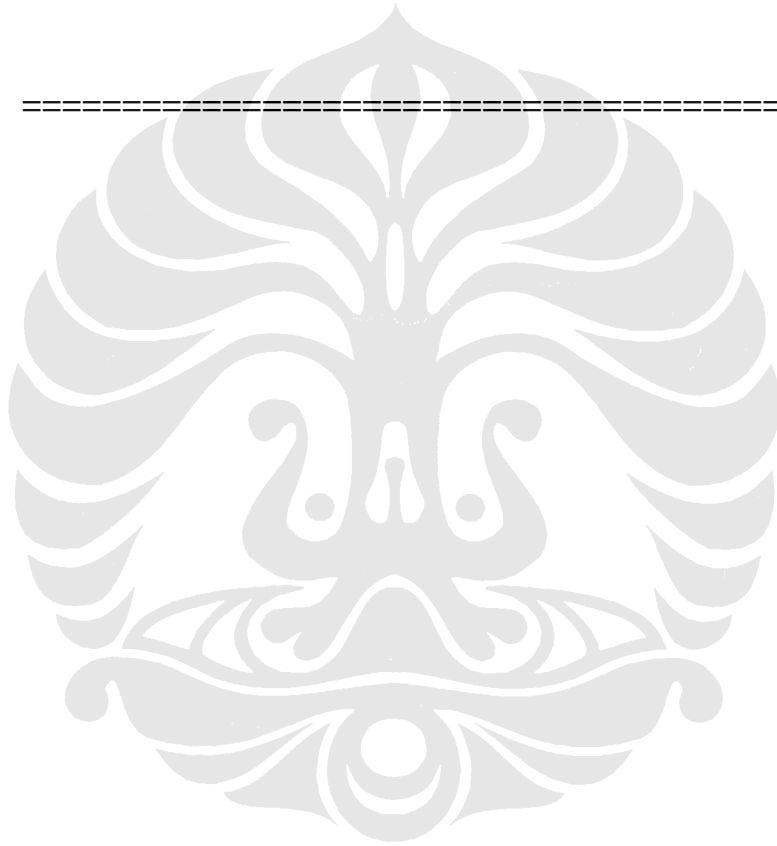
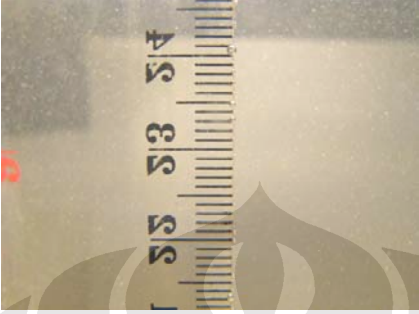


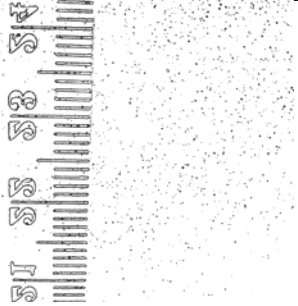


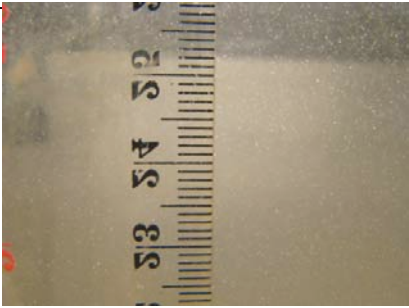
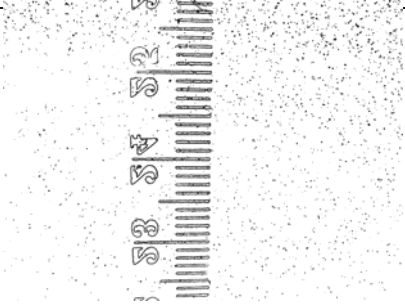
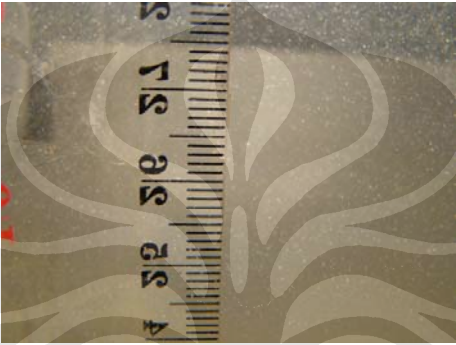
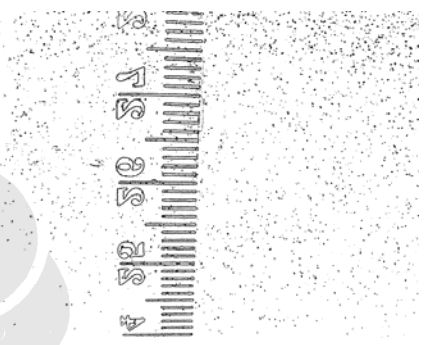
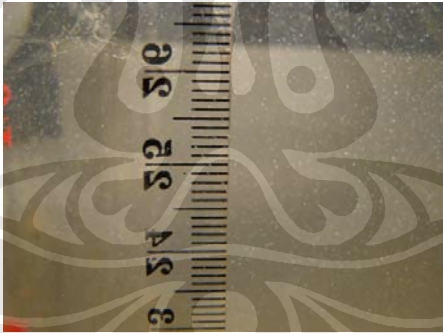
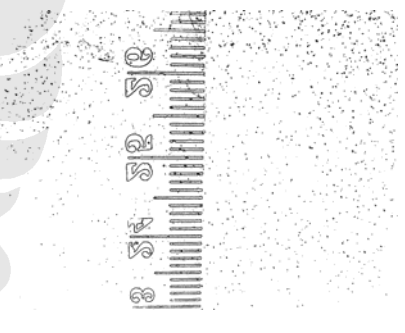
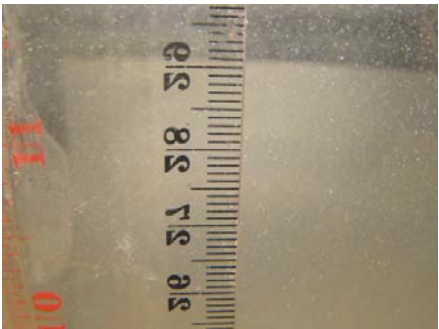



