

General.

DWTO = DORCO WASH THICKENER O'FLOW  
(1<sup>st</sup> CALCINE WASH THICKENER)

HCD WTO = HOT COTIREL DUST WASH THICKENER O'FLOW

M WTO = MILL WASH THICKENER O'FLOW  
(2<sup>nd</sup> CALCINE WASH THICKENER)

CAL. RES. = CALCINE RESIDUE (SCRAPED FROM #4 FILTER)

CAL. RES + BARREN = CALCINE RESIDUE FROM REPULPER.

Unless otherwise mentioned all tests were started between 9:30-12 and left overnight and filtered the following day.

Except where noted, tests were carried out in open buckets & mixed 5-6 times in the first 2-3 hours or so.

Line 16 p.t. of solution.

10  
9  
8  
7  
6  
5  
4  
3  
2  
1  
0

10 20 30 40 50 60 70 80 90 100

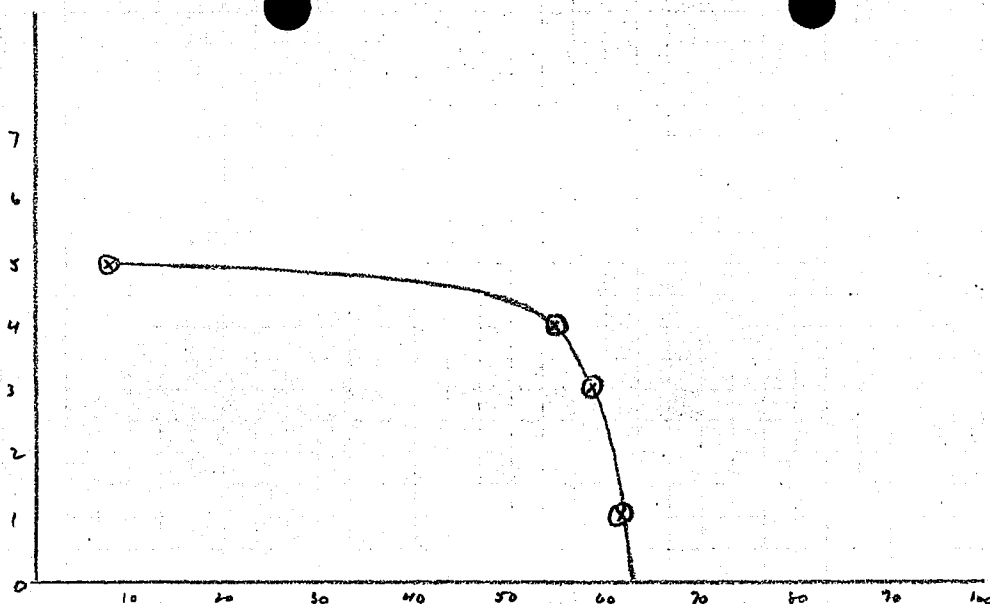
% REDUCTION IN AS.

Test 5.

	As. ppm	(RATIO) TONS	16 As p.d.	Fe ppm.	Oxidized $As^5$
DWTO	139.06	160	44.5	123.55	39.67 ppm.
HCDWTO	626.20	250	313.1	47.19	
MWTO	25.47	590	27.5	.85	
CAL. RES.	(7%)	150	-	(15%)	
FINAL BARREN. (415 ppm)		700	8.2	1.32	

N.B. In subsequent tests it has been assumed that in including of an arsenic precipitation circuit that the cyanidation circuit would be streamlined and simplified by the removal of the tailing treatment circuits which are very marginal at present. This would make Final Barren no longer available, and give the use of present equipment for Arsenic treatment.

Time in Hours Standing Before Mixing.



% As Reduction 2 lb p & lime added.

	As.	RATIO TONS	lb of As.
DWTO	132.63	250	66.3
HCDWTO	525.03	300	315.0
MWTO	25.74	600	30.9
Calc. Res + BARREN	13.71	50% 250	3.8

Point Made

Mixing should be rapid to obtain maximum effect. Loss of reduction is assumed to be connected with fracture precipitation of the iron from solution.

Test. 10.

DWTO

127.26

Ratio  
TONS

250

lb As

63.6

HCD WTD

256.54

300

153.9

MWTO

24.40

600

29.3

CAL. RES. L W BARKEN

SOL.

10.69

50% 250

2.8

HCD. RES.

