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VITA

Mr. Yongphan Vimuktanandana graduated from Chulalongkorn University in 1965 with a Bachelor Degree in Civil Engineering. After graduation he joined the Metropolitan Electricity Authority as a professional civil engineer, but left it a year after when he was admitted to Chulalongkorn University Graduate School to study for the Degree of Master of Engineering in Sanitary Engineering.



Table A-1 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	26.2°	7.97	3.09	4.88	-
5	26.2°	7.97	4.70	3.27	54.5
10	26.2°	7.97	4.96	3.01	109
20	26.2°	7.97	5.71	2.26	218
40	26.2°	7.97	7.13	0.84	436
60	26.0°	7.99	7.84	0.51	650
90	26.0°	7.99	7.69	0.30	977

NOTE : Conditions of Experiments

1. Rotor No. 1
of
2. Depth/Immersion = 5.0 cm.
3. RPM = 30
4. Power consumption

* Values of C_s Were taken from new values of oxygen saturation recommended by the American Society of Civil Engineering (1969) and corrected for chloride.

Table A-2: BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	24.8°	8.19	0.65	7.54	-
5	24.8°	8.19	2.42	5.77	56
10	24.8°	8.19	3.85	4.34	112
20	24.8°	8.19	5.42	2.77	224
40	24.8°	8.19	7.27	0.92	448
60	24.7°	8.20	7.68	0.68	670
90	24.7°	8.20	7.94	0.34	1006

NOTE : Conditions of Experiments

1. Rotor No. 1
of
2. Depth/Immersion = 7.5 cm.
3. RPM = 30
4. Power consumption

Table A-3 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	25.9°	8.04	0.95	7.09	-
5	25.9°	8.04	3.35	4.69	55.5
10	25.9°	8.04	5.00	3.04	111
20	25.9°	8.04	6.80	1.24	222
40	25.9°	8.04	7.50	0.54	443
60	25.9°	8.04	7.80	0.24	666
90	25.9°	8.04	7.80	0.24	1000

NOTE : Conditions of Experiments

1. Rotor No. 1
2. Depth of Immersion = 5.0 cm.
3. RPM = 45
4. Power consumption

Table A-4 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	27.2°	7.82	1.13	6.69	-
5	27.2°	7.82	4.29	3.53	57.4
10	27.1°	7.84	5.60	2.24	115
20	27.1°	7.85	7.00	0.85	229
40	27.0°	7.85	7.48	0.37	458
60	26.9°	7.87	7.69	0.18	683
90	26.8	7.88	7.69	0.19	1040

NOTE : Conditions of Experiments

1. Rotor No. 1
2. Depth^{of} Immersion = 7.5 cm.
3. RPM = 45
4. Power consumption

Table A-5 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C_S^* mg./l	C_L mg./l	$C_S - C_L$ mg./l	Power watt-hr.
0	27.2°	7.82	0.96	6.82	-
5	27.2°	7.82	4.29	3.51	57.8
10	27.2°	7.82	5.60	2.22	116
20	27.2°	7.82	6.61	1.21	232
40	27.0°	7.85	7.50	0.35	462
60	26.5°	7.93	7.69	0.24	693
90	26.0°	8.00	7.69	0.31	1040

NOTE : Conditions of Experiments

1. Rotor No. 1
2. Depth of Immersion = 5 cm.
3. RPM = 60
4. Power consumption

Table A-6 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	26.0°	8.00	3.03	4.97	-
2	26.0°	8.00	3.18	4.72	20.6
15	26.0°	8.00	3.70	4.30	157
30	26.0°	8.00	4.56	3.44	312
45	26.0°	8.00	5.56	2.44	468
60	26.0°	8.00	5.87	2.13	625
75	26.0°	8.00	6.07	1.93	781
90	25.9°	8.02	6.27	1.73	937