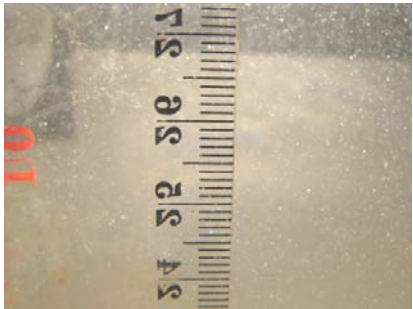
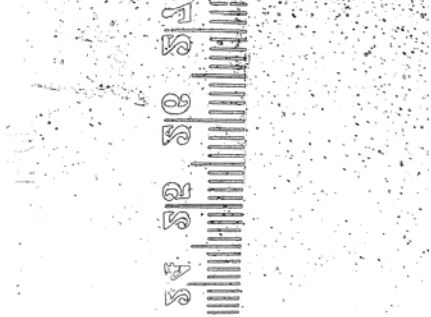

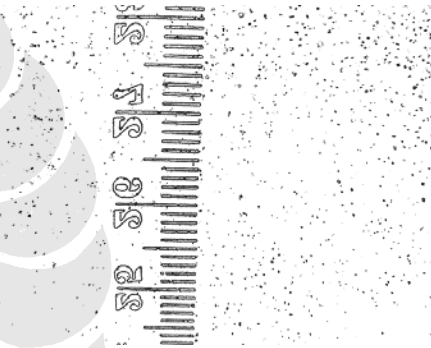
LAMPIRAN



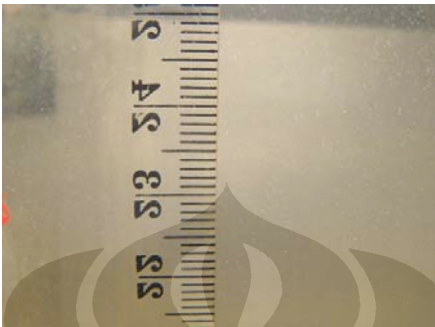
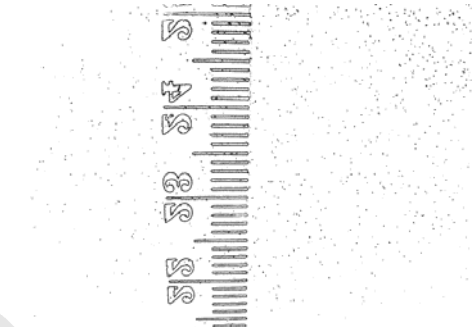
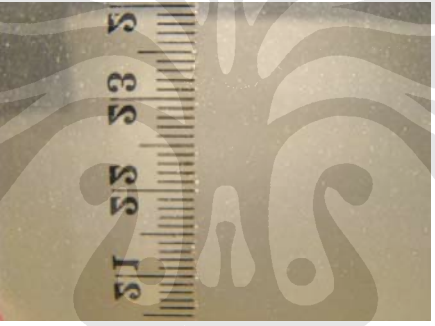
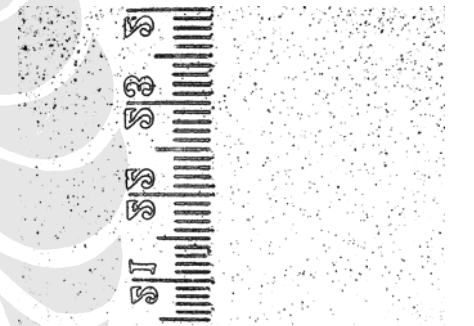
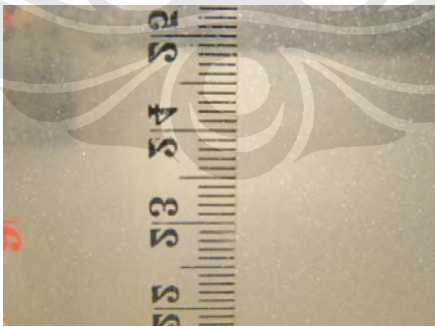
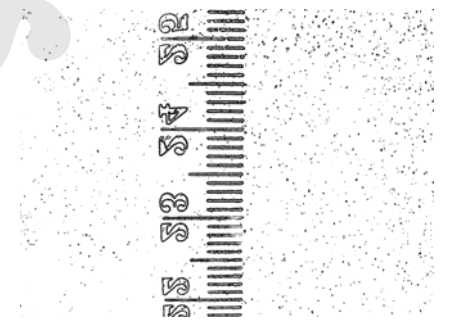
HASIL VISUALISASI MICRO BUBBLE BUKAAN KATUP 180 DERAJAT

