CYPRUS ANVIL MINING CORPORATION INTEROFFICE CORRESPONDENCE

File 8-7-108

006949

To Ron Murarka

From Yvon Boudreau

Date April 12, 1984

Subject Conditioning Time vs Flotation Time on 2EF Ore

Conclusion:

i) Pb Circuit: The recoveries in this testwork were higher than the previous results but the grades were lower.

ii) Zn Circuit: The results in this testwork did not equal or better previous recoveries & grades.

TABLE I

REPEAT OF BEST TEST	Pb CIRCUIT		Zn CIRCUIT	
	% GRADE	% RECOVERY	% GRADE	% RECOVERY
6	15.76	94.67	6.36	73.83

Recommendations:

1. Further testwork should be done with the new impeller by altering the r.p.m. speed, to see, if the increased agitation was a factor in the poor grades and recovery. (See Appendix A)

2. Rougher and cleaner condition vs flotation time tests should be tried with an open and a closed impeller to see if selectivity improves or worsens.

Discussion and Analysis:

The testwork that was carried out, was based on previous conditioning tests (2EF ore test results of January 27th, 1984). The previous best tests for Pb and Zn were repeated in order to substantiate previous results.

It should be noted that a new impeller was used on the Denver machine (No. 8129) at a higher r.p.m. speed, throughout the testwork. Machine 8129, was used at a lower r.p.m. speed, in previous testwork and only for the Zn circuit.

The collected masses from each pan, with the new impeller was much higher than the previous testwork. This might be a factor in getting lower grades because selectivity is diminished. Table II compares a few tests of old weights to the new ones (see Appendix A).

Conditioning Time vs Flotation Time on 2EF Ore - (Cont'd)

Discussion and Analysis - (Cont'd)

TABLE II

TEST NO.	Pb Ro_1	Ro_2	Sc_1	Sc_2	Sc_3	Fin. Tls
1						
Old wt.	32.4	29.7	25.0	14.5	19.8	878.6
New wt.	61.0	27.8	30.6	35.1	33.1	811.6
TEST NO.	Zn Ro_1	Ro_2	Sc_1	Sc_2	Sc_3	Fin. Tls
6						
Old wt.	102.1	73.0	74.6	48.2	155.9	446.7
New wt.	113.5	42.7	100.5	220.2	107.2	208.2

Pb Circuit

In the Pb circuit the repeat of the best Pb test indicated a 3% increase in recovery, but the grade was much lower. An 8 minute conditioning test was performed to see if the results of the best test could be amended by doubling the conditioning time. There was no increase in grade or recovery. (See table III) (See Appendix B & C)

TABLE III

BEST Pb ROUGHER TEST (PAST AND PRESENT)					
TEST NUMBER		CONDITIONING TIME (MIN)	FLOTATION TIME (MIN)	% GRADE	% RECOVERY
PAST	PRESENT				
11		4	10	33.00	91.23
	6	4	10	15.76	94.67
	7	8	10	15.90	94.52

Zn Circuit

In the Zn circuit, the best test (test 6) was repeated to see if the grade and recovery would compare. The 6 minute (best test) conditioning proved not to be beneficial for recovery and grade. Based on the Pb circuit feed, there was a 13% decrease in recovery and a 4% decrease in grade. (See table IV) (See Appendix B & C)

Conditioning Time vs Flotation Time on 2EF Ore - (Cont'd)

Discussion and Analysis - (Cont'd)

TABLE IV

BEST Zn ROUGHER TESTS (PAST AND PRESENT)					
TEST NUMBER		CONDITIONING TIME (MIN)	FLOTATION TIME (MIN)	% GRADE	% RECOVERY
PAST	PRESENT				
6		6	14	10.47	87.06
	6	6	14	6.36	78.83

APPENDIX A

TEST NO.: 1

PURPOSE: Conditioning VS flotation time

PROCEDURE: Standard Roughter Test

FEED: 2EF (June '83)

GRIND: 10 ½ min primary

STAGE	REAGENTS ADDED (g/t): Na_2CO_3	Na_2SO_3	NaCN	Z-11	$CuSO_4$	CaO	MIBC drops	DOW drops	TIME (MIN): GRIND	COND	FROTH	SCAV TL $P_{80}\mu$	PH: START	FINISH
PRIMARY GRIND	3000		200	60					8.5 2.0					
$PbRo_1$											1		8.2	10.0
$PbRo_2$											2			
$PbSc_1$				20			1				2			
$PbSc_2$							1				2			
$PbSc_3$				20			1				3			
Zn COND.				60	700					8 2			Start 9.8	After CaSO4 9.7 End 11.2
$ZnRo_1$											1			
$ZnRo_2$								2			2			
$ZnSc_1$				20				2			2			
$ZnSc_2$								2			2			
$ZnSc_3$				20							3			

TEST NO.: 2

PURPOSE: Conditioning time VS flotation time

PROCEDURE: No conditioning in Pb & Zn cct's

FEED: 2EF (June '83)

GRIND: 10½ min primary

STAGE	REAGENTS ADDED (g/t): Na_2CO_3	Na_2SO_3	NaCN	Z-11	$CuSO_4$	CaO	MIBC drops	DOW drops	TIME (MIN): GRIND	COND	FROTH	SCAV TL $P_{80}\mu$	PH: START	FINISH
PRIMARY GRIND	3000	—	200	60	—	—	—	—	8.5 2.0	—	—	—	—	—
$PbRo_1$	—	—	—	—	—	—	—	—	—	—	1	—	8.4	10.0
$PbRo_2$				—			1				2			
$PbSc_1$				20			1				2			
$PbSc_2$				—			1				2			
$PbSc_3$				20			—				3			
Zn COND.	—			60	700	—				—			Start 9.7	after $CuSO_4$ 9.5 11.0 end
$ZnRo_1$				—				2			1			
$ZnRo_2$				—				1			2			
$ZnSc_1$				20				—			2			
$ZnSc_2$				—				1			2			
$ZnSc_3$				20				1			3	—		

TEST NO.: 3

PURPOSE: Conditioning time VS flotation time

PROCEDURE: Std. Pb circuit & 4min. conditioning in Zn circuit

FEED: 2EF (June'83 ore)

GRIND: 10½ min. primary

STAGE	REAGENTS ADDED (g/t): Na_2CO_3	Na_2SO_3	NaCN	Z-11	$CuSO_4$	CaO	MIBC drops	DOW drops	TIME (MIN): GRIND	COND	FROTH	SCAV TL $P_{80}\mu$	PH: START	FINISH
PRIMARY GRIND	3000	—	200	60		—			8.5 2.0					
$PbRo_1$	—			—		—	—			—	1		8.3	10.0
$PbRo_2$				—			1				1			
$PbSc_1$				20			1				1			
$PbSc_2$				—			1				2			
$PbSc_3$				20			—				3			
Zn COND.	—			60	700	—				2 2			Start 9.8	After CuSO4 9.6 End 9.2
$ZnRo_1$				—				2			1			
$ZnRo_2$				—				—			2			
$ZnSc_1$				20				1			2			
$ZnSc_2$				—				—			2			
$ZnSc_3$				20				1			3	—		

TEST NO.: 4

PURPOSE: Conditioning time VS flotation time

PROCEDURE: Std. Pb circuit & 6min. total conditioning time in the Zn circuit

FEED: 2EF (June '83 ore)

GRIND: 10½ min. primary

STAGE	REAGENTS ADDED (g/t): Na_2CO_3	Na_2SO_3	NaCN	Z-11	$CuSO_4$	CaO	MIBC drops	DOW drops	TIME (MIN): GRIND	COND	FROTH	SCAV TL $P_{80}\mu$	PH: START	FINISH
PRIMARY GRIND	3000	—	200	60		—			8.5 2.0					
$PbRo_1$	—			—		—	—			—	1		8.3	10.0
$PbRo_2$				—			1				2			
$PbSc_1$				20			1				2			
$PbSc_2$				—			1				2			
$PbSc_3$				20			—				3			
Zn COND.	—			60	700	—				3 3			Start 9.7	After $CuSO_4$ 9.5 11.3 end
$ZnRo_1$				—				2			1			
$ZnRo_2$				—				—			2			
$ZnSc_1$				20				1			2			
$ZnSc_2$				—				—			2			
$ZnSc_3$				20				1			3	—		

TEST NO.: 5

PURPOSE: Conditioning time VS flotation time

PROCEDURE: Std. Pb circuit & 8min total conditioning time for Zn circuit

FEED: 2EF (June '83 ore)

GRIND: 10½ minute primary

STAGE	REAGENTS ADDED (g/t): Na_2CO_3	Na_2SO_3	NaCN	Z-11	$CuSO_4$	CaO	MIBC drops	DOW drops	TIME (MIN) GRIND	COND	FROTH	SCAV TL $P_{80}\mu$	PH START	FINISH
PRIMARY GRIND	3000	—	400	60		—			8.5 / 2.0					
$PbRo_1$	—			—		—	—			—	1		8.6	10.0
$PbRo_2$				—			2				2			
$PbSc_1$				20			—				2			
$PbSc_2$				—			1				2			
$PbSc_3$				20			—				3			
Zn COND.	— / — / —			60	700	— / — / —				4 / 4			Start 9.8	after Cu[illegible] 9.7 / 11.1 end
$ZnRo_1$				—				2			1			
$ZnRo_2$				—				1			2			
$ZnSc_1$				20				—			2			
$ZnSc_2$				—				—			2			
$ZnSc_3$				20				—			3	—		

TEST NO.: 6

PURPOSE: Condition time Vs flotation time

PROCEDURE: Best Pb circuit & Zn circuit from Previous testwork
3 min cond. Pb circuit & 6 min cond. in Zn Circuit

FEED: 2 EF (June '83 ore)

GRIND: 60 1/2 min. primary

STAGE	REAGENTS ADDED (g/t): Na_2CO_3	Na_2SO_3	NaCN	Z-11	$CuSO_4$	CaO	MIBC drops	DOW drops	TIME (MIN): GRIND	COND	FROTH	SCAV TL $P_{80}\mu$	PH: START	FINISH
PRIMARY GRIND	3000	—	200	60		—			8.5 2.0					
$PbRo_1$	—			—		—	1			4	1		8.9	10.0
$PbRo_2$				—			—				2			
$PbSc_1$				40			1				2			
$PbSc_2$				—			1				2			
$PbSc_3$				20			—				3			
Zn COND.	—			60	700	—				4 2			Start 9.8	After $CuSO_4$ 9.9 11.4 end
$ZnRo_1$				—				1			2			
$ZnRo_2$				—				—			3			
$ZnSc_1$				20				—			3			
$ZnSc_2$				—				1			3			
$ZnSc_3$				20				—			3	—		

TEST NO.: 7

PURPOSE: Conditioning time VS flotation time

PROCEDURE: 8 min cond. in Pb cct. & 10 min cond. in Zn cct.