NOTE : Conditions of Experiments

1. Rotor No. 2
2. Depth/Immersion = 5.0 cm.
3. RPM = 30
4. Power consumption



Table A-7 : BASIC DATA OBTAINED FROM AERTION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	27.8 °	7.73	1.22	6.51	-
5	27.8 °	7.73	1.58	6.15	54.1
10	27.7 °	7.73	2.14	5.61	108
20	27.7 °	7.73	3.30	4.45	217
40	27.5 °	7.78	4.85	2.93	433
60	27.4 °	7.79	5.71	2.08	650
90	27.3 °	7.81	6.62	1.19	975

NOTE : Conditions of Experiments

1. Rotor No. 2
2. Depth^{of}/Immersion = 7.5 cm.
3. RPM = 30
4. Power consumption

Table A-8 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C_s^* mg./l	C_l mg./l	$C_s - C_l$ mg./l	Power watt-hr.
0	28.0°	7.70	0.91	6.79	--
10	28.0°	7.70	2.38	5.32	112
20	28.0°	7.70	3.39	4.31	224
30	28.0°	7.70	4.10	3.60	336
40	28.0°	7.70	4.91	2.79	447
55	28.0°	7.70	5.56	2.14	617
70	28.0°	7.70	6.16	1.54	780
90	28.0°	7.70	6.87	0.83	943

NOTE : Conditions of Experiments

1. Rotor No. 2
2. Depth of Immersion = 10. cm.
3. RPM = 30
4. Power consumption

Table A-9 : BASIC DATA OBTAINED FROM AERTION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	28.5°	7.63	1.22	6.41	-
10	28.5°	7.63	1.92	5.71	109
20	28.5°	7.63	2.34	5.29	217
35	28.5°	7.63	3.75	3.88	378
50	28.5°	7.63	4.55	3.08	542
70	28.4°	7.64	5.76	1.88	750
100	28.2°	7.67	6.47	1.20	1080

NOTE : Conditions of Experiments

1. Rotor No. 2
2. Depth^{of} Immersion = 5.0 cm.
3. RPM = 45
4. Power consumption

Table A-10 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C ₁ mg./l	C _s - C ₁ mg./l	Power watt-hr.
0	28.0°	7.72	0.90	6.82	-
10	28.0°	7.72	2.80	4.92	110
20	28.0°	7.72	3.80	3.92	220
35	28.0°	7.72	5.60	2.12	385
50	28.0°	7.72	6.50	1.22	550
65	28.0°	7.75	7.00	0.75	715
90	27.5°	7.80	7.10	0.70	990

NOTE : Conditions of Experiments

1. Rotor No. 2
2. Depth^{of}/Immersion = 7.5 cm.
3. RPM = 45
4. Power consumption

Table A-11 : BASIC DATA OBTAINED FROM AERTION EXPERIMENTS

t min.	Temp. °C	C_s^* mg./l	C_l mg./l	$C_s - C_l$ mg./l	Power watt-hr.
0	26.8°	7.88	1.33	6.55	-
5	26.8°	7.88	2.99	4.89	56.2
10	26.8°	7.88	3.84	4.04	113
20	26.8°	7.88	5.45	2.43	227
40	26.8°	7.88	6.90	0.98	453
60	26.5°	7.93	7.48	0.45	683
90	26.2°	7.99	7.69	0.30	1025

NOTE : Conditions of Experiments

1. Rotor No. 2.
2. Depth^{of}/Immersion = 10 cm.
3. RPM = 45
4. Power consumption

Table 12 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	28.0°	7.70	1.82	5.88	-
5	28.0°	7.70	2.64	5.06	55
10	27.9°	7.72	3.97	3.93	110
20	27.8°	7.73	5.61	2.12	220
40	27.6°	7.76	6.96	0.85	440
60	27.0°	7.85	7.47	0.38	660
90	27.0°	7.85	7.84	0.01	990

NOTE : Conditions of Experiments

1. Rotor No.2
2. Depth^{of}/Immersion = 5.0 cm.
3. RPM = 60
4. Power consumption

Table A-13 : BASIC DATA OBTAINED FROM AERTION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	28.0°	7.70	0.80	6.90	-
5	28.0°	7.70	2.84	4.86	56.7
10	28.0°	7.70	4.34	3.36	113
20	27.9°	7.72	6.26	1.46	227
40	27.3°	7.81	7.11	0.70	453
60	27.3°	7.81	7.68	0.13	683
90	27.0°	7.85	7.69	0.16	1025