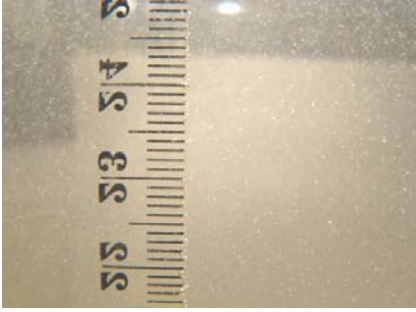
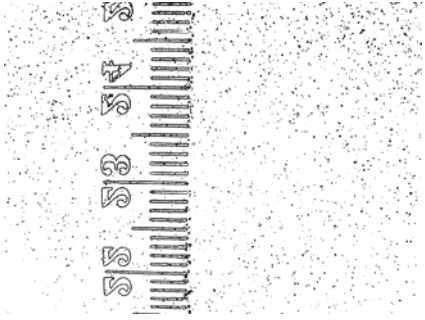
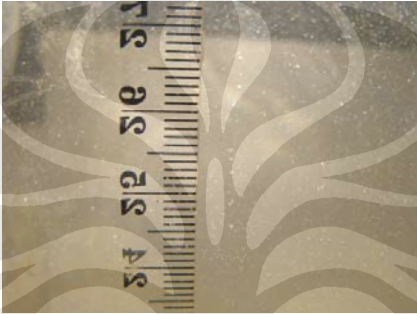
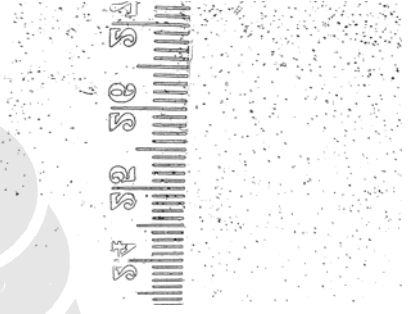
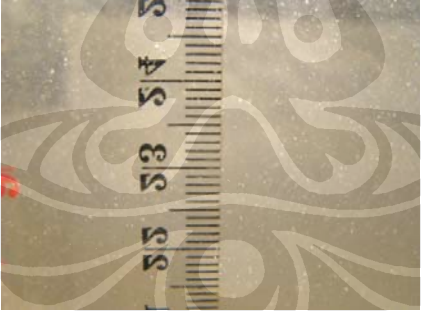
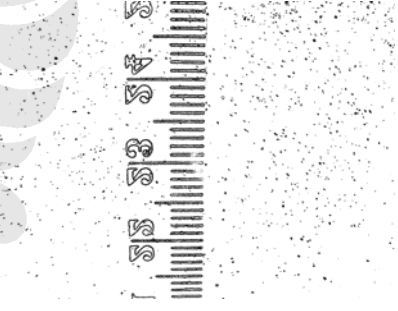
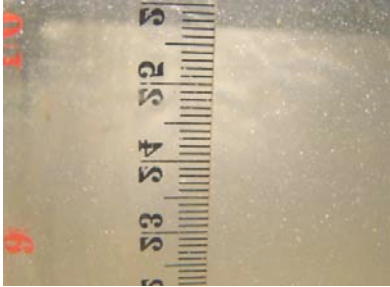