FEED: 2EF (June '83 ore

GRIND: 10½ min. primary

STAGE	REAGENTS ADDED (g/t): Na_2CO_3	Na_2SO_3	NaCN	Z-11	$CuSO_4$	CaO	MIBC drops	DOW drops	TIME (MIN): GRIND	COND	FROTH	SCAV TL $P_{80}\mu$	PH: START	FINISH
PRIMARY GRIND	3000	—	200	60		—			8.5 8.0					
$PbRo_1$	—			—		—	—			8	1		8.5	10.0
$PbRo_2$				—			—				2			
$PbSc_1$				20			2				2			
$PbSc_2$				—			—				2			
$PbSc_3$				20			1				3			
Zn COND.	— — —			60	700	— — —				8 2			Start 9.7	after $CuSO_4$ 9.4 11.2 end.
$ZnRo_1$				—				2			1			
$ZnRo_2$				—				1			2			
$ZnSc_1$				20				—			2			
$ZnSc_2$				—				1			2			
$ZnSc_3$				20				—			3	—		

TEST NO.: 8

PURPOSE: Conditioning time VS flotation time

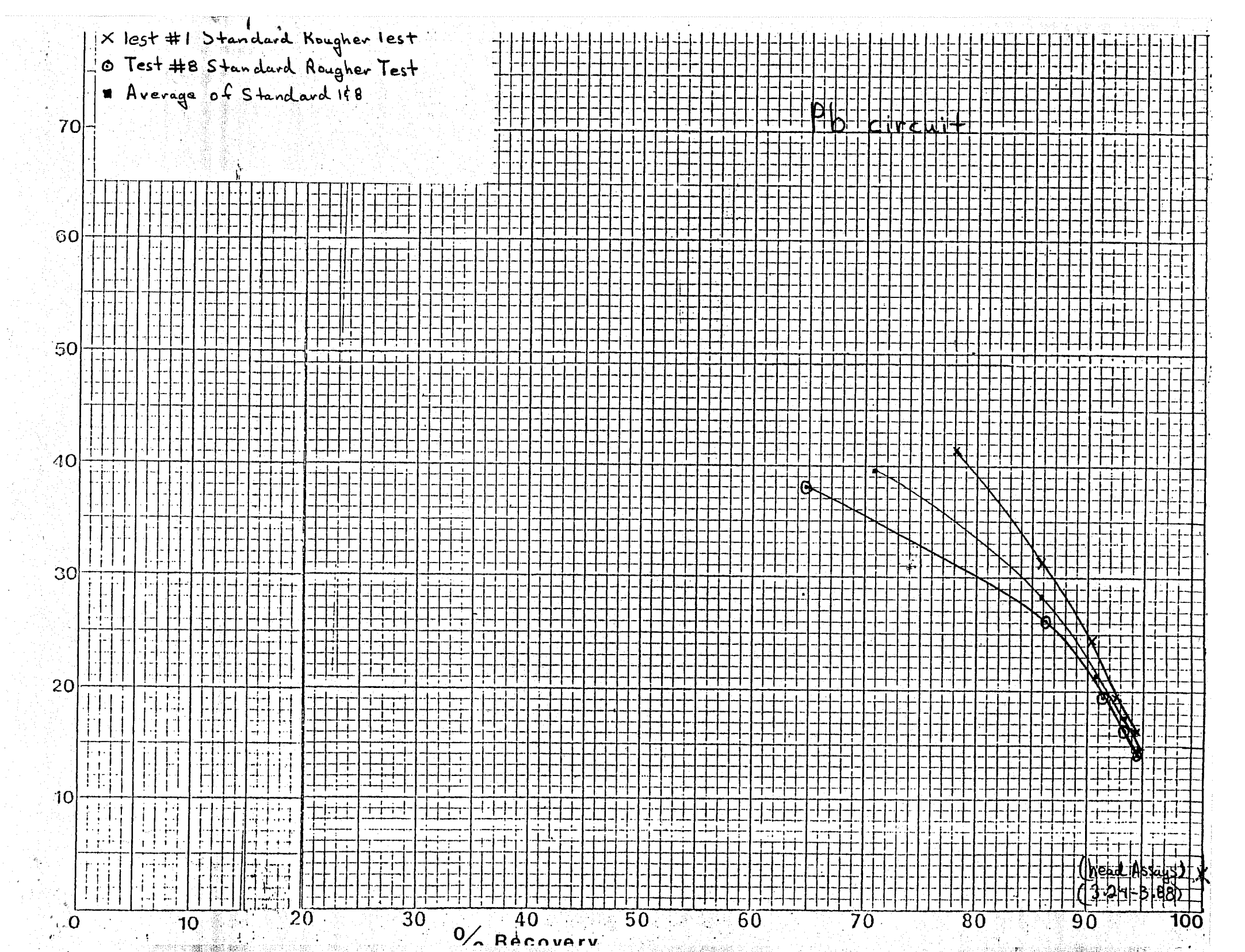
PROCEDURE: Standard Roughor Test

FEED: LEF (June '83 ore)

GRIND: 10½ min. primary

STAGE	REAGENTS ADDED (g/t): Na_2CO_3	Na_2SO_3	NaCN	Z-11	$CuSO_4$	CaO	MIBC drops	DOW drops	TIME (MIN): GRIND	COND	FROTH	SCAV TL $P_{80}\mu$	PH: START	FINIS
PRIMARY GRIND	3000	—	200	60		—			8.5 2.0					
$PbRo_1$	—			—		—	—			—	1		8.4	10.0
$PbRo_2$				—			1				2			
$PbSc_1$				20			1				1			
$PbSc_2$				—			1				1			
$PbSc_3$				20			—				3			
Zn COND.	—			60	700	—				3 2			Start 9.8	after CuSO4 9.5 11.2 end
$ZnRo_1$				—				2			1			
$ZnRo_2$				—				—			2			
$ZnSc_1$				20				—			2			
$ZnSc_2$				—				1			1			
$ZnSc_3$				20				—			3			
												—		

APPENDIX B


× Test #1 Standard Rougher Test
⊙ Test #8 Standard Rougher Test
■ Average of Standard 1 & 8
Pb circuit
(Head Assays)
(3.24-3.88)
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
% Recovery

■ Average of Standard 1 & 8
* Test #2 (Std. Pb cct. & No Conditioning in Zn cct.)
△ Test #3 (Std. Pb cct. & 4 min Cond. in Zn cct.)
• Test #4 (Std Pb cct. & 6 min cond. in Zn cct.)
⋈ Test #5 (Std Pb cct. & 8 min cond. in Zn cct.)

Pb circuit

70
60
50
40
30
20
10

0 10 20 30 40 50 60 70 80 90 100

% Recovery

Head Assays (3.32 - 3.75)

■ Average of standard 1 & 8

○ Test #6 (Repeat of best Pb cct. & Zn cct. from previous testwork)

Pb cct.	Zn cct.
200 g/t $N_a CN$	800 g/t $N_a CN$
260 g/t Z-11	360 g/t Z-11
4 min cond.	100 g/t $CuSO_4$
	6 min cond.