NOTE : Conditions of Experiments

1. Rotor No. 2
2. Depth ^{of} Immersion = 7.5 cm.
3. RPM = 60
4. Power consumption

Table A-14 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	26.4°	7.94	2.08	5.86	-
5	26.4°	7.94	4.19	3.75	57.4
10	26.4°	7.94	5.15	2.79	115
20	26.4°	7.94	6.70	1.24	230
40	26.4°	7.94	7.61	0.33	458
60	26.4°	7.94	7.78	0.16	685
90	26.2°	7.97	7.83	0.14	1030

NOTE : Conditions of Experiments

1. Rotor No. 2
of
2. Depth/Immersion = 10 cm.
3. RPM = 60
4. Power consumption

Table A-15 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C_s^* mg./l	C_1 mg./l	$C_s - C_1$ mg./l	Power watt-hr.
0	24.0°	8.31	0.85	7.46	-
10	24.0°	8.31	3.68	3.36	107
20	24.0°	8.31	5.35	2.96	244
35	24.0°	8.31	6.66	1.65	374
50	24.0°	8.31	7.47	0.84	535
70	24.0°	8.31	7.69	0.62	749
100	24.0°	8.31	7.79	0.52	1070

NOTE : Conditions of Experiments

1. Rotor No. 3
of
2. Depth/Immersion = 5.0 cm.
3. RPM = 45
4. Power consumption



Table A-16: BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	25.5°	8.08	1.51	6.58	-
10	25.5°	8.08	4.29	3.79	106
20	25.5°	8.08	6.16	1.92	213
35	25.5°	8.08	7.27	0.81	373
50	25.5°	8.08	7.37	0.71	535
70	25.4°	8.09	7.58	0.51	744
90	25.4°	8.09	7.79	0.30	965

NOTE : Conditions of Experiments

1. Rotor No. 3
2. Depth/Immersion = 7.5 cm.
3. RPM = 45
4. Power consumption

Table A-17 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C ₁ mg./l	C _s - C ₁ mg./l	Power watt-hr.
0	24.5°	8.23	1.37	6.86	-
2	24.5°	8.23	2.45	5.78	22
5	24.5°	8.23	3.82	4.41	55
10	24.5°	8.23	5.29	2.94	110
15	24.4°	8.25	6.32	1.93	165
20	24.2°	8.28	6.66	1.62	220
25	24.1°	8.30	7.35	0.95	275
30	24.1°	8.30	7.69	0.61	330

NOTE : Conditions of Experiments

1. Rotor No. 3
2. Depth/Immersion ^{of} 10 cm.
3. RPM = 45
4. Power consumption

Table A-18 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	26.5°	7.93	0.85	7.08	-
10	26.5°	7.93	3.23	4.70	109
20	26.5°	7.93	5.71	2.22	218
35	26.5°	7.93	6.66	1.27	381
50	26.4°	7.94	7.27	0.67	545
70	26.3°	7.96	7.58	0.38	763
90	26.2°	7.99	7.58	0.41	981

NOTE : Conditions of Experiments

1. Rotor No. 3
2. Depth^{of}/Immersion = 5.0 cm.
3. RPM = 60
4. Power consumption

Table A-19 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	24.5°	8.23	1.67	6.56	-
10	24.5°	8.23	5.70	2.53	146.0
20	24.6°	8.22	7.27	0.95	292.0
35	24.6°	8.22	7.73	0.49	507.0
50	24.8°	8.19	7.99	0.20	730.0

NOTE : Conditions of Experiments

1. Rotor No. 3
of
2. Depth/Immersion = 7.5 cm.
3. RPM = 60
4. Power consumption

Table A-20 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	24.5	8.23	2.45	5.78	-
2	24.6	8.22	3.87	4.35	22.3
5	24.6	8.22	5.24	2.98	55.7
8	24.6	8.22	6.46	1.76	89.2
11	24.6	8.22	7.00	1.22	122.6
15	24.8	8.19	7.59	0.60	167.2
20	24.8	8.19	7.84	0.35	223.0
23	24.8	8.19	7.84	0.35	256.4