SOL. 1313.0 33/67 30

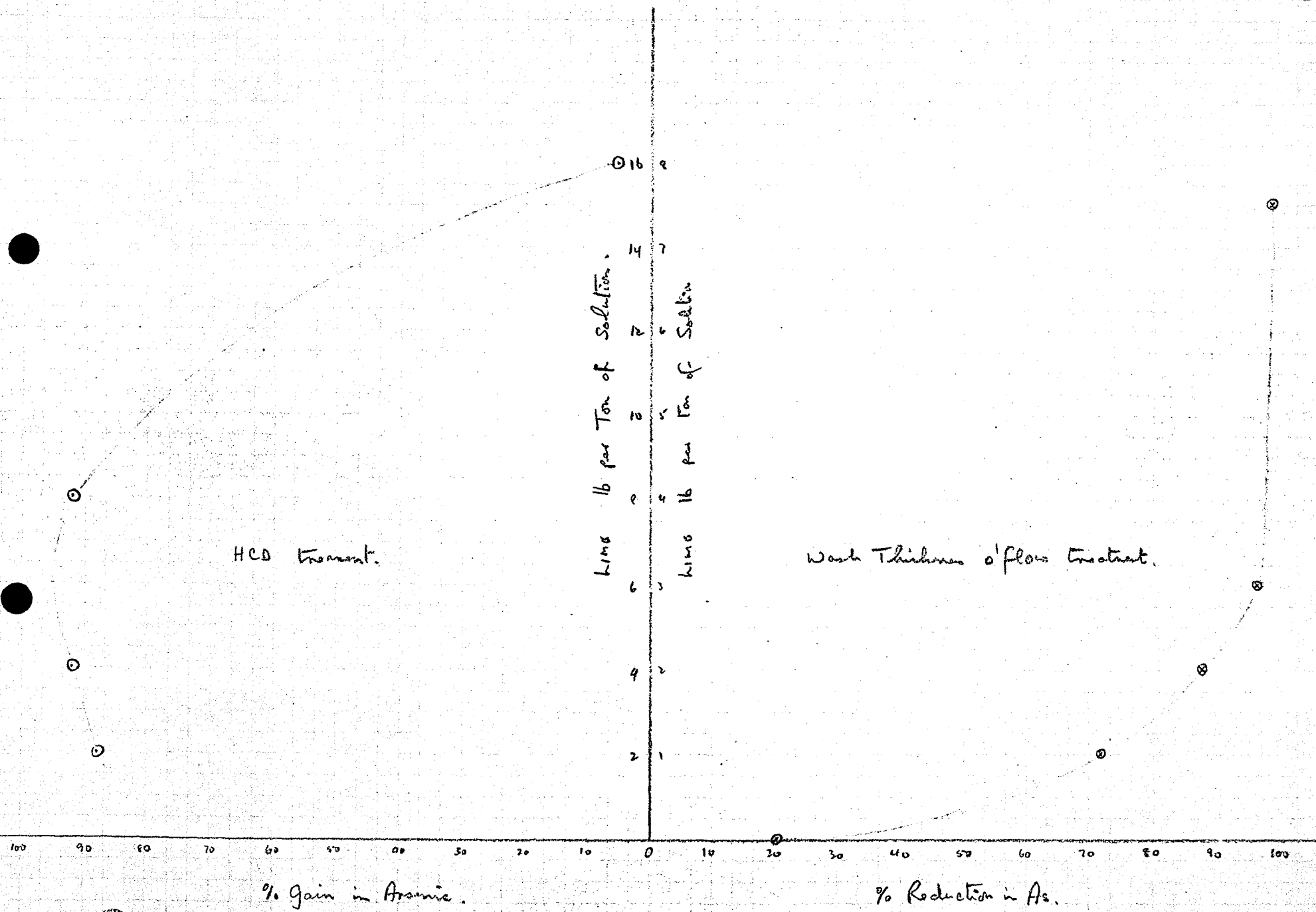
52.5

Repulped Solids from HCD tests, ratio 10 Tons HCD RES RES. with 100 tons water dissolved 105; 160; 215, + 230 lb arsenic in 24 hours.

Point Made Plain water dilutions (No lime addition at high pH) dissolves the arsenic left in this lime treated HCD residue.

Point Made Only 2 lb pT. lime is required to give approximately 90% reduction.

