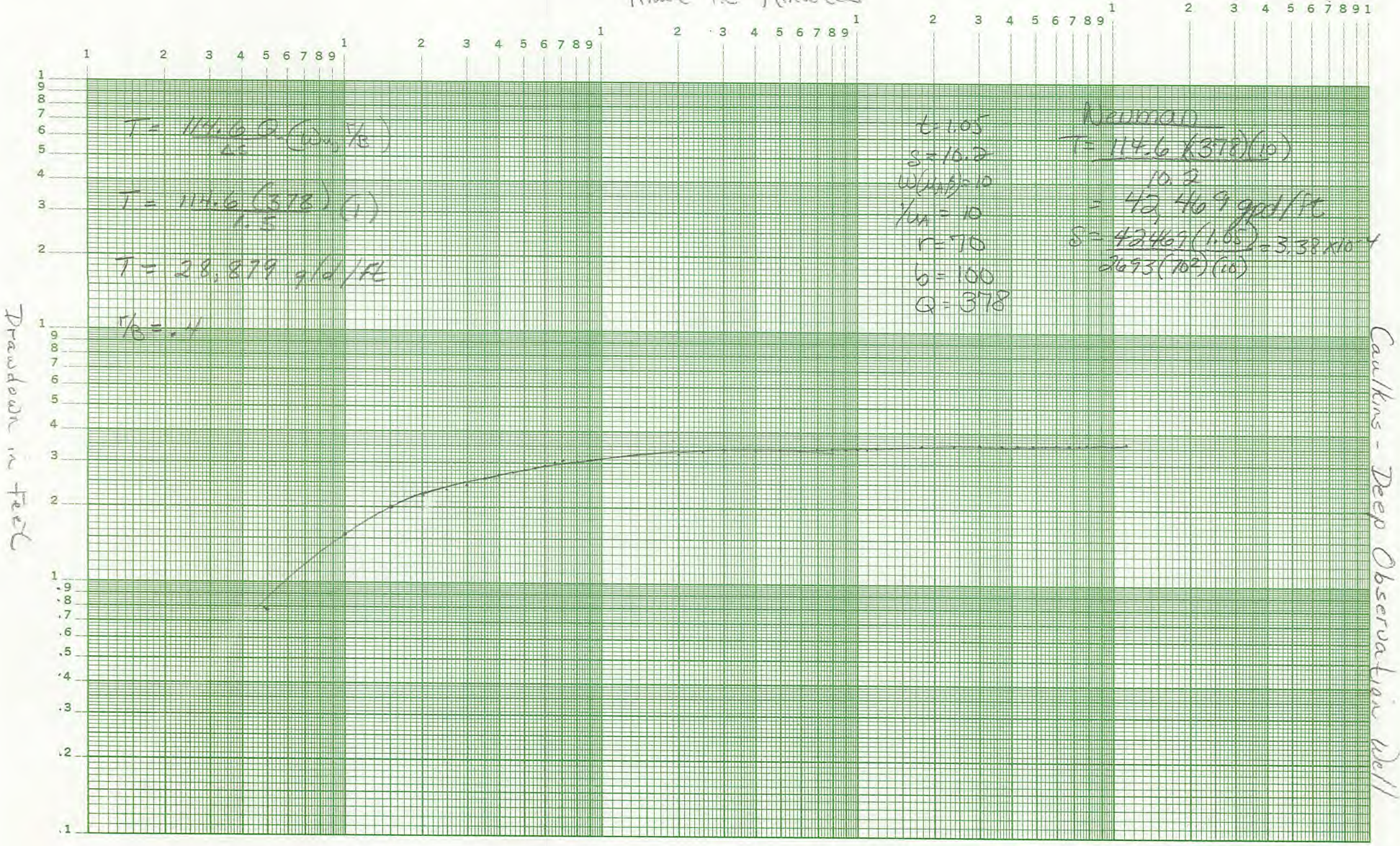
$$d = \frac{2440}{\Delta S}$$

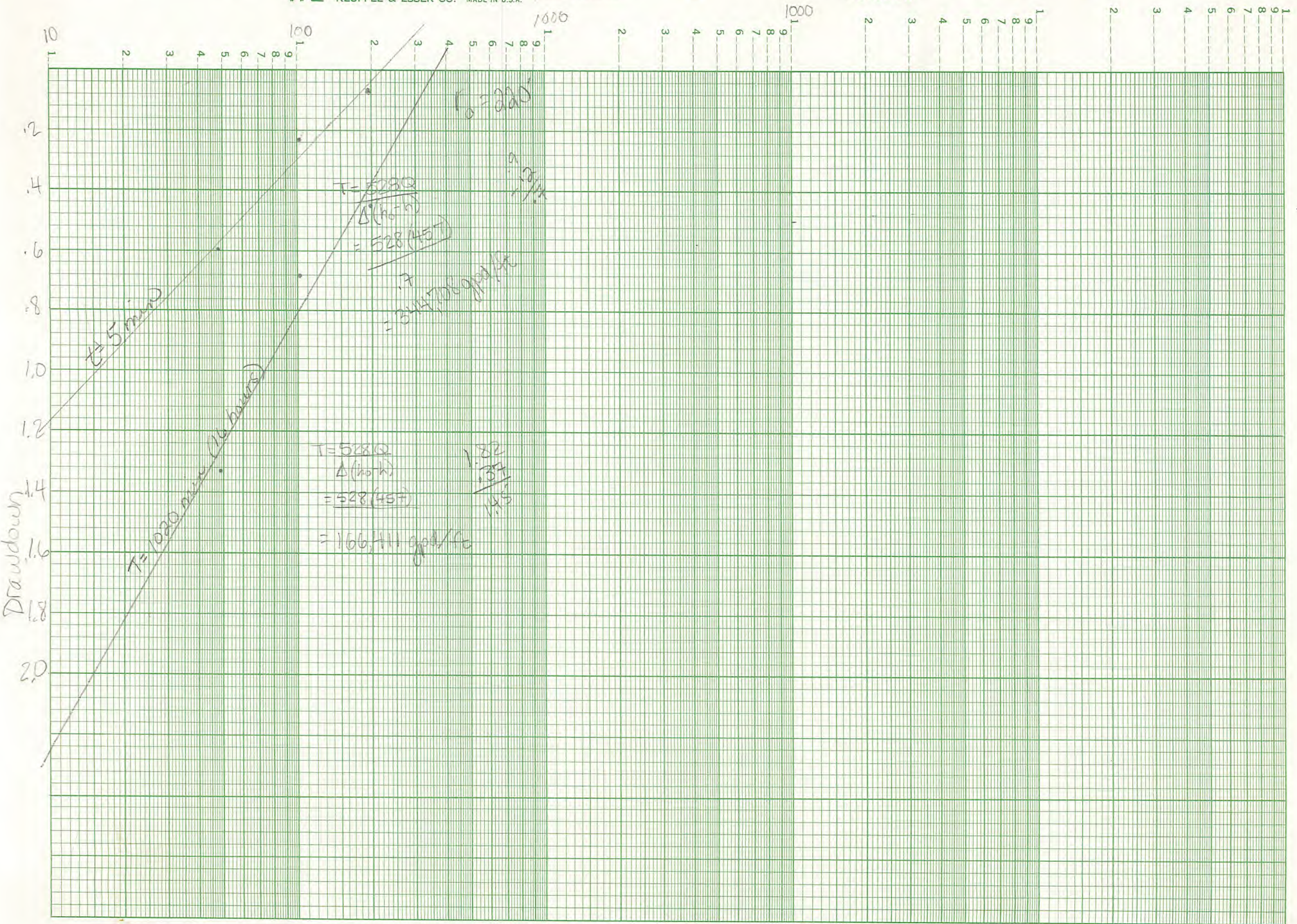
$$T = \frac{244(378)}{.3}$$

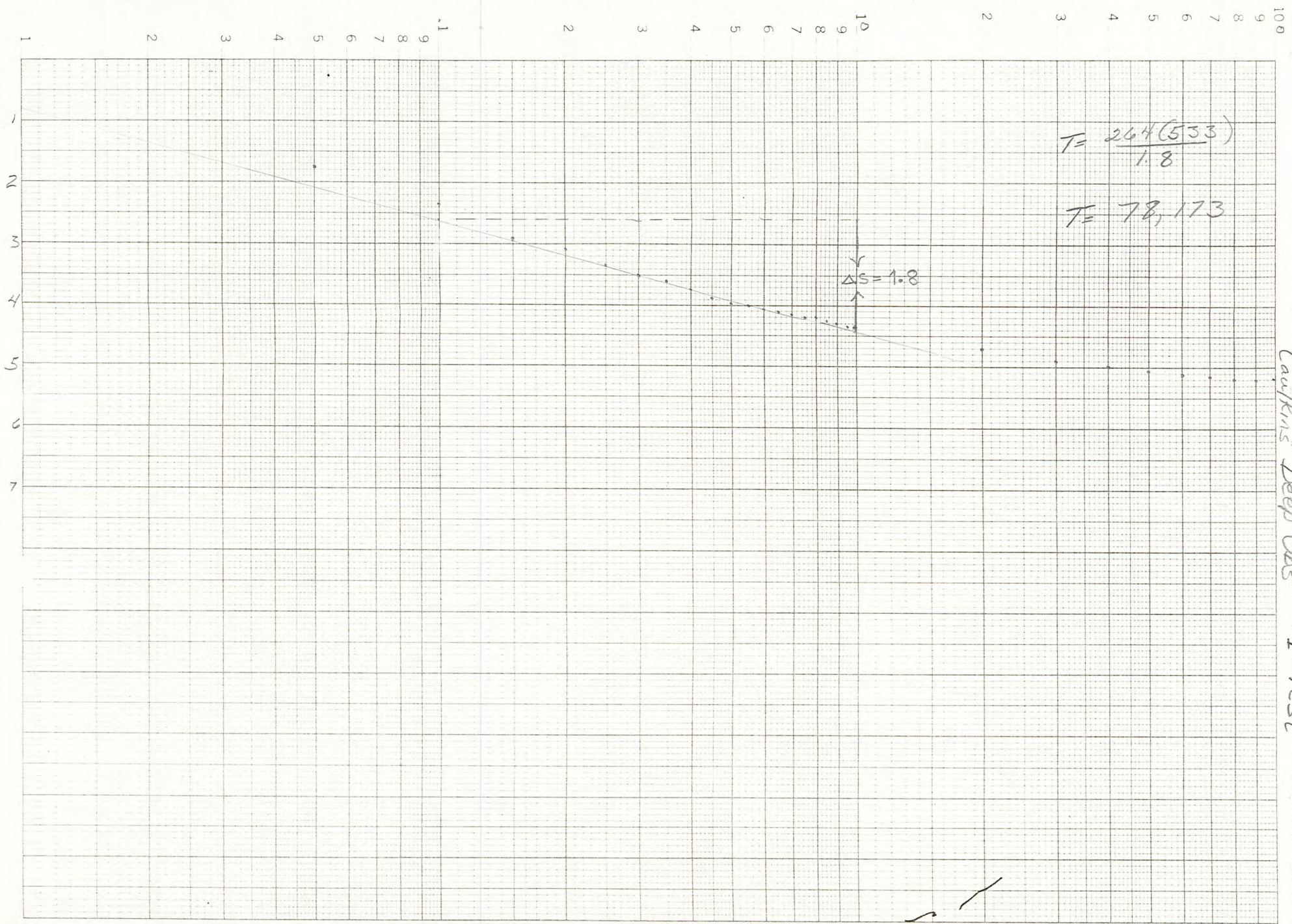
$$T = 332,640$$

Caulkins Pumping Well

Time in Minutes







$$T = \frac{264(533)}{1.8}$$

$$T = 78,173$$

$\Delta S = 1.8$

Caulkins Deep Obs #1 Test

PUMP WELL NUMBER _____

Drilling Point _____
 _____ ft above land surface.
 Elevation of Measuring Point _____ ft
 above mean sea level.

Well Location: T. _____, R. _____, Sec. _____
 Well Coordinates: _____ ft N. _____ ft E.
 Orifice Size: Start 11:45 am

pumping well - tape start at 6"

Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Discharge (gpm)	Remarks (include method of measuring water level)
0	16.08				
.5	16.56				