FREQ	180 DEG	
	FOTO ASLI	HASIL OLAHAN IMAGE J
46		
44		
42		

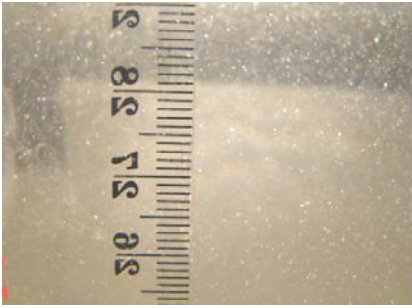
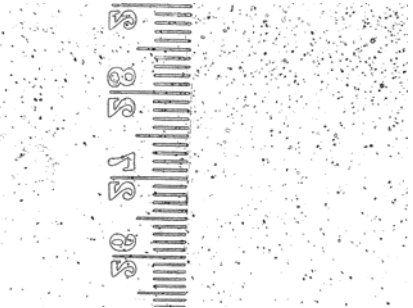
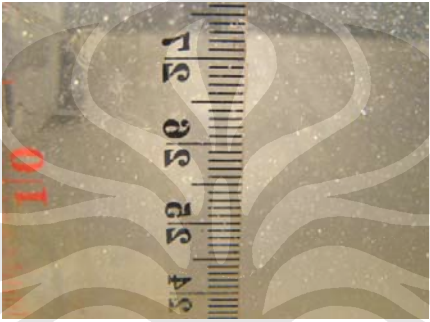
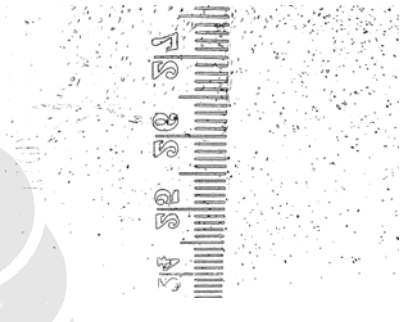
40		
38		
36		
34		

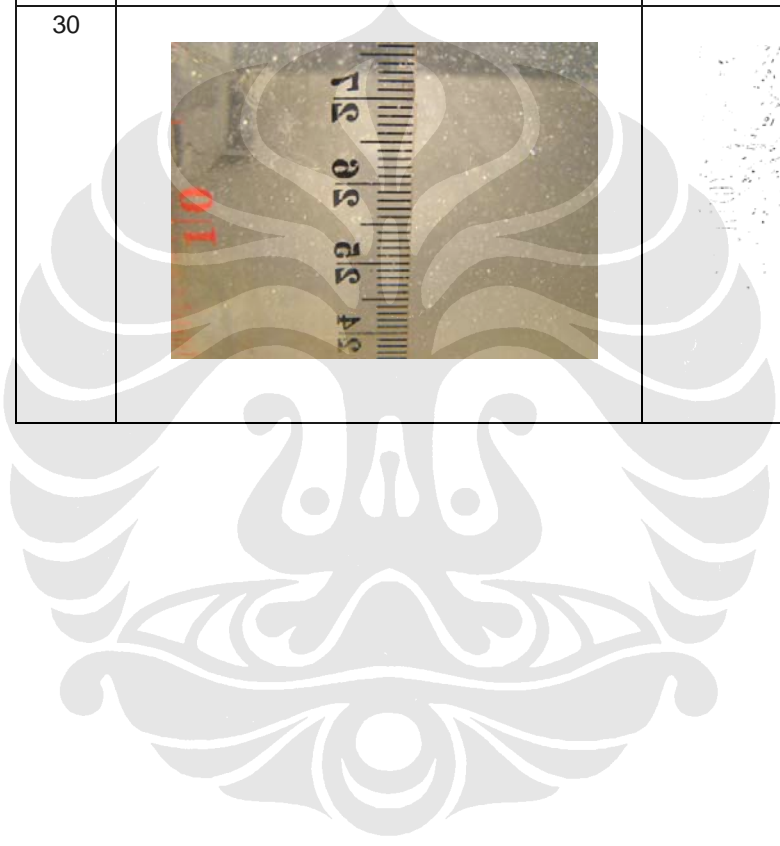
32		
30		

HASIL VISUALISASI MICRO BUBBLE
BUKAAN KATUP 195 DERAJAT

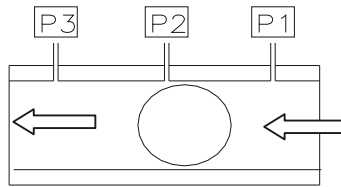
FREQ	195 DEG	
	FOTO ASLI	HASIL OLAHAN IMAGE J
46		
44		
42		

40		
38		
36		
34		

32		
30		



DATA PRESSURE HASIL PERCOBAAN



FREKUENSI Hz	PRESSURE					
	P1 (kg/cm ²)	P2 (mmHg)	P3 (mmHg)	P1 (N/m ²)	P2 (N/m ²)	P3 (N/m ²)
30	0.45	- 20	17	44129.93	-2666.4	2266.44
32	0.5	- 24	18	49033.25	3199.68	2399.76
34	0.56	- 27	18	54917.24	3599.64	2399.76
36	0.62	- 31	18	60801.23	4132.92	2399.76
38	0.68	- 38	19	66685.22	5066.16	2533.08
40	0.75	- 43	19	73549.88	5732.76	2533.08
42	0.82	- 47	20	80414.53	6266.04	2666.4
44	0.87	- 49	20	85317.86	6532.68	2666.4
46	0.93	- 52	21	91201.85	6932.64	2799.72