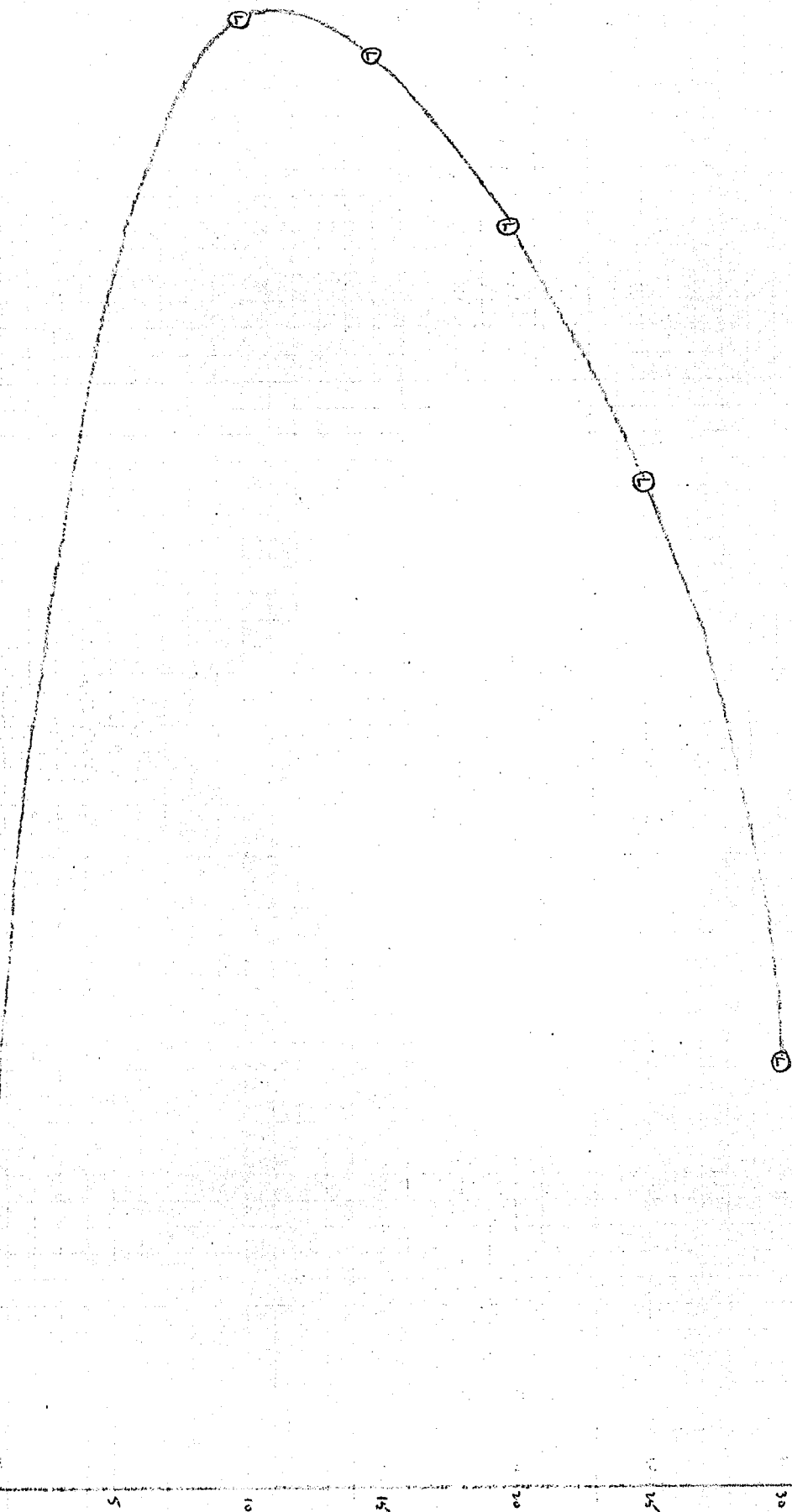
Test 10



Test 11A  
Straight line

% As. Gain.