1					
1.5					
2	27.15				
2.5	27.30				
3	27.4				
3.5	27.45				
4	27.53				
4.5	27.6				
5	27.61				
5.5	27.64				
6	27.65				
6.5	27.7				
7	27.72				
7.5	27.76				
8	27.78				
8.5	27.80				
9	27.81				
9.5	27.83				
10	27.85				
20	28.00				
30	28.10				
40	28.14				
50	28.16				
60	28.20				
70	28.23				
80	28.23				
90	28.24				
100	110				* Pump went off 13:25
120					
180					
240					
300					
360					

Caulkers #3

PUMP WELL NUMBER _____

Gauging Point _____
_____ ft above land surface.
Elevation of Measuring Point _____ ft
above mean sea level.

Well Location: T. _____, R. _____, Sec. _____
Well Coordinates: _____ ft N. _____
_____ ft E.

Orifice Size: _____

Hour	Depth to Water Held Wet Depth TAPE START 30' (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Discharge (gpm)	Remarks (include method of measuring water level) 9/24/84 START 11:45
0	37.98				
.5	38.00			375	
1	38.14				
1.5	38.20				
2	38.25				
2.5	38.30				
3	38.30				
3.5	38.35				
4	38.35				
4.5	38.38				
5	38.38				
5.5	38.40				
6	38.40				
6.5	38.43				
7	38.43				
7.5	38.44				
8	38.45				
8.5	38.45				
9	38.47				
9.5	38.47				
10	38.47				
20	38.58				
30	38.65				
40	38.68				
50	38.70				
60	38.72				
70	38.75				
80	38.75				
90	38.75				
100	110				
120					
180					
240					
300					
360					

PUMP WELL NUMBER _____

Sounding Point _____
 _____ ft above land surface.
 Elevation of Measuring Point _____ ft
 above mean sea level.

Well Location: T. _____, R. _____, Sec. _____
 Well Coordinates: _____ ft N. _____ ft E.

