

Borax Acidification

Part I

Test runs to establish pH changes upon addition of 4N H_2SO_4 on Borax & DTB.

Borax

pH	4N H_2SO_4 (ml)	observations
11.1	0	clear
4.4	4.7	clear
3.6	5.3	yellow ppt + pink tinge
2.2	10.1	yellow ppt + pink tinge

DTB

pH	4N H_2SO_4 (ml)	observations
7.8	0	clear yellow soln
6.6	2.1	ppt starts but dissolves quickly
6.1	3.7	soln goes from yellow to green
5.1	6.2	Dark green

Part II

The acidification of 450 ml of Borax with 1N H_2SO_4 .

pH	H_2SO_4 (ml)	pH	H_2SO_4 (ml)	pH	H_2SO_4 (ml)	pH	H_2SO_4 (ml)	pH	H_2SO_4 (ml)
11.5	0	6.65	6.0	5.6	8.1	4.05	9.5	2.7	13.0
9.2	2.7	6.35*	6.4*	5.4	8.4	3.4*	10.2*	2.5	14.6
8.55	3.7	6.25	6.6	5.0	8.9	3.4	10.9	2.3	17.2
8.1	4.3	6.1	6.9	4.7	9.1	3.3	11.2	2.2	19.35
7.3	5.3	6.0	7.2	4.5	9.2	3.1	11.7	2.1	20.2
6.9	5.7	5.9	7.4	4.3	9.3	2.9	12.2		

N.B. that a pH 6.35 a colloidal mass is apparent and
 at a pH of 3.4 a white colloidal suspension with
 a pink tinge appears.

Part III

The acidification of 450ml Barren with DTB and
 then further acidification with 1N H_2SO_4 .

450ml Barren	DTB (ml.)
pH	
11.1	0
10.9	9.2
10.7	16.2
10.5	22.2
10.3	28
10.2	31
10.0	40
9.9	45

(450ml Barren + 45ml DTB)		1N H_2SO_4 (ml.)			
pH		pH	H_2SO_4	pH	H_2SO_4
9.9	0	6.95	5.3	3.55	11.0
9.8	.3	6.7	5.7	3.35	11.5
9.5	.7	6.4	6.2	2.8	13.2
9.3	1.3	6.2	6.6	2.5	15.7
9.0	2.0	6.0	7.1	2.4	17.0
8.3	3.2	5.7	7.7		
7.9	3.7	5.1	8.8		
7.4	4.6	3.9	10.0		
7.3	4.8	3.7	10.5		

NB! No color changes or ppt's noticeable upon the addition of DTB to Barren, but when 1 N H_2SO_4 reactions follow:

pH	H_2SO_4	
7.4	4.6	- tinging light yellow color.
7.3	4.8	- fine colloidal ppt's noticed.
3.9	10.0	- colloidal suspension noticed
3.55	11.0	- Blue grey ppt's appears.

PART IV

After acidification of Barren & DTB varying amounts of lime were added.

pH	CaO/Km	
2.4	0	
2.55	1	- milkiness ppt (white - easy).
2.9-3.25	2	- grey ppt
3.25 → 11.0	5	- ppt. disperses & returns.