DATA DEBIT GAS HASIL PERCOBAAN

FREQ (Hz)	No.	Gas (180 DEG)			Gas (195 DEG)		
		T (sec)	V (mm3)	Q (m ³ /sec)	T (sec)	V (mm3)	Q (m ³ /sec)
46	1	10.04	4749.25	0.000000473	3.08	4749.25	0.000001542
	2	10.63	4749.25	0.000000447	3.05	4749.25	0.000001557
	3	10.45	4749.25	0.000000454	3.06	4749.25	0.000001552
	4	10.28	4749.25	0.000000462	2.95	4749.25	0.000001610
	5	10.25	4749.25	0.000000463	2.92	4749.25	0.000001626
	6	10.21	4749.25	0.000000465	2.99	4749.25	0.000001588
	7	10.96	4749.25	0.000000433	2.90	4749.25	0.000001638
	8	10.87	4749.25	0.000000437	2.88	4749.25	0.000001649
	9	10.18	4749.25	0.000000467	2.90	4749.25	0.000001638
	10	10.42	4749.25	0.000000456	2.94	4749.25	0.000001615
	11	10.22	4749.25	0.000000465	2.94	4749.25	0.000001615
	12	10.3	4749.25	0.000000461	2.91	4749.25	0.000001632
	13	10.51	4749.25	0.000000452	2.97	4749.25	0.000001599
	14	10.37	4749.25	0.000000458	2.98	4749.25	0.000001594
	15	10.35	4749.25	0.000000459	2.96	4749.25	0.000001604
	Σ	10.403	4749.25	0.000000457	2.962	4749.25	0.000001604
44	1	10.13	4749.25	0.000000469	3.16	4749.25	0.000001503
	2	10.71	4749.25	0.000000443	3.19	4749.25	0.000001489
	3	10.35	4749.25	0.000000459	3.31	4749.25	0.000001435
	4	10.29	4749.25	0.000000462	3.37	4749.25	0.000001409
	5	10.09	4749.25	0.000000471	3.25	4749.25	0.000001461
	6	10.56	4749.25	0.000000450	3.09	4749.25	0.000001537
	7	10.63	4749.25	0.000000447	3.18	4749.25	0.000001493
	8	10.41	4749.25	0.000000456	3.08	4749.25	0.000001542
	9	10.67	4749.25	0.000000445	3.07	4749.25	0.000001547
	10	10.72	4749.25	0.000000443	3.07	4749.25	0.000001547
	11	10.51	4749.25	0.000000452	3.07	4749.25	0.000001547
	12	10.46	4749.25	0.000000454	3.07	4749.25	0.000001547
	13	10.44	4749.25	0.000000455	3.07	4749.25	0.000001547
	14	10.5	4749.25	0.000000452	3.07	4749.25	0.000001547
	15	10.45	4749.25	0.000000454	3.07	4749.25	0.000001547
	Σ	10.461	4749.25	0.000000454	3.177	4749.25	0.000001513

42	1	12.05	4749.25	0.000000394	3.14	4749.25	0.000001513
	2	10.08	4749.25	0.000000471	3.15	4749.25	0.000001508
	3	12.01	4749.25	0.000000395	3.23	4749.25	0.000001470
	4	12.05	4749.25	0.000000394	3.22	4749.25	0.000001475
	5	11.78	4749.25	0.000000403	3.29	4749.25	0.000001444
	6	11.9	4749.25	0.000000399	3.31	4749.25	0.000001435
	7	11.8	4749.25	0.000000402	3.34	4749.25	0.000001422
	8	12.1	4749.25	0.000000393	3.22	4749.25	0.000001475
	9	12.21	4749.25	0.000000389	3.30	4749.25	0.000001439
	10	12.04	4749.25	0.000000394	3.19	4749.25	0.000001489
	11	11.82	4749.25	0.000000402	3.19	4749.25	0.000001489
	12	11.78	4749.25	0.000000403	3.19	4749.25	0.000001489
	13	11.83	4749.25	0.000000401	3.19	4749.25	0.000001489
	14	12.02	4749.25	0.000000395	3.19	4749.25	0.000001489
	15	11.86	4749.25	0.000000400	3.19	4749.25	0.000001489
		∑	11.822	4749.25	0.000000402	3.24	4749.25
40	1	13.32	4749.25	0.000000357	3.5	4749.25	0.000001357
	2	13.16	4749.25	0.000000361	3.47	4749.25	0.000001369
	3	13.95	4749.25	0.000000340	3.17	4749.25	0.000001498
	4	14.33	4749.25	0.000000331	3.22	4749.25	0.000001475
	5	14.25	4749.25	0.000000333	3.34	4749.25	0.000001422
	6	15.1	4749.25	0.000000315	3.31	4749.25	0.000001435
	7	14.72	4749.25	0.000000323	3.34	4749.25	0.000001422
	8	14.37	4749.25	0.000000330	3.15	4749.25	0.000001508
	9	14.51	4749.25	0.000000327	3.38	4749.25	0.000001405
	10	15.11	4749.25	0.000000314	3.29	4749.25	0.000001444
	11	14.02	4749.25	0.000000339	3.37	4749.25	0.000001409
	12	14.43	4749.25	0.000000329	3.57	4749.25	0.000001330
	13	14.42	4749.25	0.000000329	3.81	4749.25	0.000001247
	14	14.57	4749.25	0.000000326	3.22	4749.25	0.000001475
	15	13.97	4749.25	0.000000340	3.32	4749.25	0.000001430
		∑	14.282	4749.25	0.000000333	3.36	4749.25