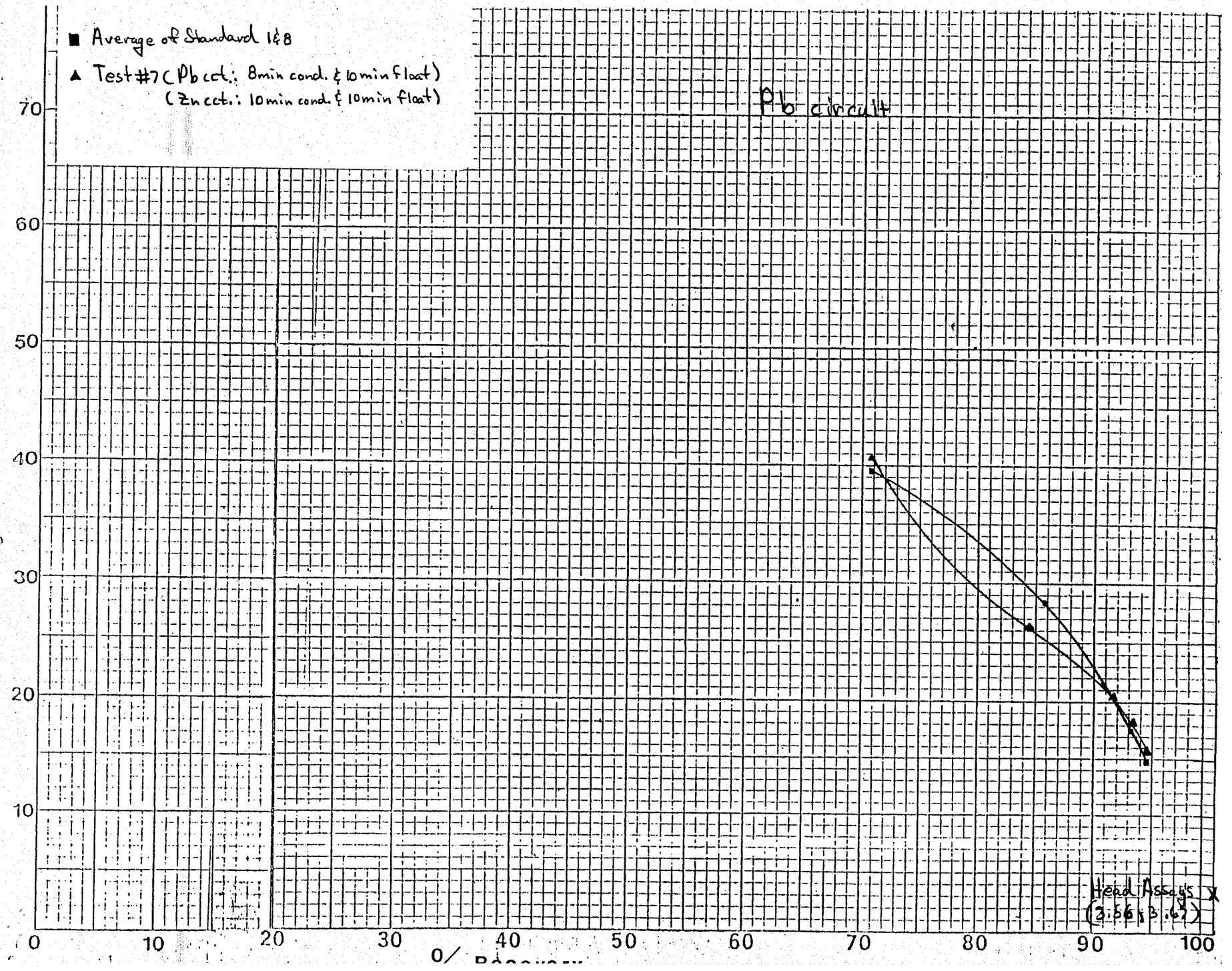
Pb circuit

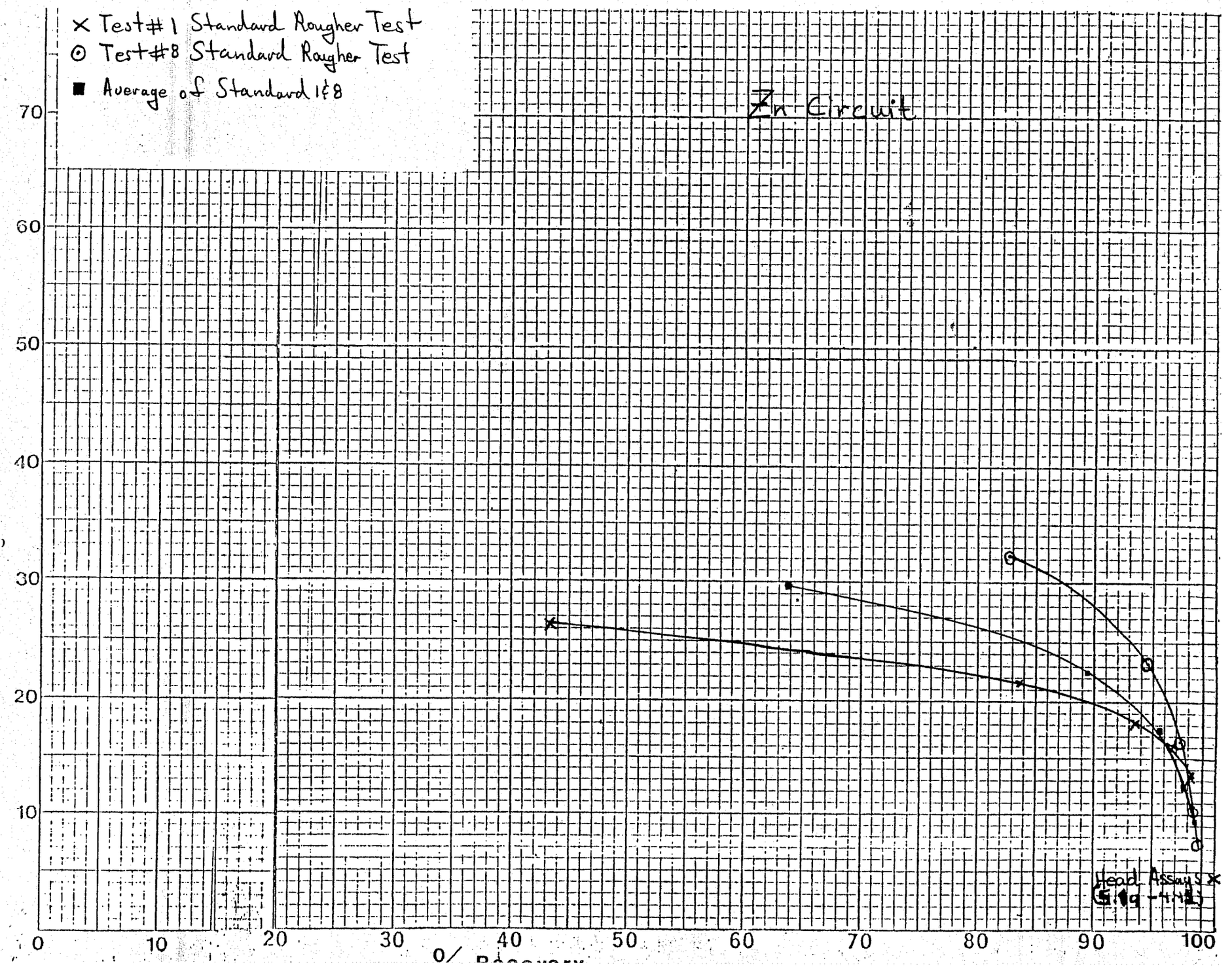
Head Assays
3.6%, 3.4%

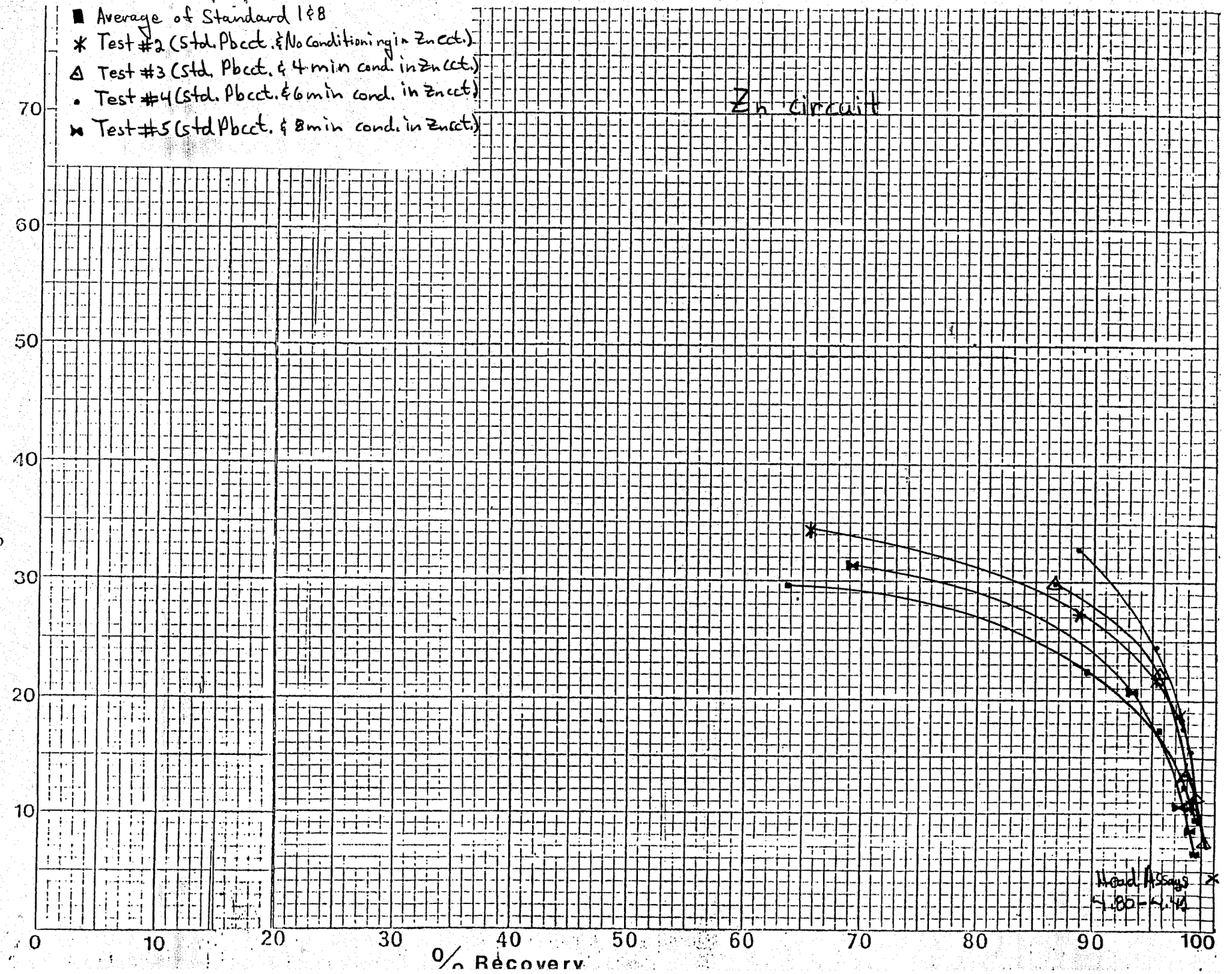
70
60
50
40
30
20
10

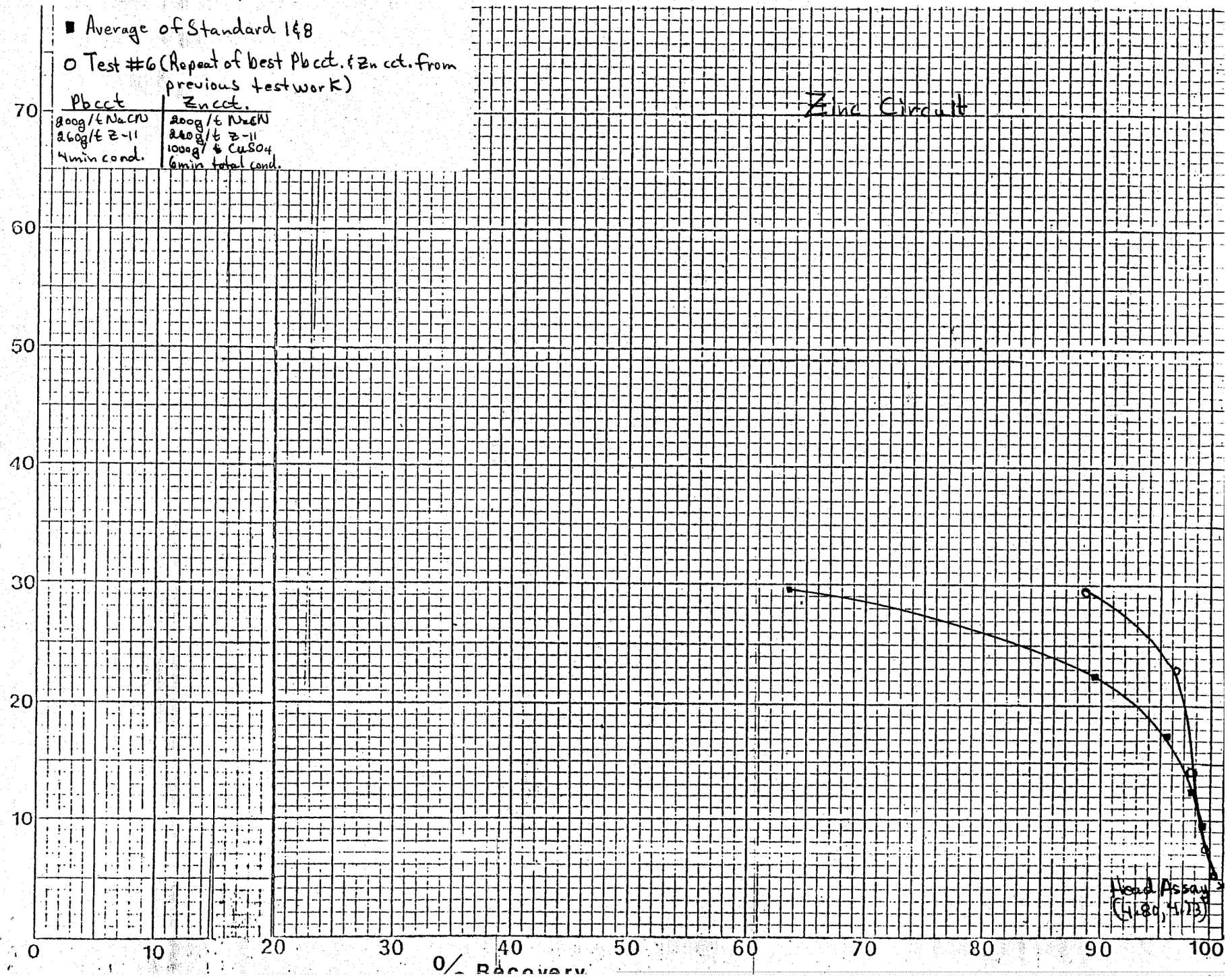
0 10 20 30 40 50 60 70 80 90 100

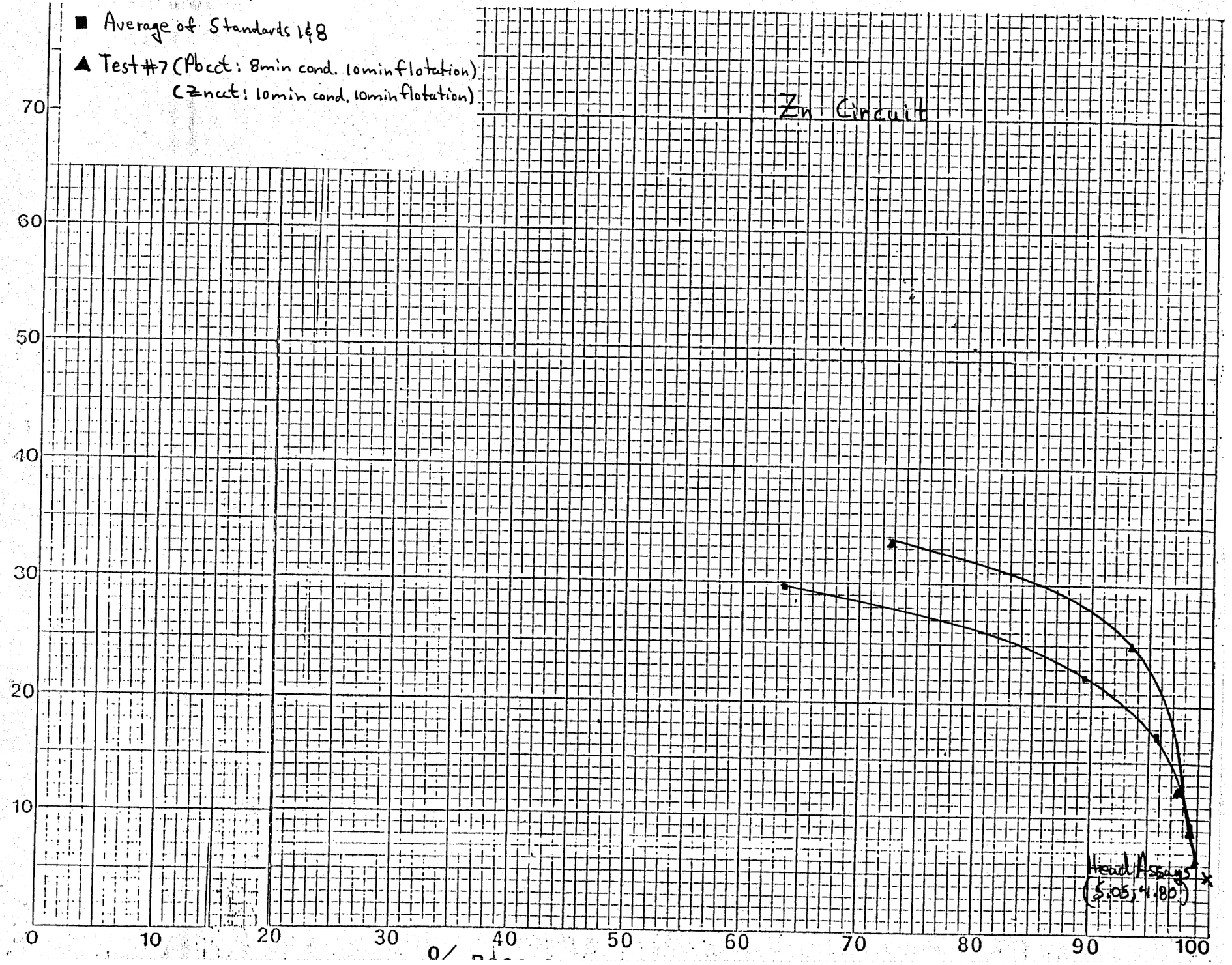