Orifice Size: D 2" well

Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Discharge (gpm)	Remarks (include method of measuring water level)
0	10.48				
.5	10.40				
1	10.60				
1.5	12.58				
2	12.85				
2.5	13.03				
3	13.11				
3.5	13.24				
4	13.28				
4.5	13.34				
5	13.42				
5.5	13.49				
6	13.52				
6.5	13.60				
7	13.65				
7.5	13.68				
8	13.71				
8.5	13.74				
9	13.78				
9.5	13.80				
10	13.81				
20	14.10				
30	14.25				
40	14.35				
50	14.4				
60	14.5				
70	14.52				
80	14.54				
90	15.55				
100	110				
120					
180					
240					
300					
360					

PUMP WELL NUMBER 71

Caulkins

Gauging Point _____
 _____ ft above land surface.
 Elevation of Measuring Point _____ ft
 above mean sea level.

Well Location: T. _____, R. _____, Sec. _____
 Well Coordinates: _____ ft N. _____
 _____ ft E.

Start at 10:00 AM - shallow well
 Orifice Size: _____

Pipe starts at 6'

Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Discharge (gpm)	Remarks (include method of measuring water level)
0	14.3				
.5	14.51				
1	14.64				
1.5	14.70				
2	14.75				
2.5	14.80				
3	14.83				
3.5	14.84				
4	14.85				
4.5	14.86				
5	14.88				
5.5	14.89				
6	14.90				
6.5	14.90				
7	14.92				
7.5	14.93				
8	14.94				
8.5	14.95				
9	14.96				
9.5	14.97				
10	14.98				
20	15.05				
30	15.10				
40	15.15				
50	15.18				
60	15.20				
70	15.22				
80	15.24				
90	15.26				
100	15.26	110	15.28		
120	15.30				
180	15.34				
240	15.36				
300	15.40				<i>pump goes off right after reading gpm = 580</i>
360	15.10				<i>pump goes off again just before reading</i>

late reading due to pump

pump goes off again just before reading

PUMP WELL NUMBER #1

deep obs well

Measuring Point _____
 _____ ft above land surface.
 Elevation of Measuring Point _____ ft
 above mean sea level.

Well Location: T. _____, R. _____, Sec. _____
 Well Coordinates: _____ ft N. _____
 _____ ft E.

Orifice Size: _____

TAPE STARTS AT 1

Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Dis-charge (gpm)	Remarks (include method of measuring water level)
0	10.77	0			
.5	12.53	1.76			
1	13.13	2.36			
1.5	13.88	2.91			
2	13.85	3.08			
2.5	14.11	3.34			
3	14.29	3.52			
3.5	14.38	3.61			
4	14.52	3.75			
4.5	14.64	3.87			
5	14.71	3.94			
5.5	14.77	4			
6	14.83	4.06			
6.5	14.86	4.09			
7	14.92	4.15			
7.5	14.96	4.19			
8	14.99	4.22			
8.5	15.03	4.26			
9	15.07	4.3			
9.5	15.12	4.36			
10	15.14	4.37			
20	15.49	4.72			
30	15.67	4.9			
40	15.76	4.99			
50	15.83	5.06			
60	15.87	5.1			
70	15.91	5.14			
80	15.94	5.17			
90	15.98	5.21			
100	15.99	5.22/5.24			
120	16.02	5.25			
180	16.09	5.32			
240	16.12	5.35			
300	16.13	5.36			
360	15.65	late due to pump			

pump goes off
 pump goes off again, before ready
 pump " " " we leave

PUMP WELL NUMBER

Caulkins #2 shallow art

Boring Point _____
ft above land surface.

Well Location: T. _____, R. _____, Sec. _____

Elevation of Measuring Point _____ ft
above mean sea level.

Well Coordinates: _____ ft N. _____ ft E.

Tape starts at 6'

Orifice Size: _____

Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Dis-charge (gpm)	Remarks (include method of measuring water level)
0	14.91				
.5	14.91				
1	14.91				
1.5	14.91				
2	15.09				
2.5	15.15				
3	15.20				
3.5	15.22				
4	15.25				
4.5	15.28				
5	15.29				
5.5	15.31				
6	15.33				
6.5	15.34				
7	15.35				
7.5	15.35				
8	15.37				
8.5	15.37				
9	15.38				
9.5	15.40				
10	15.40				
20	15.48				
30	15.53				
40	15.56				
50	15.60				
60	15.63				
70	15.63				
80	15.64				
90	15.64				
100	15.65	110	15.65		
120	→ pump goes off right at 110 reading for 15 min				
180	15.70				
240					
300					
360					

PUMP WELL NUMBER

Caulkins #2 deep obs

Boring Point _____
ft above land surface.