38	1	14.58	4749.25	0.000000326	3.83	4749.25	0.000001240
	2	14.73	4749.25	0.000000322	3.94	4749.25	0.000001205
	3	15.27	4749.25	0.000000311	3.51	4749.25	0.000001353
	4	14.94	4749.25	0.000000318	3.84	4749.25	0.000001237
	5	14.79	4749.25	0.000000321	3.85	4749.25	0.000001234
	6	15.01	4749.25	0.000000316	3.97	4749.25	0.000001196
	7	14.96	4749.25	0.000000317	3.72	4749.25	0.000001277
	8	14.5	4749.25	0.000000328	3.93	4749.25	0.000001208
	9	15.05	4749.25	0.000000316	3.52	4749.25	0.000001349
	10	15.78	4749.25	0.000000301	3.46	4749.25	0.000001373
	11	15.02	4749.25	0.000000316	3.87	4749.25	0.000001227
	12	15.05	4749.25	0.000000316	3.86	4749.25	0.000001230
	13	15.22	4749.25	0.000000312	3.52	4749.25	0.000001349
	14	14.97	4749.25	0.000000317	3.41	4749.25	0.000001393
	15	14.77	4749.25	0.000000322	3.89	4749.25	0.000001221
		Σ	14.976	4749.25	0.000000317	3.7413	4749.25
36	1	17.63	4749.25	0.000000269	4.22	4749.25	0.000001125
	2	17.7	4749.25	0.000000268	4.31	4749.25	0.000001102
	3	17.62	4749.25	0.000000270	4.29	4749.25	0.000001107
	4	17.68	4749.25	0.000000269	3.54	4749.25	0.000001342
	5	18.43	4749.25	0.000000258	3.34	4749.25	0.000001422
	6	17.69	4749.25	0.000000268	3.73	4749.25	0.000001273
	7	17.92	4749.25	0.000000265	3.80	4749.25	0.000001250
	8	17.76	4749.25	0.000000267	3.93	4749.25	0.000001208
	9	17.77	4749.25	0.000000267	3.82	4749.25	0.000001243
	10	17.97	4749.25	0.000000264	3.64	4749.25	0.000001305
	11	17.53	4749.25	0.000000271	3.51	4749.25	0.000001353
	12	17.61	4749.25	0.000000270	3.82	4749.25	0.000001243
	13	17.91	4749.25	0.000000265	3.98	4749.25	0.000001193
	14	17.88	4749.25	0.000000266	4.02	4749.25	0.000001181
	15	17.84	4749.25	0.000000266	3.99	4749.25	0.000001190
		Σ	17.796	4749.25	0.000000267	3.863	4749.25

34	1	21.19	4749.25	0.000000224	4.26	4749.25	0.000001115
	2	20.97	4749.25	0.000000226	4.21	4749.25	0.000001128
	3	21.04	4749.25	0.000000226	4.32	4749.25	0.000001099
	4	21.27	4749.25	0.000000223	4.07	4749.25	0.000001167
	5	21.26	4749.25	0.000000223	4.18	4749.25	0.000001136
	6	21.26	4749.25	0.000000223	4.20	4749.25	0.000001131
	7	22.75	4749.25	0.000000209	4.22	4749.25	0.000001125
	8	22.53	4749.25	0.000000211	4.08	4749.25	0.000001164
	9	21.25	4749.25	0.000000223	4.17	4749.25	0.000001139
	10	20.83	4749.25	0.000000228	4.10	4749.25	0.000001158
	11	21.45	4749.25	0.000000221	3.98	4749.25	0.000001193
	12	21.42	4749.25	0.000000222	4.03	4749.25	0.000001178
	13	21.53	4749.25	0.000000221	4.24	4749.25	0.000001120
	14	21.37	4749.25	0.000000222	4.41	4749.25	0.000001077
	15	21.39	4749.25	0.000000222	4.35	4749.25	0.000001092
		Σ	21.434	4749.25	0.000000222	4.188	4749.25
32	1	24.17	4749.25	0.000000196	4.36	4749.25	0.000001089
	2	24.87	4749.25	0.000000191	4.38	4749.25	0.000001084
	3	24.12	4749.25	0.000000197	4.50	4749.25	0.000001055
	4	24.11	4749.25	0.000000197	4.83	4749.25	0.000000983
	5	24.2	4749.25	0.000000196	4.62	4749.25	0.000001028
	6	24.36	4749.25	0.000000195	4.28	4749.25	0.000001110
	7	23.81	4749.25	0.000000199	4.32	4749.25	0.000001099
	8	24.67	4749.25	0.000000193	4.39	4749.25	0.000001082
	9	24.13	4749.25	0.000000197	4.25	4749.25	0.000001117
	10	24.25	4749.25	0.000000196	4.23	4749.25	0.000001123
	11	24.62	4749.25	0.000000193	4.71	4749.25	0.000001008
	12	24.31	4749.25	0.000000195	4.65	4749.25	0.000001021
	13	24.44	4749.25	0.000000194	4.32	4749.25	0.000001099
	14	24.57	4749.25	0.000000193	4.08	4749.25	0.000001164
	15	24.58	4749.25	0.000000193	4.19	4749.25	0.000001133
		Σ	24.347	4749.25	0.000000195	4.407	4749.25