% Recovery

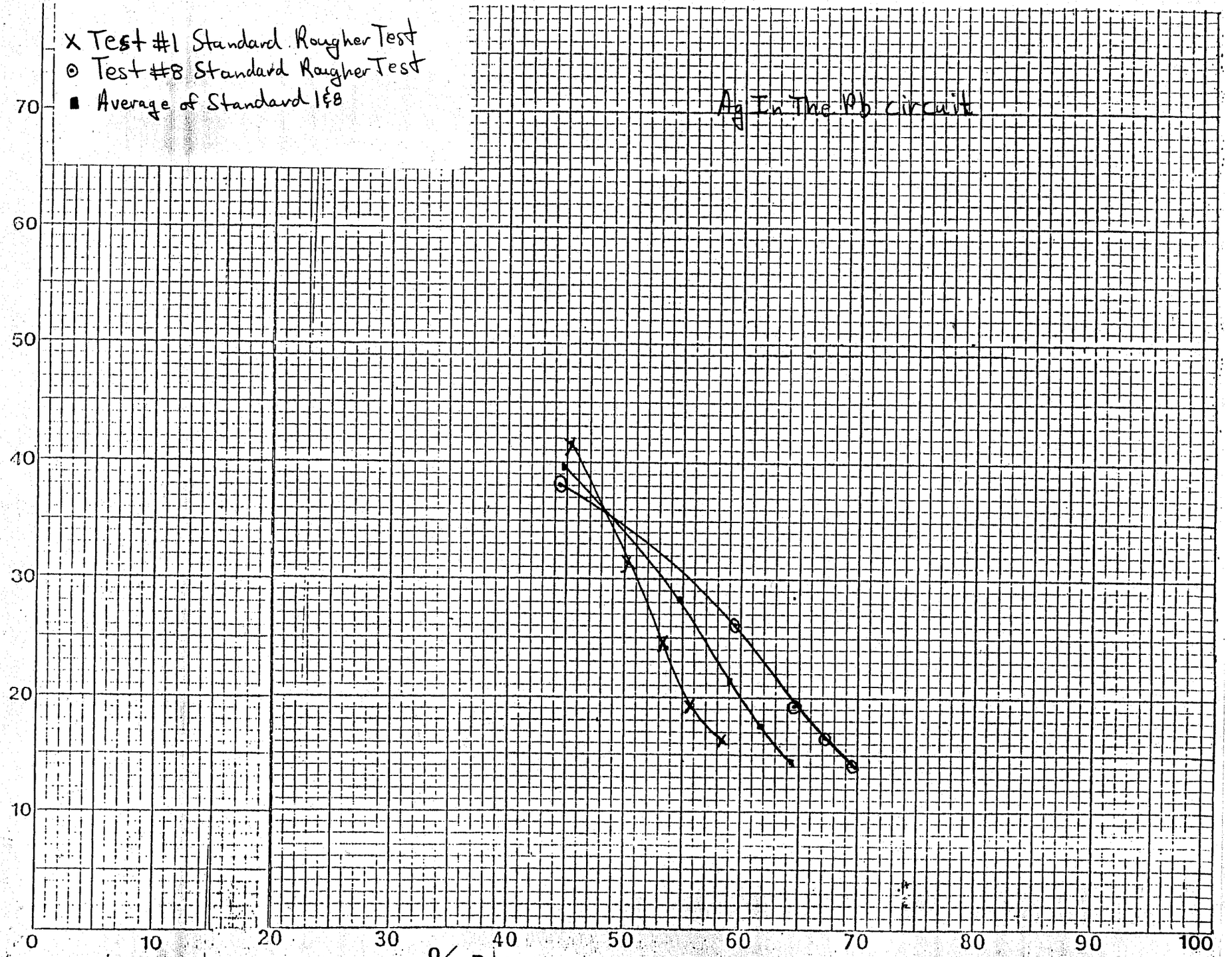

■ Average of Standard 1&8
▲ Test #7 (Pb cct.: 8 min cond. & 10 min float)
(Zn cct.: 10 min cond. & 10 min float)
Pb circuit
Head Assays
(3.56 ; 3.62)
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100