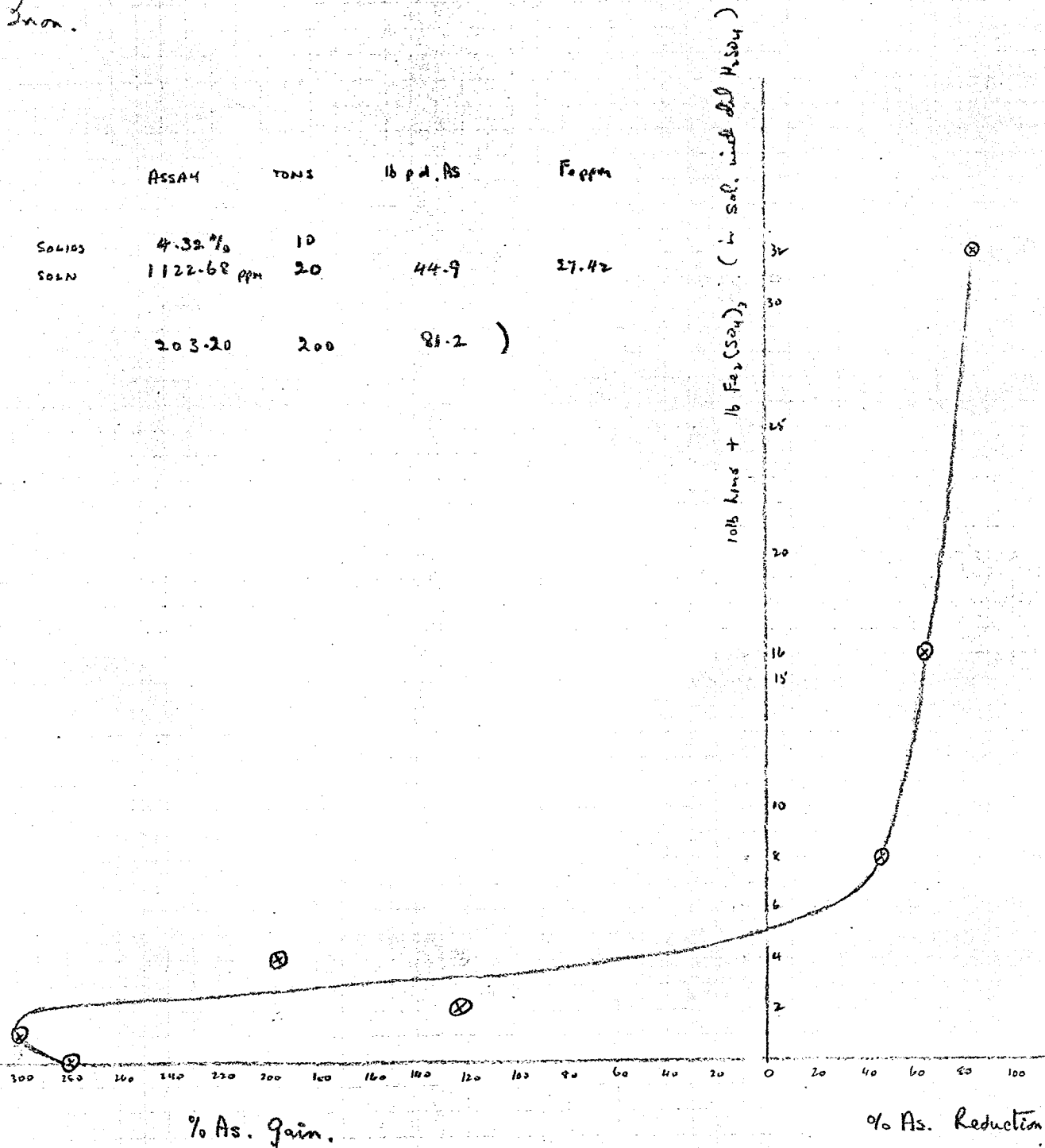
200 180 160 140 120 100 80 60 40 20 0



Lime lb per Ton of Solution.

Test 11 B. line a Iron.

		ASSAY	TONS	lb p.d. AS	Fe ppm
HCD RES	SOLIDS	4.32%	10		
	SOLN	1122.68 ppm	20	44.9	27.42
(NOTE. HCD WTD		203.20	200	81.2	)



Test 12.