Well Location: T. _____, R. _____, Sec. _____

Elevation of Measuring Point _____ ft
above mean sea level.

Well Coordinates: _____ ft N. _____ ft E.

Orifice Size: _____

Tape starts at 1 foot

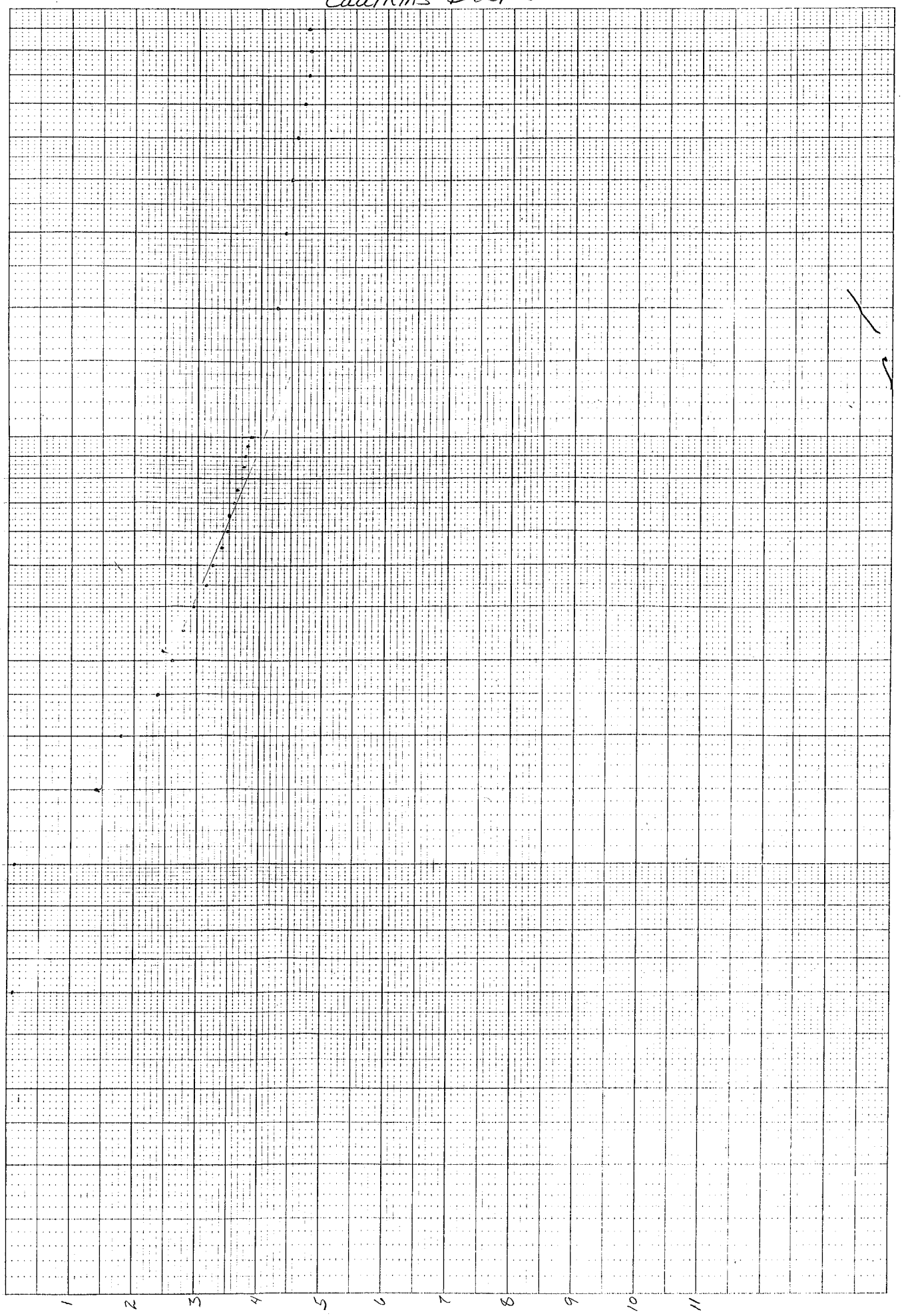
Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Discharge (gpm)	Remarks (include method of measuring water level)
0	11.28	0			
.5	11.38	.1			
1	11.38	.1			
1.5	12.68	1.4			
2	13.07	1.79			
2.5	13.65	2.37			
3	13.87	2.59			
3.5	14.06	2.78			
4	14.23	2.95			
4.5	14.42	3.14			
5	14.53	3.25			
5.5	14.64	3.36			
6	14.73	3.45			
6.5	14.78	3.5			
7	14.86	3.58			
7.5	14.91	3.63			
8	14.99	3.71			
8.5	15.01	3.78			
9	15.04	3.76			
9.5	15.07	3.79			
10	15.11	3.83			
20	15.54	4.26			
30	15.69	4.41			
40	15.78	4.5			
50	15.85	4.57			
60	15.90	4.62			
70	15.93	4.65			
80	15.95	4.67			
90	15.94	4.66			
100	15.96	4.66			
120					
180	15.96				
240					
300					
360					

Caulkins Deep Obs #2 Test

46 5810

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Handwritten marks on the right side of the graph, including a checkmark and a downward-pointing arrow.