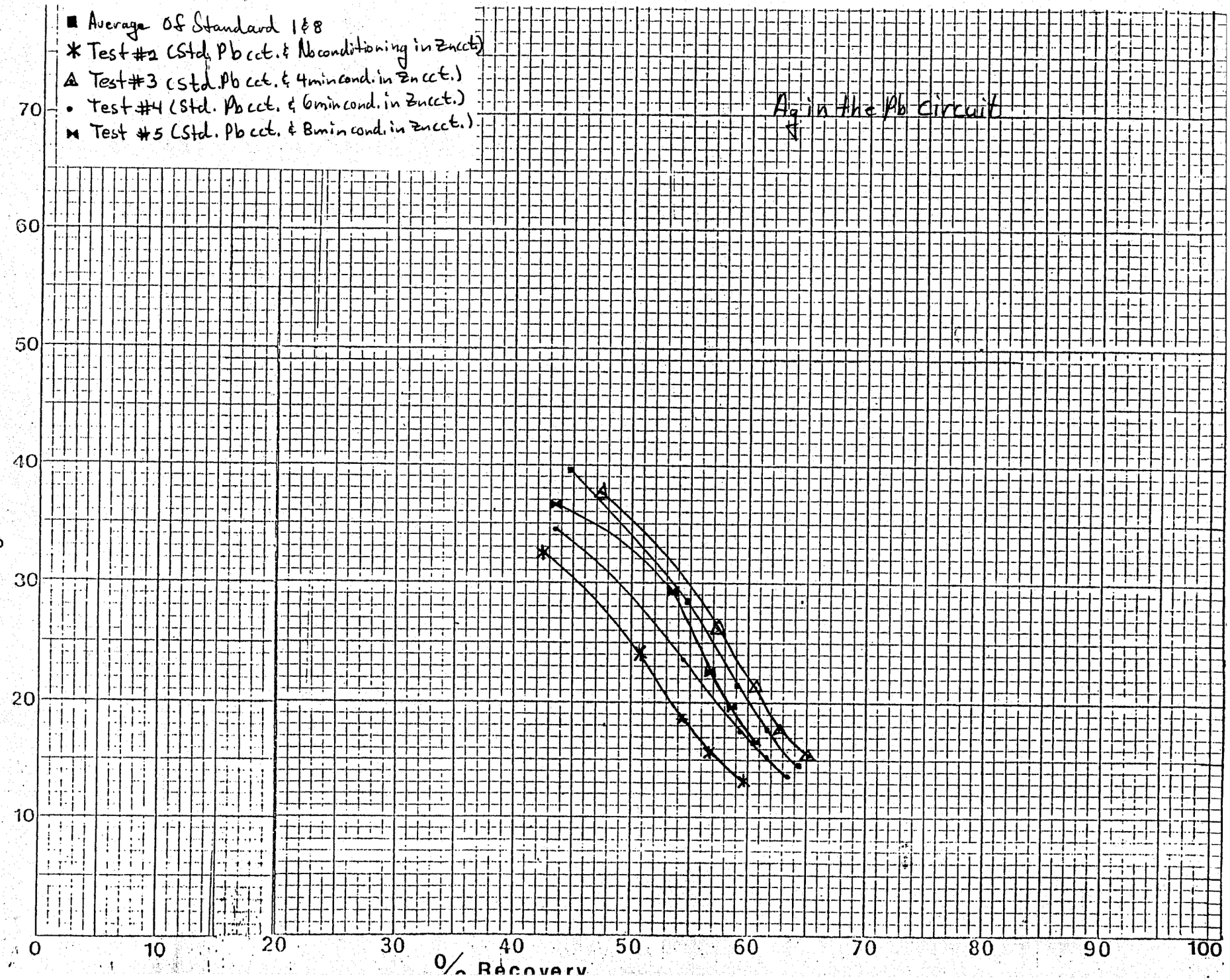

× Test#1 Standard Rougher Test
⊙ Test#8 Standard Rougher Test
■ Average of Standard 1&8
Zn Circuit
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
% Recovery
Head Assays

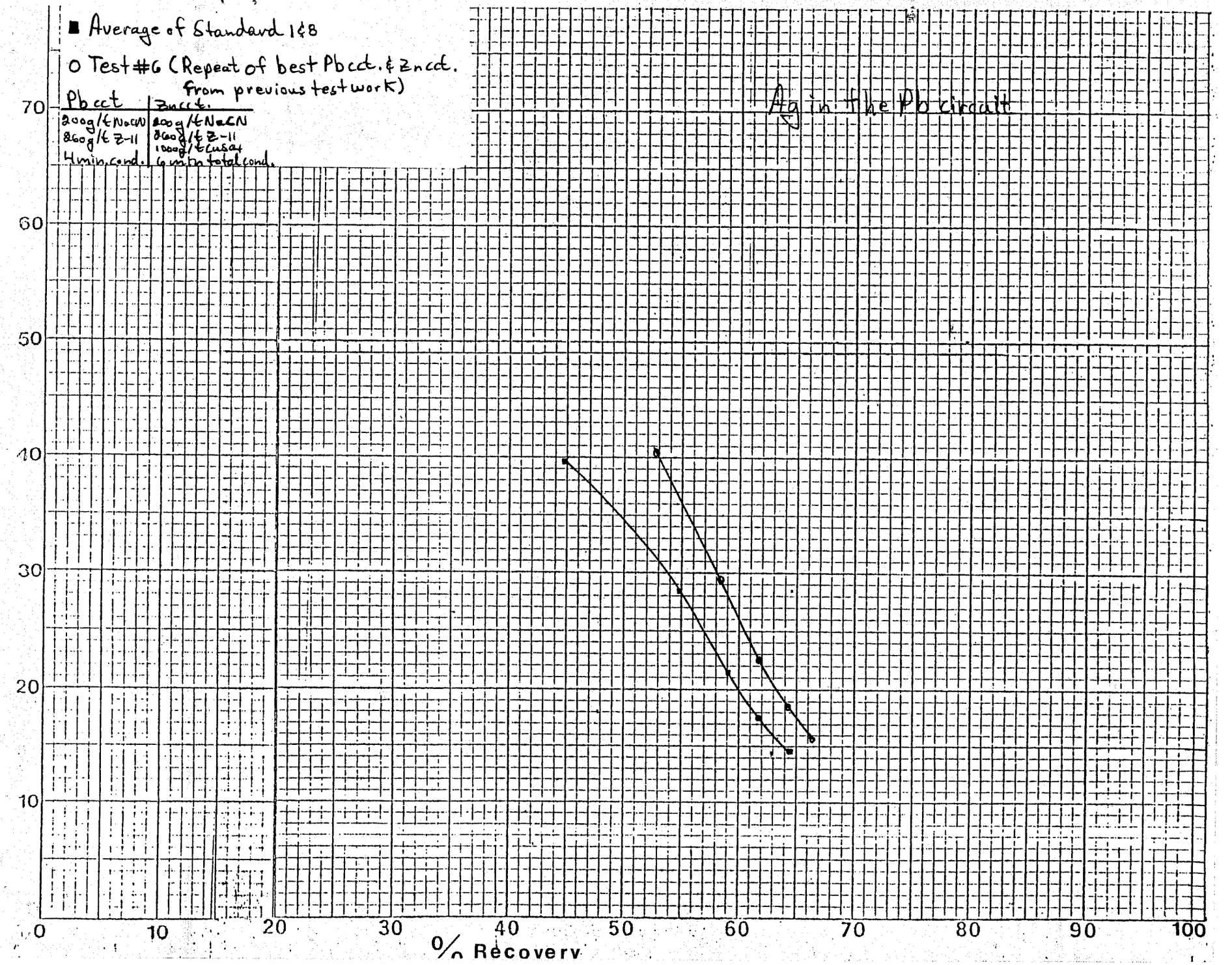

■ Average of Standard 1 & 8
* Test #2 (Std. Pb cct. & No conditioning in Zn cct.)
Δ Test #3 (Std. Pb cct. & 4 min cond. in Zn cct.)
• Test #4 (Std. Pb cct. & 6 min cond. in Zn cct.)
⋈ Test #5 (Std Pb cct. & 8 min cond. in Zn cct.)
Zn circuit
Head Assays
~1.80 - 4.14
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
% Recovery


■ Average of Standard 1&8
○ Test #6 (Repeat of best Pb cct. & Zn cct. from previous testwork)
Pb cct
200g/t NaCN
260g/t Z-11
4min cond.
Zn cct.
200g/t NaCN
260g/t Z-11
1000g/t CuSO4
6min total cond.
Zinc Circuit
Head Assay
(4.80, 4.73)
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
% Recovery


■ Average of Standards 1&8
▲ Test #7 (Pb cct: 8min cond. 10min flotation)
(Zn cct: 10min cond. 10min flotation)
Zn Circuit
Head Assays
(5.05, 4.80)
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100


X Test #1 Standard Rougher Test
⊙ Test #8 Standard Rougher Test
■ Average of Standard 1&8
Ag In The Pb circuit
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
% Recovery


■ Average of Standard 1 & 8
* Test #2 (Std. Pb cct. & Nb conditioning in Zn cct.)
△ Test #3 (std. Pb cct. & 4min cond. in Zn cct.)
• Test #4 (Std. Pb cct. & 6min cond. in Zn cct.)
⋈ Test #5 (Std. Pb cct. & 8min cond. in Zn cct.)
Ag in the Pb circuit
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
% Recovery


■ Average of Standard 1&8
o Test #6 (Repeat of best Pb cct. & Zn cct. from previous test work)
Pb cct
200g/t NaCN
860g/t Z-11
4 min. cond.
Zn cct.
200g/t NaCN
860g/t Z-11
100g/t CuSO4
6 min. total cond.
Ag in the Pb circuit
70
60
50
40
30
20
10
0
10
20
30
40
50
60
70
80
90
100
% Recovery

■ Average of Standard 1 & 8

▲ Test #7 (Pb cct.: 8 min. cond. & 10 min flotation)
(Zn cct.: 10 min. cond. & 10 min flotation)

Ag in the Pb circuit

70
60
50
40
30
20
10

0 10 20 30 40 50 60 70 80 90 100

% Recovery

APPENDIX C

WEIGHTED AVERAGE OF ROUGHER TESTS

AVERAGE OF STANDARDS 1 & 8 (2EF CONDITIONING vs FLOTATION TIME)

	MASS (GM)	ASSAYS(%) Pb	Zn	Fe	Cu	Ag(g/t)	DISTRIBUTION(%) Pb	Zn	Fe	Cu	Ag
Pb RO1	63.50	39.63	4.61	16.8	0.26	276.86	70.83	5.70	3.37	8.37	44.79
Pb RO2	44.80	12.02	7.18	28.6	0.44	88.71	15.16	6.26	4.04	10.03	10.12
Pb SC1	43.20	4.02	7.19	32.6	0.53	37.14	4.88	6.05	4.44	11.68	4.09
Pb SC2	35.10	2.24	6.98	31.8	0.55	29.24	2.21	4.77	3.51	9.72	2.61
Pb SC3	38.15	1.39	6.75	33.0	0.52	26.11	1.50	5.01	3.97	10.03	2.54
Zn RO1	78.95	0.25	29.89	21.0	0.23	17.99	0.56	45.91	5.23	9.11	3.62
Zn RO2	69.10	0.35	13.86	28.5	0.26	20.20	0.68	18.63	6.21	9.24	3.56
Zn SC1	57.80	0.35	3.93	34.6	0.24	18.63	0.57	4.42	6.31	7.19	2.74
Zn SC2	87.75	0.24	0.89	39.4	0.16	15.52	0.60	1.51	10.63	7.17	3.47
Zn SC3	93.35	0.26	0.37	37.7	0.14	14.62	0.67	0.67	11.11	6.47	3.48
Zn SC TLS	386.95	0.21	0.14	33.7	0.06	19.26	2.33	1.09	41.17	10.99	18.99
CalcPbFeed	998.65	3.56	5.15	31.8	0.20	39.31	100.00	100.00	100.00	100.00	100.00
CalcZnFeed	773.90	0.25	4.80	33.1	0.13	18.18	5.42	72.22	80.67	50.16	35.85