	As ppm	TONAGE RATIO USED	lb As p.d.	RE ASSGD TONAGE	lb As p.d.
<u>WTO's.</u> { D.WTO	121.96	250	61.0	390	95.2
HCO WTO	193.04	300	115.8	200	77.2
M WTO	27.55	600	30.1	425	23.4
CAL. RES. + BARROW	12.00	50% 250	206.9 3.0		195.8

HCO RES	SOLIDS 4.57%	10	
	SOL. 670.56	20	26.8

	Notes.	% Reduction	REMARKS.
1.	WTO's. No Roll	20.5	} No Reagents.
2.	WTO's. 24 Roll	35.4	
6.	WTO's + 2100 F. WATER No Roll	42.4	} 2 lb lime. P.T.F.O.F.
7.	WTO's + 2100 F. WATER 24 Roll	96.0	
8.	HCO RES No Roll	+ 5.2	} No Reagents. (N.B. lime is extracting the Na <sup>+</sup> to NaOH) See Tests 10+11.
9.	HCO RES 24 Roll	+ 16.8	
13.	HCO RES. + 20 lb lime + 4 lb Fe. + 24 Roll	+ 14.9	
14.	WTO's 2 Roll + HCO 2 Roll 24 Roll	+ 73.1	} In practice it would only take about 2 1/4 hours to settle at Tailings
15.	WTO's 24 Roll + HCO 24 Roll 24 Roll	+ 58.9	



Test 12.

HCD Res.  
+10 lb ft hms  
2 lbs  $Fe_2(SO_4)_3$

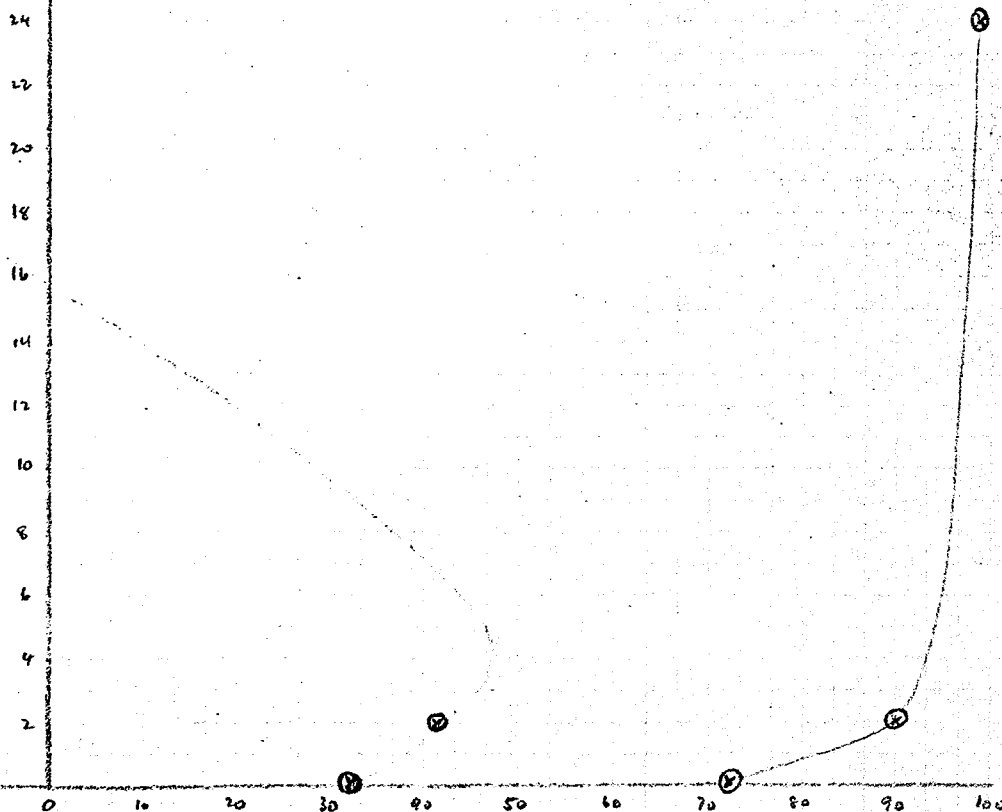
hours Rolled

WT of s. +2 1/2 pthms.

160 150 140 130 120 110 0 10 20 30 40 50 60 70 80 90 100

% Arsenic Gain

% Arsenic Reduction.



## INFERENCES      TO DATE

1. There should be little or no delay in treating and mixing solutions.
2. With good mixing, 2 lb per ton of lime ( $\text{CaO}$  added as a slurry), is more than sufficient to obtain a 90% reduction of the dissolved arsenic in W.T. overflow.
3. In early tests it was noted that the order of addition was important and follows the same order as they are listed, then by iron salts if any, then by lime slurry and mixing.
4. Iron salts should be given a chance to mix well before lime is added.
5. Lime additions to HCO residue initially reactivates the sodium salts present.

## NOTES

Final Tailings (For SAN. as other large figures on sheet)      AV 10.4 % Solids

General Range from 7 to 12