CAUS

PUMP WELL NUMBER _____

Surfing Point _____
 _____ ft above land surface.
 Elevation of Measuring Point _____ ft
 above mean sea level.

Well Location: T. _____, R. _____, Sec. _____

Well Coordinates: _____ ft N.
 _____ ft E.

Shallow Obs

Orifice Size: _____

Hour	Depth to Water Held Wet Depth	Elevation of Water Level (ft)	Piezometer Head (in)	Discharge (gpm)	Remarks (include method of measuring water level)
	<i>30' tape start</i>				
	<i>11.5 ft</i>				
0	38.24	0			
.5					
1	38.39	.15			
1.5	38.45	.21			
2	38.49	.25			
2.5	38.53	.29			
3	38.56	.32			
3.5	38.60	.36			
4	38.60	.36			
4.5	38.60	.36			
5	38.62	.38			
5.5	38.62	.38			
6	38.65	.41			
6.5	38.66	.42			
7	38.69	.44			
7.5	38.68	.44			
8	38.69	.45			
8.5	38.69	.45			
9	38.70	.46			
9.5	38.70	.46			
10	38.72	.48		375	
20	38.80	.56			
30	38.85	.61			
40	38.90	.66			
50	38.92	.68			
60	38.95	.71			
70	38.97	.73			
80	38.97	.73			
90	39.00	.76		370	
100	39.00 110 39.02	.76 .78			
120	39.02	.78			
180	39.08	.84		370	
240	39.10	.86			
300	39.15	.91			
360	39.20	.96			

CAUS

~~CAUS~~ *Canberra # 4*

PUMP WELL NUMBER _____

Measuring Point _____
ft above land surface.

Well Location: T. _____, R. _____, Sec. _____

Duration of Measuring Point _____ ft
above mean sea level.

Well Coordinates: _____ ft N. _____ ft E.

Shallow obs

Orifice Size: _____

Hour	Depth to Water Held Wet Depth <i>30' tape</i> (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Discharge (gpm)	Remarks (include method of measuring water level) START Time: 15:15 9/25/89
420	39.20	.96			
480	39.25	1.01			
540	39.28	1.04			
600	39.28	1.04			
660	39.28	1.04			
720	39.29	1.05			
780	39.30	1.06			
840	39.30	1.06			
900	39.31	1.07			
960	39.31	1.07			
1020	39.34	1.10			
1080	39.38	1.14			
1140	39.40	1.16		370	
1200					
1260					
1320					
1380					
1440					

CAUSR

PUMP WELL NUMBER _____

4

Boring Point _____
ft above land surface.
Elevation of Measuring Point _____ ft
above mean sea level.

Well Location: T. _____, R. _____, Sec. _____
Well Coordinates: _____ ft N. _____ ft E.

Shallow obs

Recovery

Orifice Size: _____

3824

Hour	Depth to Water Held Wet Depth <i>30' Tape</i> (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Dis-charge (gpm)	Remarks (include method of measuring water level)
0	39.40	0			<i>20219 meter reaching water</i>
.5	39.28	.12			
1	39.20	.20			
1.5	39.17	.23			
2	39.15	.25			
2.5	39.10	.30			
3	39.08	.32			
3.5	39.05	.35			
4	39.05	.35			
4.5	39.04	.36			
5	39.03	.37			
5.5	39.00	.40			
6	39.00	.40			
6.5	38.99	.41			
7	38.97	.43			
7.5	38.97	.43			
8	38.96	.44			
8.5	38.95	.45			
9	38.95	.45			
9.5	38.94	.46			
10	38.94	.46			
20	38.88	.52			
30	38.81	.59			
40	38.77	.63			
50	38.74	.66			
60	38.71	.69			
70	38.70	.70			
80	38.68	.72			
90	38.67	.73			
100	38.65 110 38.69	.75 76			
120	38.69	.76			
180					
240					
300					
360					

STOP 10:15

9/26/89

CAUD

PUMP WELL NUMBER 4

Measuring Point _____
 _____ ft above land surface.
 Elevation of Measuring Point _____ ft
 above mean sea level.

Well Location: T. _____, R. _____, Sec. _____
 Well Coordinates: _____ ft N. _____ ft E.

Tape started at 1'

Orifice Size: Deep Obs.

Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft)	Piezometer Head Recovery (in)	Discharge Calculated Recovery (gpm)	Remarks (include method of measuring water level)
0	10.71	0	1506	0	
.5	11.50	.79	1395	1.11	
1	12.30	1.59	1348	1.58	
1.5	12.71	2	13.20	1.86	
2	12.96	2.25	13.00	2.06	
2.5	13.08	2.37	12.83	2.23	
3	13.20	2.49	12.69	2.37	
3.5	13.32	2.61	12.58	2.48	
4	13.40	2.69	12.50	2.56	
4.5	13.48	2.77	12.43	2.63	
5	13.54	2.83	12.35	2.71	
5.5	13.60	2.89	12.29	2.77	
6	13.66	2.95	12.25	2.81	
6.5	13.70	2.99	12.20	2.86	
7	13.75	3.04	12.15	2.91	
7.5	13.78	3.07	12.11	2.95	
8	13.81	3.1	12.08	2.98	
8.5	13.85	3.14	12.04	3.02	
9	13.88	3.17	12.01	3.05	
9.5	13.89	3.18	11.98	3.08	
10	13.93	3.22	11.94	3.12	
20	14.27	3.56	11.57	3.49	
30	14.4	3.69	11.38	3.68	
40	14.5	3.79	11.31	3.75	
50	14.54	3.83	11.25	3.81	
60	14.60	3.89	11.21	3.85	
70	14.65	3.94	11.16	3.9	
80	14.65	3.94	11.12	3.94	
90	14.67	3.96	11.09	3.97	
100	14.70 110 14.70	3.99 3.99	11.07	110 11.05	3.99 4.01
120	14.73	4.02	11.02	4.04	
180	14.80	4.09			
240	14.85	4.14			
300	14.86	4.15			
360	14.88	4.17			

CAUD

~~445~~ *Caulkins # 4*

PUMP WELL NUMBER _____

Spring Point _____
ft above land surface.

Well Location: T. _____, R. _____, Sec. _____

Elevation of Measuring Point _____ ft
above mean sea level.

Well Coordinates: _____ ft N.
_____ ft E.

Orifice Size: *Deep Well*

Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Dis-charge (gpm)	Remarks (include method of measuring water level)
420	14.95	4.24			
480	14.95	4.24			
540	14.95	4.24			
600	14.96	4.25			
660	14.97	4.26			
720	14.98	4.27			
780	14.98	4.27			
840	15.00	4.29			
900	15.01	4.3			
960	15.01	4.3			
1020	15.03	4.32			
1080	15.05	4.34			
1140	15.06	4.35			
1200					
1260					
1320					
1380					
1440					

~~1235~~
Caulkins # 4

PUMP WELL NUMBER _____

Spring Point _____
ft above land surface.
Elevation of Measuring Point _____ ft
above mean sea level.

Well Location: T. _____, R. _____, Sec. _____
Well Coordinates: _____ ft N.
_____ ft E.

Orifice Size: Pump Well

Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft)	Piezometer Head (in)	Dis-charge (gpm)	Remarks (include method of measuring water level)
420	28.28	11.98			
480	28.28	11.98			
540	28.28	11.98			
600	28.28	11.98			
660	28.28	11.98			
720	28.30	12.00			
780	28.32	12.02			
840	28.32	12.02			
900	28.33	12.03			
960	28.34	12.04			
1020	28.38	12.08			
1080	28.38	12.08			
1140	28.40	12.10			
1200					
1260					
1320					
1380					
1440					

Measuring Point _____
 _____ ft above land surface.
 Elevation of Measuring Point _____ ft
 above mean sea level.

Well Location: T. _____, R. _____, Sec. _____

Well Coordinates: _____ ft N. _____ ft E.

Orifice Size: _____

Recovery Pumping Well

Hour	Depth to Water Held Wet Depth (ft)	Elevation of Water Level (ft) Recovery	Piezometer Head (in)	Discharge (gpm)	Remarks (include method of measuring water level)
0	28.40	0			
.5	19.36	9.04			
1	18.80	9.6			
1.5	18.57	9.83			
2	18.35	10.05			
2.5	18.18	10.22			
3	18.10	10.3			
3.5	18.05	10.35			
4	17.90	10.5			
4.5	17.83	10.59			
5	17.75	10.62			
5.5	17.70	10.65			
6	17.68	10.7			
6.5	17.64	10.72			
7	17.59	10.76			
7.5	17.55	10.81			
8	17.53	10.85			
8.5	17.51	10.87			
9	17.49	10.89			
9.5	17.47	10.91			
10	17.47	10.93			
20	17.19	11.26			
30	16.98	11.42			
40	16.89	11.51			
50	16.83	11.57			
60	16.79	11.61			
70	16.76	11.64			
80	16.72	11.68			
90	16.70	11.7			
100	16.67	11.73	110	16.66	11.74
120	16.65	11.75			
180					
240					
300					
360					