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Pb circuit)

Pb in the Pb Circuit, K= 0.65	
39.63	70.83
28.21	85.99
21.31	90.87
17.73	93.08
14.95	94.58

Cu in the Pb Circuit	
0.26	8.37
0.33	18.40
0.39	30.09
0.42	39.80
0.44	49.84

Ag in the Pb Circuit	
276.86	44.79
199.03	54.91
152.87	59.00
129.61	61.61
112.04	64.15
(g/t)	

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Zn circuit)

Pb in the Zn Circuit	
0.25	10.39
0.30	22.96
0.31	33.53
0.29	44.53
0.28	56.95

Cu in the Zn Circuit	
0.23	18.15
0.24	36.59
0.24	50.91
0.22	65.21
0.20	78.10

Ag in the Zn Circuit	
17.99	10.09
19.02	20.01
18.91	27.66
17.90	37.34
17.11	47.03
(g/t)	

Zn in the Pb Circuit

(Based on Pb cct feed)	
4.61	5.70
5.67	11.95
6.11	18.00
6.27	22.76
6.35	27.78
(cumZgr)	(cumZrec)

Zn in the Zn Circuit, K= 0.69

(Based on Pb cct feed)		(Based on Zn cct feed)	
29.89	45.91	29.89	63.56
22.41	64.53	22.41	89.35
17.22	68.95	17.22	95.47
12.34	70.47	12.34	97.57
9.45	71.13	9.45	98.4?
(cumZgr)	(cumZrec)	(cumZgr)	(cumZrec)

ALL TESTS

1st Zn pan 1 min flotation time
2nd " " 2 min " "
3rd " " 2 min " "
4th " " 2 min " "
5th " " 3 min " "

ROUGHER TEST

2EF CONDITIONING vs FLOTATION TIME (STANDARD ROUGHER TEST) #1

	MASS (GM)	ASSAYS(%) Pb	Zn	Fe	Cu	Ag(g/t)	DISTRIBUTION(%) Pb	Zn	Fe	Cu	Ag
Pb RO1	61.00	41.40	4.31	13.30	0.27	283.97	78.02	5.63	2.90	9.18	45.21
Pb RO2	27.80	9.19	6.40	24.80	0.42	68.12	7.89	3.81	2.46	6.51	4.94
Pb SC1	30.60	4.74	6.62	27.10	0.50	37.95	4.48	4.34	2.96	8.52	3.03
Pb SC2	35.10	2.19	6.25	28.00	0.48	29.55	2.37	4.70	3.51	9.39	2.71
Pb SC3	33.10	1.53	6.12	28.30	0.58	28.93	1.56	4.34	3.34	10.70	2.50
Zn RO1	59.70	0.21	26.10	19.60	0.14	15.86	0.39	33.36	4.18	4.66	2.47
Zn RO2	79.90	0.27	18.30	22.60	0.20	19.28	0.67	31.30	6.45	8.90	4.02
Zn SC1	47.10	0.37	7.44	27.20	0.31	20.84	0.54	7.50	4.57	8.13	2.56
Zn SC2	28.40	0.56	4.23	29.30	0.58	21.77	0.49	2.57	2.97	9.18	1.61
Zn SC3	50.90	0.46	0.87	31.20	0.34	19.60	0.72	0.95	5.67	9.64	2.60
Zn SC TLS	545.60	0.17	0.13	31.30	0.05	19.91	2.87	1.52	60.98	15.20	28.34
CalcPbFeed	999.20	3.24	4.68	28.0	0.18	38.35	100.00	100.00	100.00	100.00	100.00
CalcZnFeed	811.60	0.23	4.44	29.3	0.12	19.65	5.67	77.19	84.83	55.71	41.61

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Pb circuit)

Pb in the Pb Circuit, K= 0.65

41.40	78.02
31.32	85.91
24.51	90.39
19.44	92.76
16.28	94.33

Cu in the Pb Circuit

0.27	9.18
0.32	15.68
0.36	24.21
0.39	33.59
0.42	44.29

Ag in the Pb Circuit

283.97	45.21
216.40	50.15
170.66	53.18
138.60	55.89
119.25	58.39
(g/t)	

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Zn circuit)

Pb in the Zn Circuit

0.21	6.83
0.24	18.59
0.28	28.07
0.31	36.73
0.34	49.49

Cu in the Zn Circuit

0.14	8.35
0.17	24.34
0.21	39.94
0.26	55.41
0.27	72.72

Ag in the Zn Circuit

15.86	5.94
17.82	15.60
18.58	21.76
19.00	25.63
19.12	31.89
(g/t)	

Zn in the Pb Circuit

(Based on Pb cct feed)	
4.31	5.63
4.96	9.44
5.39	13.77
5.58	18.47
5.68	22.81
(cum%gr)	(cum%rec)

Zn in the Zn Circuit, K= 0.62

(Based on Pb cct feed)		(Based on Zn cct feed)	
26.10	33.36	26.10	43.21
21.64	64.66	21.64	83.76
18.05	72.16	18.05	93.47
16.23	74.73	16.23	96.81
13.29	75.68	13.29	98.03
(cum%gr)	(cum%rec)	(cum%gr)	(cum%rec)

ROUGHER TEST — ZEF CONDITIONING vs FLOTATION TIME TEST #2 (STD. Pb CIRCUIT, NO COND. INZn CIRCUIT))

	MASS (GM)	ASSAYS(%) Pb	Zn	Fe	Cu	Ag(g/t)	DISTRIBUTION(%) Pb	Zn	Fe	Cu	Ag
Pb RO1	76.10	32.40	4.53	16.90	0.27	212.75	74.39	7.32	4.66	11.35	42.53
Pb RO2	44.10	9.81	6.73	24.60	0.51	72.47	13.05	6.30	3.93	12.43	8.40
Pb SC1	39.50	2.72	6.02	27.70	0.44	30.79	3.24	5.05	3.96	9.60	3.20
Pb SC2	35.20	1.93	6.36	28.10	0.53	30.48	2.05	4.75	3.58	10.31	2.82
Pb SC3	43.50	0.99	5.84	28.40	0.37	24.26	1.30	5.39	4.47	8.89	2.77
Zn RO1	64.60	0.29	34.10	16.00	0.29	20.53	0.57	46.75	3.74	10.35	3.48
Zn RO2	45.60	0.60	17.00	23.30	0.30	24.26	0.83	16.45	3.85	7.56	2.91
Zn SC1	36.20	0.45	5.93	27.90	0.33	23.02	0.49	4.56	3.66	6.50	2.19
Zn SC2	27.10	0.72	2.35	30.00	0.38	21.46	0.59	1.35	2.94	5.69	1.53
Zn SC3	129.20	0.19	0.30	31.00	0.10	16.48	0.74	0.82	14.50	7.14	5.59
Zn SC TLS	456.00	0.20	0.13	30.70	0.04	20.53	2.75	1.26	50.70	10.08	24.59
CalcPbFeed	997.10	3.32	4.73	27.7	0.18	38.18	100.00	100.00	100.00	100.00	100.00
CalcZnFeed	758.70	0.26	4.42	29.9	0.11	20.22	5.96	71.19	79.40	47.42	40.29

CUM. GRADE(%) CUM. RECOVERY(%) (Based on feed to the Pb circuit)

Pb in the Pb Circuit, K= 0.68

32.40	74.39
24.11	87.45
18.82	90.69
15.77	92.74
13.07	94.04

Cu in the Pb Circuit

0.27	11.35
0.36	23.78
0.38	33.38
0.41	43.69
0.40	52.58

Ag in the Pb Circuit

212.75	42.53
161.28	50.92
129.01	54.12
111.21	56.94
95.35	59.71

(g/t)

Zn in the Pb Circuit (Based on Pb cct feed)

4.53	7.32
5.34	13.62
5.51	19.66
5.66	23.41
5.69	29.81

(cum%gr) (cum%rec)

CUM. GRADE(%) CUM. RECOVERY(%) (Based on feed to the Zn circuit)

Fb in the Zn Circuit

0.29	9.48
0.42	23.32
0.43	31.54
0.47	41.44
0.35	52.86

Cu in the Zn Circuit

0.29	21.83
0.29	37.77
0.30	51.69
0.32	67.69
0.22	78.75

Ag in the Zn Circuit

20.53	3.65
22.07	10.86
23.31	21.25
22.17	33.08
19.75	30.97

(g/t)

Zn in the Zn Circuit, K= 0.69

(Based on Pb cct feed)		(Based on Pb cct feed)		(Based on Zn cct feed)	
4.53	7.32	34.10	46.75	34.10	67.67
5.34	13.62	27.02	63.21	27.02	87.78
5.51	19.66	21.81	67.76	21.81	95.19
5.66	23.41	18.77	69.11	18.77	97.05
5.69	29.81	10.89	67.94	10.89	97.37
(cum%gr)	(cum%rec)	(cum%gr)	(cum%rec)	(cum%gr)	(cum%rec)

ROUGHER TEST — 2EF CONDITIONING vs FLOTATION TIME TEST #3 (STD. Pb CIRCUIT, 4 MIN. CONDIN Zn CIRCUIT)