30	1	27.1	4749.25	0.000000175	4.83	4749.25	0.000000983
	2	27.75	4749.25	0.000000171	4.86	4749.25	0.000000977
	3	27.73	4749.25	0.000000171	4.92	4749.25	0.000000965
	4	27.82	4749.25	0.000000171	4.89	4749.25	0.000000971
	5	27.76	4749.25	0.000000171	4.82	4749.25	0.000000985
	6	27.53	4749.25	0.000000173	5.00	4749.25	0.000000950
	7	27.42	4749.25	0.000000173	4.68	4749.25	0.000001015
	8	27.5	4749.25	0.000000173	4.92	4749.25	0.000000965
	9	27.54	4749.25	0.000000172	4.93	4749.25	0.000000963
	10	27.08	4749.25	0.000000175	4.99	4749.25	0.000000952
	11	27.88	4749.25	0.000000170	4.57	4749.25	0.000001039
	12	27.65	4749.25	0.000000172	4.32	4749.25	0.000001099
	13	27.42	4749.25	0.000000173	4.98	4749.25	0.000000954
	14	27.38	4749.25	0.000000173	4.96	4749.25	0.000000958
	15	27.63	4749.25	0.000000172	5.03	4749.25	0.000000944
	Σ	27.546	4749.25	0.000000172	4.847	4749.25	0.000000981



DATA DEBIT WATER HASIL PERCOBAAN

FREQ (Hz)	No.	Water					
		T (sec)	L Bak	h 0	h 1	V (mm ³)	Q (m ³ /sec)
46	1	10	180000	150	212	11160000	0.0011160
	2	10	180000	150	211	10980000	0.0010980
	3	10	180000	150	211	10980000	0.0010980
	4	10	180000	150	211	10980000	0.0010980
	5	10	180000	150	213	11340000	0.0011340
	6	10	180000	150	212	11160000	0.0011160
	7	10	180000	150	211	10980000	0.0010980
	8	10	180000	150	211	10980000	0.0010980
	9	10	180000	150	211	10980000	0.0010980
	10	10	180000	150	211	10980000	0.0010980
	11	10	180000	150	211	10980000	0.0010980
	12	10	180000	150	211	10980000	0.0010980
	13	10	180000	150	211	10980000	0.0010980
	14	10	180000	150	211	10980000	0.0010980
	15	10	180000	150	211	10980000	0.0010980
	Σ					11028000	0.0011028
44	1	10	180000	150	209	10620000	0.0010620
	2	10	180000	150	209	10620000	0.0010620
	3	10	180000	150	209	10620000	0.0010620
	4	10	180000	150	209	10620000	0.0010620
	5	10	180000	150	209	10620000	0.0010620
	6	10	180000	150	210	10800000	0.0010800
	7	10	180000	150	210	10800000	0.0010800
	8	10	180000	150	209	10620000	0.0010620
	9	10	180000	150	209	10620000	0.0010620
	10	10	180000	150	209	10620000	0.0010620
	11	10	180000	150	209	10620000	0.0010620
	12	10	180000	150	209	10620000	0.0010620
	13	10	180000	150	209	10620000	0.0010620
	14	10	180000	150	209	10620000	0.0010620
	15	10	180000	150	209	10620000	0.0010620
	Σ					10644000	0.0010644

42	1	10	180000	150	206	10080000	0.0010080
	2	10	180000	150	206	10080000	0.0010080
	3	10	180000	150	206	10080000	0.0010080
	4	10	180000	150	205	9900000	0.0009900
	5	10	180000	150	206	10080000	0.0010080
	6	10	180000	150	206	10080000	0.0010080
	7	10	180000	150	206	10080000	0.0010080
	8	10	180000	150	206	10080000	0.0010080
	9	10	180000	150	206	10080000	0.0010080
	10	10	180000	150	206	10080000	0.0010080
	11	10	180000	150	206	10080000	0.0010080
	12	10	180000	150	206	10080000	0.0010080
	13	10	180000	150	206	10080000	0.0010080
	14	10	180000	150	206	10080000	0.0010080
	15	10	180000	150	206	10080000	0.0010080
		Σ					10068000
40	1	10	180000	150	204	9720000	0.0009720
	2	10	180000	150	204	9720000	0.0009720
	3	10	180000	150	203	9540000	0.0009540
	4	10	180000	150	204	9720000	0.0009720
	5	10	180000	150	203	9540000	0.0009540
	6	10	180000	150	204	9720000	0.0009720
	7	10	180000	150	204	9720000	0.0009720
	8	10	180000	150	204	9720000	0.0009720
	9	10	180000	150	204	9720000	0.0009720
	10	10	180000	150	204	9720000	0.0009720
	11	10	180000	150	204	9720000	0.0009720
	12	10	180000	150	204	9720000	0.0009720
	13	10	180000	150	204	9720000	0.0009720
	14	10	180000	150	204	9720000	0.0009720
	15	10	180000	150	204	9720000	0.0009720
		Σ					9696000