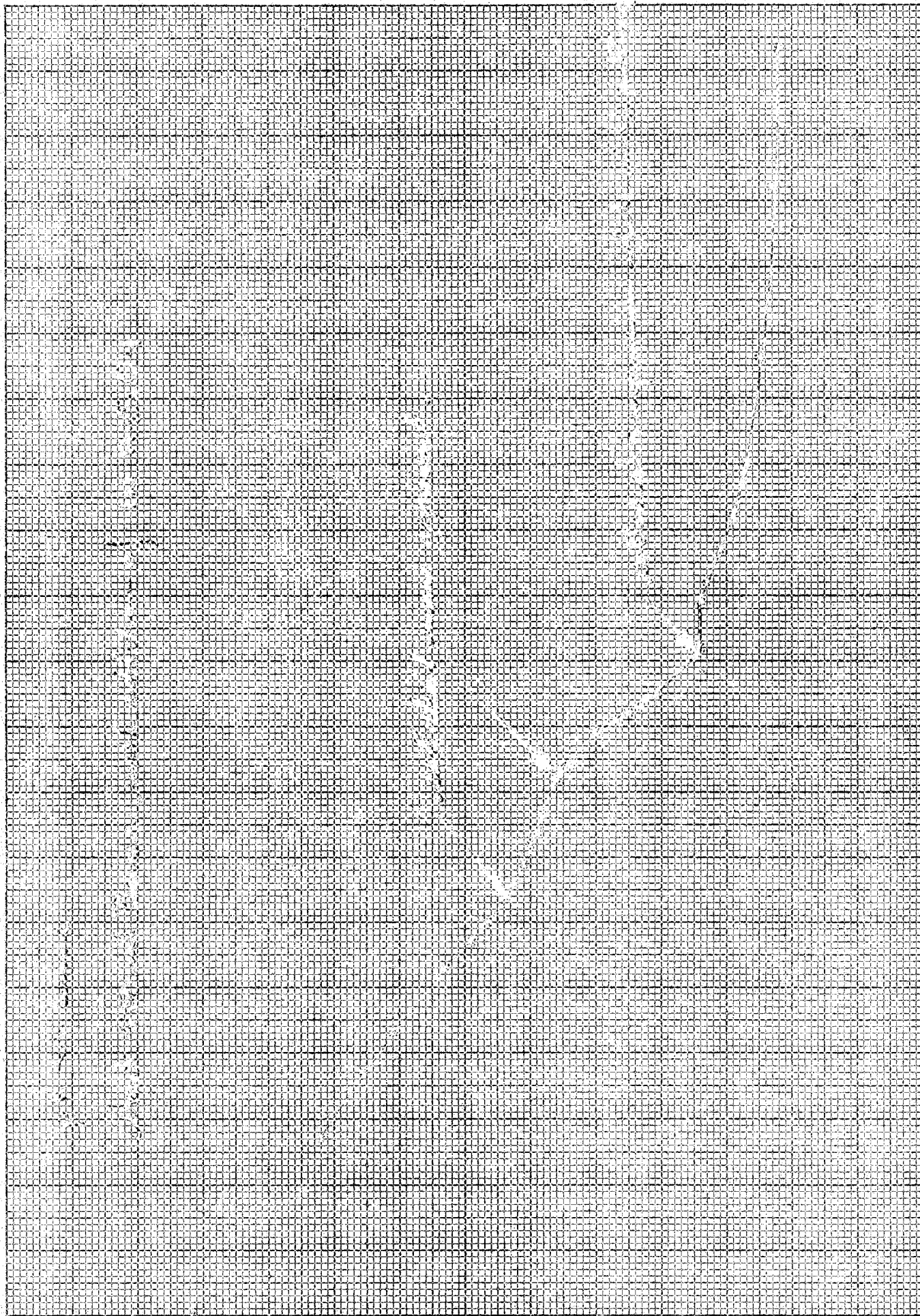
N.B. As pH increases the following is noticed
volume of ppt decreases, then solution goes opaque with no ppt & then is milkiness again.

Part V - The analysis of Ca^{++} during the acidification of the Barren.

	pH	ppm Ca
Barren	11.5	424
Barren + H_2SO_4	2.1	285
+ CaO	11.0	435

10 1/2 IN. TO 1 INCH 7 1/2 INCHES
KUTTEL & FEEN CO. MADE IN U.S.A.