	MASS (GM)	ASSAYS(%) Pb	Zn	Fe	Cu	Ag(g/t)	DISTRIBUTION(%) Pb	Zn	Fe	Cu	Ag
Pb RO1	74.50	37.60	5.13	22.40	0.29	237.32	74.74	7.33	4.32	10.47	47.27
Pb RO2	52.00	10.17	7.77	35.10	0.55	71.54	14.11	7.75	4.73	13.86	9.95
Pb SC1	36.40	3.40	7.32	38.50	0.61	34.84	3.30	5.11	3.63	10.76	3.39
Pb SC2	33.00	1.69	7.15	38.80	0.48	25.82	1.49	4.53	3.32	7.68	2.28
Pb SC3	36.10	0.98	6.66	39.60	0.36	22.39	0.94	4.61	3.70	6.30	2.16
Zn RO1	106.90	0.32	29.90	26.50	0.36	23.02	0.91	61.32	7.34	18.65	6.58
Zn RO2	52.10	0.47	6.08	39.80	0.38	17.91	0.65	6.08	5.37	9.60	2.77
Zn SC1	114.80	0.30	0.82	42.60	0.17	17.42	0.92	1.81	12.67	9.46	5.35
Zn SC2	31.80	0.44	0.71	42.60	0.13	18.97	0.37	0.43	3.51	2.00	1.61
Zn SC3	193.70	0.16	0.11	43.30	0.05	13.06	0.83	0.41	21.73	4.69	6.77
Zn SC TLS	269.30	0.24	0.12	42.50	0.05	16.48	1.72	0.62	29.66	8.53	11.87
CalcPbFeed	1000.60	3.75	5.21	38.6	0.21	37.38	100.00	100.00	100.00	100.00	100.00
CalcZnFeed	769.60	0.26	4.79	40.3	0.14	17.01	5.41	70.67	80.29	50.93	34.95

'CUM. GRADE(%) CUM. RECOVERY(%) (Based on feed to the Pb circuit)

Pb in the Pb Circuit, K= 0.73

37.60	74.74
26.32	88.86
21.20	92.16
17.92	93.65
15.28	94.59

Cu in the Pb Circuit

0.29	10.47
0.40	24.33
0.44	35.09
0.45	42.77
0.44	49.07

Ag in the Pb Circuit

237.32	47.27
169.17	57.22
139.15	60.61
120.06	62.89
104.87	65.05
(g/t)	

CUM. GRADE(%) CUM. RECOVERY(%) (Based on feed to the Zn circuit)

Pb in the Zn Circuit

0.32	16.97
0.37	29.95
0.34	45.94
0.35	52.84
0.28	69.12

Cu in the Zn Circuit

0.36	34.62
0.37	53.46
0.28	74.04
0.27	77.97
0.18	87.19

Ag in the Zn Circuit

23.02	18.82
22.00	28.76
20.08	42.06
19.96	46.67
17.29	66.03
(g/t)	

Zn in the Pb Circuit (Based on Pb cct feed)

5.13	7.33
6.22	15.08
6.46	20.20
6.58	24.72
6.59	29.33
(cum%gr)	(cum%rec)

Zn in the Zn Circuit, K= 0.85

(Based on Pb cct feed)		(Based on Zn cct feed)	
29.90	61.32	29.90	88.78
22.09	67.40	22.09	95.38
13.17	69.20	13.17	97.53
11.88	69.64	11.89	98.54
7.31	70.05	7.31	99.12
(cum%gr)	(cum%rec)	(cum%gr)	(cum%rec)

ROUGHER TEST — 2EF CONDITIONING vs FLOTATION TIME TEST #4 (STD. Pb CIRCUIT, 6 MIN. CONDIN Zn CIRCUIT)T1

	MASS (GM)	ASSAYS(%) Pb	Zn	Fe	Cu	Ag(g/t)	DISTRIBUTION(%) Pb	Zn	Fe	Cu	Ag
Pb RO1	77.30	34.50	5.01	23.80	0.26	206.84	71.43	7.48	4.83	9.69	43.47
Pb RO2	62.00	9.49	7.20	35.00	0.41	64.38	15.76	8.62	5.70	12.26	10.85
Pb SC1	58.00	3.03	7.04	38.60	0.47	31.10	4.71	7.89	5.88	13.15	4.91
Pb SC2	32.10	2.01	7.38	38.90	0.55	26.75	1.73	4.58	3.28	8.51	2.33
Pb SC3	25.90	1.50	6.98	38.80	0.53	26.13	1.04	3.49	2.64	6.62	1.84
Zn RO1	94.90	0.33	32.90	23.50	0.45	21.77	0.84	60.30	5.86	20.59	5.62
Zn RO2	42.00	0.50	5.52	39.30	0.35	21.77	0.56	4.48	4.34	7.09	2.49
Zn SC1	61.10	0.36	1.28	42.00	0.24	18.35	0.59	1.51	6.74	7.07	3.05
Zn SC2	23.70	0.50	0.86	41.80	0.15	19.60	0.32	0.39	2.60	1.71	1.26
Zn SC3	161.50	0.19	0.14	42.80	0.06	16.48	0.82	0.44	18.16	4.67	7.24
Zn SC TLS	357.70	0.23	0.12	42.50	0.05	17.42	2.20	0.83	39.95	8.63	16.94
CalcPbFeed	996.20	3.75	5.20	38.2	0.21	36.92	100.00	100.00	100.00	100.00	100.00
CalcZnFeed	740.90	0.27	4.75	39.9	0.14	18.17	5.33	67.95	77.66	49.77	36.59

CUM. GRADE(%) CUM. RECOVERY(%) (Based on feed to the Pb circuit)

Pb in the Pb Circuit, K= 0.70

34.50	71.43
23.37	87.19
17.39	91.90
15.24	93.63
13.84	94.67

Cu in the Pb Circuit

0.26	9.69
0.33	21.95
0.37	35.10
0.39	43.61
0.41	50.23

Ag in the Pb Circuit

206.84	43.47
143.43	54.33
110.41	59.23
98.71	61.57
91.34	63.41
(g/t)	

CUM. GRADE(%) CUM. RECOVERY(%) (Based on feed to the Zn circuit)

Pb in the Zn Circuit

0.33	15.73
0.38	26.27
0.38	37.32
0.39	43.27
0.30	58.68

Cu in the Zn Circuit

0.45	41.38
0.42	55.63
0.36	6?.83
0.34	7?.28
0.22	8?.67

Ag in the Zn Circuit

21.77	1?.35
21.77	2?.15
20.72	3?.48
20.60	3?.93
18.86	5?.71
(g/t)	

Zn in the Pb Circuit (Based on Pb cct feed)

5.01	7.48
5.98	16.10
6.29	23.99
6.45	28.56
6.50	32.05
(cum%gr)	(cum%rec)

Zn in the Zn Circuit, K= 0.85

(Based on Pb cct feed)		(Based on Zn cct feed)	
32.90	60.30	32.90	88.75
24.50	64.78	24.50	9?.33
17.33	66.29	17.33	9?.56
15.57	66.68	15.57	9?.14
9.07	67.12	9.07	9?.78
(cum%gr)	(cum%rec)	(cum%gr)	(cum%rec)

ROUGHER TEST — 2EF CONDITIONING vs FLOTATION TIME TEST #5 (STD. Pb CIRCUIT, 8 MIN. CONDIN Zn CIRCUIT)T'

	MASS (GM)	ASSAYS(%) Pb	Zn	Fe	Cu	Ag(g/t)	DISTRIBUTION(%) Pb	Zn	Fe	Cu	Ag
Pb RO1	71.50	36.80	4.72	22.30	0.25	236.08	72.09	6.80	4.14	8.61	43.48
Pb RO2	40.00	15.50	8.05	31.10	0.63	98.91	16.99	6.48	3.23	12.13	10.19
Pb SC1	37.40	2.66	7.04	38.50	0.49	31.73	2.73	5.30	3.73	8.82	3.06
Pb SC2	24.50	1.63	6.53	39.20	0.44	29.55	1.09	3.22	2.49	5.19	1.86
Pb SC3	31.00	1.45	6.76	38.60	0.55	26.13	1.23	4.22	3.10	8.21	2.09
Zn RO1	81.40	0.26	31.20	24.00	0.24	20.53	0.58	51.14	5.07	9.41	4.30
Zn RO2	83.60	0.38	10.59	37.90	0.36	21.77	0.87	17.83	8.22	14.49	4.69
Zn SC1	167.70	0.22	0.91	43.30	0.16	18.66	1.01	3.07	18.83	12.92	8.06
Zn SC2	90.40	0.23	0.36	43.20	0.10	17.11	0.57	0.66	10.13	4.35	3.98
Zn SC3	146.90	0.15	0.14	43.40	0.07	17.11	0.60	0.41	16.54	4.95	6.47
Zn SC TLS	226.70	0.36	0.19	41.70	0.10	20.22	2.24	0.87	24.52	10.92	11.81
CalcPbFeed	1001.10	3.65	4.96	38.5	0.21	38.78	100.00	100.00	100.00	100.00	100.00
CalcZnFeed	796.70	0.27	4.61	40.3	0.15	19.16	5.87	73.98	83.31	57.04	39.32

CUM. GRADE(%) CUM. RECOVERY(%) (Based on feed to the Pb circuit)

Pb in the Pb Circuit, K= 0.71

36.80	72.09
29.16	89.08
22.50	91.80
19.55	92.90
16.81	94.13

Cu in the Pb Circuit

0.25	8.61
0.39	20.74
0.41	29.56
0.42	34.75
0.44	42.96

Ag in the Pb Circuit

236.08	43.48
186.87	53.67
147.90	56.73
131.18	58.59
115.25	60.68
(g/t)	

CUM. GRADE(%) CUM. RECOVERY(%) (Based on feed to the Zn circuit)

Pb in the Zn Circuit

0.26	9.88
0.32	24.70
0.27	41.92
0.26	51.63
0.23	61.91

Cu in the Zn Circuit

0.24	16.49
0.30	41.90
0.23	64.55
0.20	72.18
0.17	86.86

Ag in the Zn Circuit

20.53	10.95
21.16	22.87
19.90	42.33
19.30	57.51
18.74	69.97
(g/t)	

Zn in the Pb Circuit (Based on Pb cct feed)

4.72	6.80
5.91	13.28
6.20	18.58
6.24	21.80
6.32	26.02
(cum%gr)	(cum%rec)

Zn in the Zn Circuit, K= 0.80 (Based on Pb cct feed)

31.20	51.14
20.76	68.97
10.75	72.04
8.53	72.70
6.37	73.11
(cum%gr)	(cum%rec)

(Based on Zn cct feed)

31.20	69.13
20.76	93.23
10.75	97.38
8.53	98.27
6.37	98.83
(cum%gr)	(cum%rec)

ROUGHER TEST

2EF CONDITIONING vs FLOTATION TIME TEST #6 (REPEAT OF BEST Pb CIRCUIT, &BEST Zn CIRCUIT)