38	1	10	180000	150	201	9180000	0.0009180
	2	10	180000	150	201	9180000	0.0009180
	3	10	180000	150	201	9180000	0.0009180
	4	10	180000	150	201	9180000	0.0009180
	5	10	180000	150	201	9180000	0.0009180
	6	10	180000	150	201	9180000	0.0009180
	7	10	180000	150	201	9180000	0.0009180
	8	10	180000	150	201	9180000	0.0009180
	9	10	180000	150	201	9180000	0.0009180
	10	10	180000	150	201	9180000	0.0009180
	11	10	180000	150	201	9180000	0.0009180
	12	10	180000	150	201	9180000	0.0009180
	13	10	180000	150	201	9180000	0.0009180
	14	10	180000	150	201	9180000	0.0009180
	15	10	180000	150	201	9180000	0.0009180
		Σ					9180000
36	1	10	180000	150	199	8820000	0.0008820
	2	10	180000	150	198	8640000	0.0008640
	3	10	180000	150	199	8820000	0.0008820
	4	10	180000	150	198	8640000	0.0008640
	5	10	180000	150	198	8640000	0.0008640
	6	10	180000	150	199	8820000	0.0008820
	7	10	180000	150	199	8820000	0.0008820
	8	10	180000	150	199	8820000	0.0008820
	9	10	180000	150	199	8820000	0.0008820
	10	10	180000	150	198	8640000	0.0008640
	11	10	180000	150	198	8640000	0.0008640
	12	10	180000	150	198	8640000	0.0008640
	13	10	180000	150	198	8640000	0.0008640
	14	10	180000	150	198	8640000	0.0008640
	15	10	180000	150	198	8640000	0.0008640
		Σ					8712000

34	1	10	180000	150	196	8280000	0.0008280
	2	10	180000	150	196	8280000	0.0008280
	3	10	180000	150	196	8280000	0.0008280
	4	10	180000	150	196	8280000	0.0008280
	5	10	180000	150	196	8280000	0.0008280
	6	10	180000	150	197	8460000	0.0008460
	7	10	180000	150	197	8460000	0.0008460
	8	10	180000	150	196	8280000	0.0008280
	9	10	180000	150	196	8280000	0.0008280
	10	10	180000	150	196	8280000	0.0008280
	11	10	180000	150	196	8280000	0.0008280
	12	10	180000	150	196	8280000	0.0008280
	13	10	180000	150	196	8280000	0.0008280
	14	10	180000	150	196	8280000	0.0008280
	15	10	180000	150	196	8280000	0.0008280
		Σ					8304000
32	1	10	180000	150	193	7740000	0.0007740
	2	10	180000	150	193	7740000	0.0007740
	3	10	180000	150	193	7740000	0.0007740
	4	10	180000	150	193	7740000	0.0007740
	5	10	180000	150	193	7740000	0.0007740
	6	10	180000	150	193	7740000	0.0007740
	7	10	180000	150	193	7740000	0.0007740
	8	10	180000	150	193	7740000	0.0007740
	9	10	180000	150	193	7740000	0.0007740
	10	10	180000	150	193	7740000	0.0007740
	11	10	180000	150	193	7740000	0.0007740
	12	10	180000	150	193	7740000	0.0007740
	13	10	180000	150	193	7740000	0.0007740
	14	10	180000	150	193	7740000	0.0007740
	15	10	180000	150	193	7740000	0.0007740
		Σ					7740000

30	1	10	180000	150	190	720000	0.0007200
	2	10	180000	150	189	7020000	0.0007020
	3	10	180000	150	190	7200000	0.0007200
	4	10	180000	150	190	7200000	0.0007200
	5	10	180000	150	190	7200000	0.0007200
	6	10	180000	150	190	7200000	0.0007200
	7	10	180000	150	190	7200000	0.0007200
	8	10	180000	150	190	7200000	0.0007200
	9	10	180000	150	190	7200000	0.0007200
	10	10	180000	150	190	7200000	0.0007200
	11	10	180000	150	190	7200000	0.0007200
	12	10	180000	150	190	7200000	0.0007200
	13	10	180000	150	190	7200000	0.0007200
	14	10	180000	150	190	7200000	0.0007200
	15	10	180000	150	190	7200000	0.0007200
	Σ					7188000	0.0007188