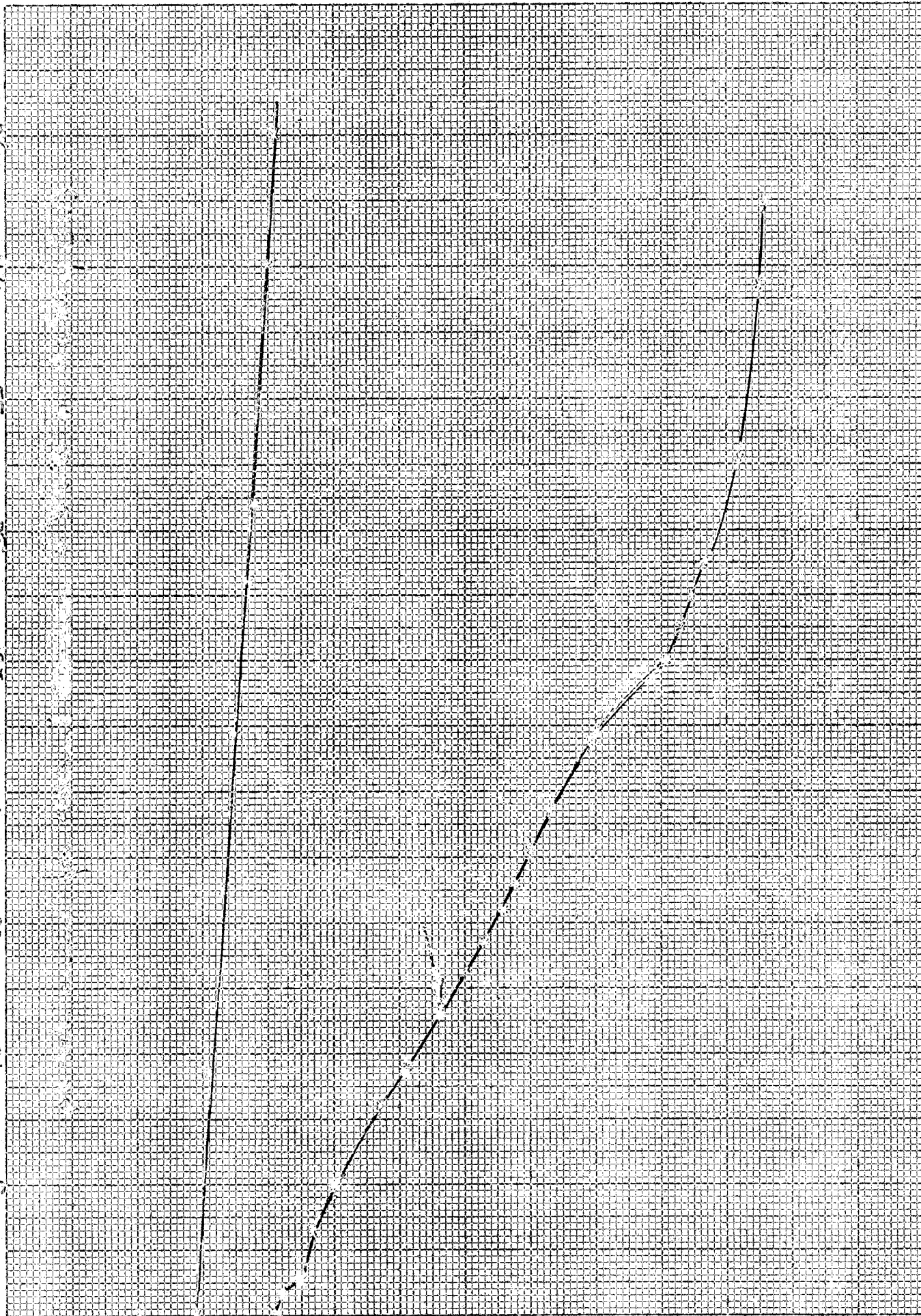
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Handwritten note: 10 1/2 IN. TO 1 INCH 7 1/2 INCHES

DTG (m)

5 10 15 20 25 30 35 40 45



10-2-10 TO 1-10-24 7-10-24