	MASS (GM)	ASSAYS(%) Pb	Zn	Fe	Cu	Ag(g/t)	DISTRIBUTION(%) Pb	Zn	Fe	Cu	Ag
Fb RO1	69.30	40.40	4.95	18.10	0.35	278.38	80.71	6.82	3.45	11.60	52.67
Fb RO2	35.00	7.90	7.10	33.90	0.51	60.03	7.97	4.94	3.27	8.54	5.74
Fb SC1	36.40	3.11	6.97	35.90	0.60	33.28	3.26	5.05	3.60	10.44	3.31
Fb SC2	33.40	1.67	6.65	37.20	0.55	27.06	1.61	4.42	3.42	8.78	2.47
Fb SC3	34.30	1.13	6.28	36.80	0.51	23.02	1.12	4.28	3.47	8.36	2.16
Zn RO1	113.50	0.31	29.60	24.70	0.30	21.15	1.01	66.81	7.72	16.28	6.55
Zn RO2	42.70	0.53	5.69	37.30	0.34	23.02	0.65	4.83	4.38	6.94	2.68
Zn SC1	100.50	0.26	0.65	40.20	0.19	15.24	0.75	1.30	11.12	9.13	4.18
Zn SC2	220.20	0.13	0.15	40.70	0.07	12.13	0.83	0.66	24.67	7.37	7.29
Zn SC3	107.20	0.15	0.11	40.60	0.07	15.24	0.46	0.23	11.98	3.59	4.46
Zn SC TLS	208.20	0.27	0.16	40.00	0.09	14.93	1.62	0.66	22.92	8.96	8.49
CalcPbFeed	1000.70	3.47	5.03	36.3	0.21	36.60	100.00	100.00	100.00	100.00	100.00
CalcZnFeed	792.30	0.23	4.73	38.0	0.14	15.56	5.33	74.49	82.79	52.27	33.66

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Pb circuit)

Pb in the Fb Circuit, K= 0.71

40.40	80.71
29.49	88.68
22.67	91.95
18.64	93.55
15.76	94.67

Cu in the Pb Circuit

0.35	11.60
0.40	20.13
0.45	30.58
0.47	39.36
0.48	47.73

Ag in the Fb Circuit

278.38	52.67
205.11	58.41
160.65	61.72
135.02	64.18
116.59	66.34
(g/t)	

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Zn circuit)

Pb in the Zn Circuit

0.31	19.03
0.37	31.27
0.33	45.41
0.24	60.89
0.22	69.59

Cu in the Zn Circuit

0.30	31.15
0.31	44.43
0.26	61.90
0.17	76.00
0.16	82.86

Ag in the Zn Circuit

21.15	19.47
21.66	27.44
19.15	37.87
15.91	61.53
15.78	74.79
(g/t)	

Zn in the Pb Circuit (Based on Pb cct feed)

4.95	6.82
5.67	11.76
6.01	16.81
6.13	21.22
6.16	25.51
(cum%gr)	(cum%rec)

Zn in the Zn Circuit, K= 0.91

(Based on Pb cct feed)		(Based on Zn cct feed)	
29.60	66.81	29.60	89.63
23.06	71.64	23.06	96.17
14.29	72.94	14.29	97.91
7.76	73.59	7.76	98.83
6.36	73.93	6.36	99.11
(cum%gr)	(cum%rec)	(cum%gr)	(cum%rec)

ROUGHER TEST

2EF CONDITIONING vs FLOTATION TIME TEST #7
(Pb cct: 8 min. cond. 10 min. flotation)
(Zn cct: 10 min. cond. 10 min. flotation)

	MASS (GM)	ASSAYS(%) Pb	Zn	Fe	Cu	Ag(g/t)	DISTRIBUTION(%) Pb	Zn	Fe	Cu	Ag
Pb RO1	63.40	40.70	4.69	19.10	0.23	308.55	70.63	5.57	3.33	7.14	49.53
Pb RO2	53.50	9.31	6.94	33.80	0.34	70.60	13.63	6.96	4.97	8.91	9.56
Pb SC1	43.70	6.10	7.44	34.70	0.54	49.14	7.30	6.09	4.17	11.56	5.44
Pb SC2	27.50	2.97	7.24	36.40	0.50	27.37	1.56	3.73	2.75	6.73	1.91
Pb SC3	29.10	1.76	7.13	36.80	0.68	23.95	1.40	3.89	2.94	9.69	1.76
Zn RO1	85.30	0.27	33.60	22.40	0.24	19.28	0.63	53.72	5.25	10.03	4.17
Zn RO2	61.50	0.40	13.20	34.50	0.36	17.42	0.67	15.22	5.83	10.84	2.71
Zn SC1	156.10	0.23	1.03	41.20	0.18	14.62	0.98	3.01	17.67	13.76	5.78
Zn SC2	118.70	0.18	0.27	41.10	0.09	11.20	0.58	0.60	13.40	5.23	3.37
Zn SC3	162.00	0.14	0.14	41.20	0.07	14.00	0.62	0.43	18.33	5.55	5.74
Zn SC TLS	196.00	0.37	0.21	39.70	0.11	20.22	1.99	0.77	21.37	10.56	10.03
CalcPbFeed	996.80	3.67	5.35	36.5	0.20	39.62	100.00	100.00	100.00	100.00	100.00
CalcZnFeed	779.60	0.26	5.05	38.2	0.15	16.11	5.48	73.75	81.85	55.97	31.80

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Pb circuit)

Pb in the Pb Circuit, K= 0.86

40.70	70.63
26.33	84.27
20.83	91.56
18.09	93.12
15.90	94.52

Cu in the Pb Circuit

0.23	7.14
0.28	16.05
0.35	27.61
0.37	34.34
0.41	44.03

Ag in the Pb Circuit

308.55	49.53
199.65	59.10
158.70	64.53
139.50	66.44
124.02	68.20
(g/t)	

Zn in the Pb Circuit

(Based on Pb cct feed)	
4.69	5.57
5.72	12.53
6.19	18.63
6.34	22.36
6.45	26.25
(cum%gr)	(cum%rec)

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Zn circuit)

Pb in the Zn Circuit

0.27	11.51
0.32	23.80
0.28	41.75
0.25	52.42
0.22	63.76

Cu in the Zn Circuit

0.24	17.91
0.29	37.28
0.23	61.87
0.19	71.21
0.16	81.14

Ag in the Zn Circuit

19.28	17.10
18.50	21.63
16.50	39.80
15.01	59.39
14.73	66.44
(g/t)	

Zn in the Zn Circuit, K= 0.81

(Based on Pb cct feed)		(Based on Pb cct feed)		(Based on Zn cct feed)	
4.69	5.57	33.60	53.72	33.60	72.84
5.72	12.53	25.05	68.94	25.05	93.48
6.19	18.63	12.67	71.95	12.67	97.56
6.34	22.36	9.18	72.55	9.18	98.38
6.45	26.25	6.67	72.99	6.67	98.93
(cum%gr)	(cum%rec)	(cum%gr)	(cum%rec)	(cum%gr)	(cum%rec)

ROUGHER TEST

2EF CONDITIONING vs FLOTATION TIME TEST #8
STANDARD ROUGHER TEST

	MASS (GM)	ASSAYS(%) Pb	Zn	Fe	Cu	Ag(g/t)	DISTRIBUTION(%) Pb	Zn	Fe	Cu	Ag
Pb RO1	66.00	38.00	4.89	20.10	0.25	270.29	64.81	5.75	3.74	7.70	44.38
Pb RO2	61.80	13.30	7.53	30.30	0.45	97.98	21.24	8.29	5.29	12.98	15.06
Pb SC1	55.80	3.62	7.51	35.60	0.55	36.70	5.22	7.47	5.61	14.33	5.10
Pb SC2	35.10	2.29	7.71	35.50	0.61	28.93	2.08	4.82	3.52	10.00	2.53
Pb SC3	43.20	1.29	7.24	36.60	0.47	23.95	1.44	5.57	4.46	9.48	2.57
Zn RO1	98.20	0.28	32.20	21.90	0.28	19.28	0.71	56.36	6.07	12.84	4.71
Zn RO2	58.30	0.46	7.77	36.60	0.35	21.46	0.69	8.07	6.02	9.53	3.11
Zn SC1	68.50	0.34	1.52	39.70	0.20	17.11	0.60	1.86	7.68	6.40	2.92
Zn SC2	147.10	0.18	0.24	40.20	0.08	14.31	0.68	0.63	16.69	5.49	5.24
Zn SC3	135.80	0.18	0.18	40.20	0.06	12.75	0.63	0.44	15.41	3.80	4.31
Zn SC TLS	228.30	0.32	0.18	39.60	0.07	17.73	1.89	0.73	25.52	7.46	10.07
CalcPbFeed	998.10	3.88	5.62	35.5	0.21	40.27	100.00	100.00	100.00	100.00	100.00
CalcZnFeed	736.20	0.27	5.19	37.2	0.13	16.57	5.21	68.09	77.38	45.51	30.36

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Pb circuit)

Pb in the Pb Circuit, K= 0.65

38.00	64.81
26.06	86.05
19.24	91.27
16.52	93.35
14.01	94.79

Cu in the Pb Circuit

0.25	7.70
0.35	20.69
0.41	35.01
0.44	45.01
0.45	54.49

Ag in the Pb Circuit

270.29	44.38
186.96	59.45
141.30	64.54
123.26	67.07
106.88	69.64
(g/t)	

Zn in the Pb Circuit

(Based on Pb cct feed)	
4.89	5.75
6.17	14.05
6.57	21.52
6.76	28.34
6.84	31.91
(cumZgr)	(cumZrec)

CUM. GRADE(%) CUM. RECOVERY(%)
(Based on feed to the Zn circuit)

Pb in the Zn Circuit

0.28	13.64
0.35	26.94
0.34	38.50
0.28	51.63
0.25	63.76

Cu in the Zn Circuit

0.28	28.20
0.31	49.13
0.27	63.18
0.20	75.25
0.16	83.61

Ag in the Zn Circuit

19.28	15.52
20.10	25.78
19.19	35.35
17.26	52.63
16.05	66.85
(g/t)	

Zn in the Zn Circuit, K= 0.81

(Based on Pb cct feed)		(Based on Pb cct feed)		(Based on Zn cct feed)	
4.89	5.75	32.20	56.36	32.20	82.73
6.17	14.05	23.10	64.43	23.10	94.63
6.57	21.52	16.53	66.29	16.53	97.36
6.76	26.34	10.09	66.92	10.09	98.28
6.84	31.91	7.44	67.35	7.44	98.92
(cumZgr)	(cumZrec)	(cumZgr)	(cumZrec)	(cumZgr)	(cumZrec)