Caulkins #3 Test
gallons start 19877.5

Caulkins #4 Test
gallons start 19788
gallons end 20219
start @ 3:15 pm
end @ 10:15 am

20219
- 19788

431 1000

1140 $\sqrt{431000}$
378

30' between wells

C-23

#2

gallons start 21845 for 30 min
 gallon start 21863 } 250 min \approx 375 gpm
 gallons end 21977 } 456 gpm

125' between wells

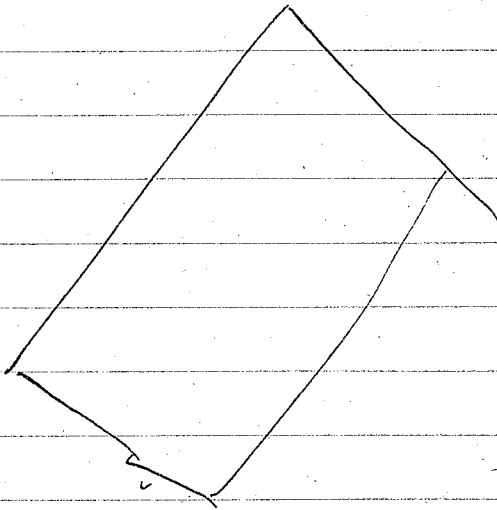
Alla patah Rd

gallons start 21977 }
 gallons end 22061 } 250 min \approx 325 gpm
 336 gpm

75' between wells

L-65

gallons start 22188 }
 gallons end 22259 } 250 min \approx 275-300 gpm
 284 gpm



Caulkins Grove pump at ≈ 500 gpm -
gallons start 19538

gallons end 19730

pumping well to deep obs 70'

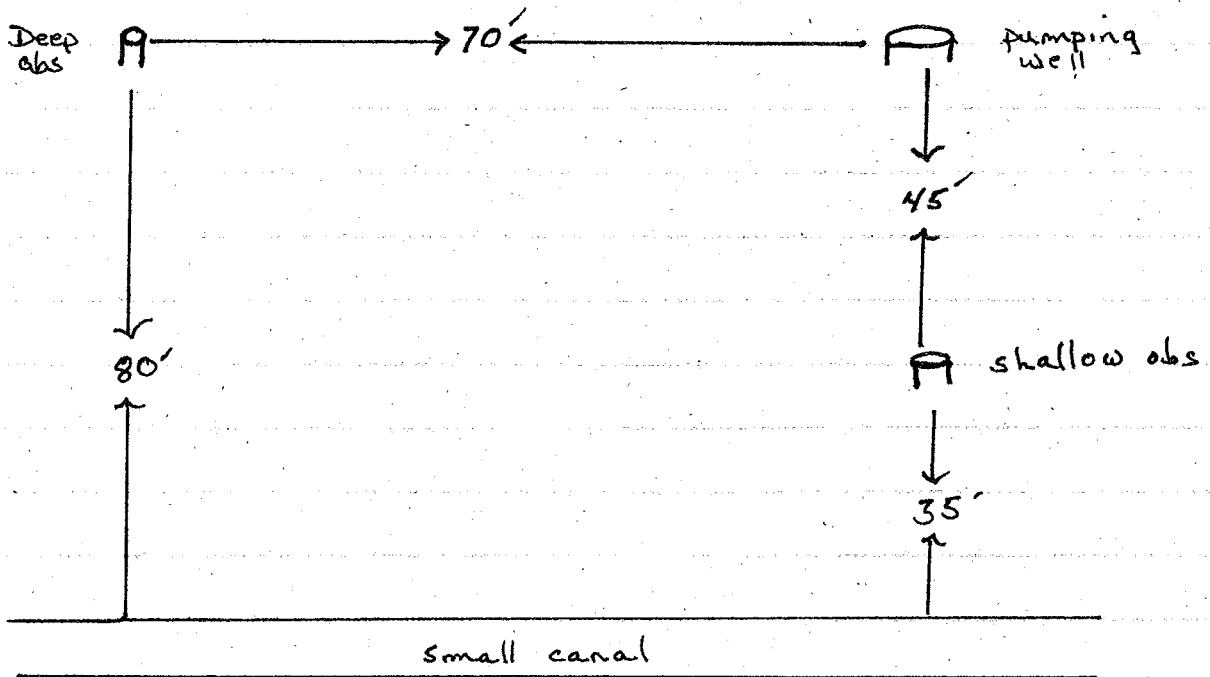
pumping well to shallow obs 45'

pumping well to canal 80'

duration of test = 5 hrs & 1 hr working on pump \therefore 6 hrs

Total gallons pumped = 192000,

GPM = 533



Caulkins Test 1, 2, & 3 -

Incomplete, due to pump failure

Caulkins #2

gallons start 19731

gallons end

start at 10:15 AM