NOTE : Conditions of Experiments

1. Rotor No. 3
of
2. Depth/Immersion = 10 cm.
3. RPM = 60
4. Power consumption



Table A-21: BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	26.0°	8.00	0.78	7.21	-
1	26.0°	8.00	2.25	5.75	12.2
2	26.0°	8.00	3.72	4.28	22.4
3	26.0°	8.00	4.26	3.72	36.6
4	26.0°	8.00	5.24	2.76	48.8
5	26.0°	8.00	5.73	2.27	61.0
6	26.0°	8.00	6.32	1.68	73.2
7	26.0°	8.00	6.51	1.49	85.4
8	26.0°	8.00	6.76	1.24	97.6

NOTE : Conditions of Experiments

1. Rotor No. 3
2. Depth^{of}/Immersion = 5.0 cm.
3. RPM = 80
4. Power consumption

Table A-22 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C ₁ mg./l	C _s - C ₁ mg./l	Power watt-hr.
0	26.1°	7.99	1.17	6.82	-
1	26.1°	7.99	3.33	4.66	12.3
2	26.1°	7.99	4.50	3.49	24.6
3	26.1°	7.99	5.44	2.55	36.9
4	26.0°	8.00	5.97	2.03	49.2
5	26.0°	8.00	6.51	1.49	61.5
6	26.0°	8.00	6.95	1.05	73.8
7	26.0°	8.00	7.20	0.80	86.1
8	26.0°	8.00	7.30	0.70	98.4

NOTE : Conditions of Experiments

1. Rotor No. 3
of
2. Depth/Immersion = 7.5 cm.
3. RPM = 80
4. Power consumption

Table A-23 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	26.5°	7.93	1.42	6.51	-
1	26.5°	7.93	3.75	4.36	12.5
2	26.5°	7.93	4.75	3.18	25.0
3	26.3°	7.96	5.78	2.18	37.5
4	26.3°	7.96	6.17	1.79	50.0
5	26.3°	7.96	6.71	1.25	62.5
7	26.2°	7.97	7.20	0.77	87.5
10	26.2°	7.97	7.49	0.48	125.0

NOTE : Conditions of Experiments

1. Rotor No. 3
2. Depth/Immersion = 10.0 cm.
3. RPM = 80
4. Power consumption

Table A-24: BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	22.0 °	8.65	0.939	7.711	-
2	22.0 °	8.65	4.417	4.233	25
4	21.8 °	8.68	6.012	2.668	50
6	21.8 °	8.68	6.954	1.726	75
8	21.8 °	8.68	7.519	1.161	100
10	21.8 °	8.68	7.706	0.974	125
12	21.8 °	8.68	7.894	0.786	150

NOTE : Condition of experiment

1. Rotor No. 3
2. Depth of immersion = 5.0 cm.
3. RPM = 100
4. Power consumption.

Table A-25 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C_s^* mg./l	C_l mg./l	$C_s - C_l$ mg./l	Power watt-hr.
0	25.9 °	8.02	0	8.02	-
1	25.9 °	8.02	3.333	4.687	12.9
2	25.9 °	8.02	4.883	3.137	25.8
3	25.8 °	8.04	5.128	2.312	38.7
4	25.7 °	8.05	6.385	1.665	51.6
6	25.6 °	8.06	7.043	1.007	77.4
8	25.3 °	8.11	7.371	0.739	103.2

NOTE : Condition of Experiment

1. Rotor No. 3
2. Depth of immersion = 7.5 cm.
3. RPM = 100
4. Power consumption.

Table A-26: BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	25.8	8.04	1.549	6.491	-
1	25.8	8.04	4.319	4.721	13
2	25.8	8.04	5.728	2.312	26
4	25.8	8.04	6.855	1.185	52
6	25.5	8.08	7.418	0.662	78
8	25.4	8.09	7.420	0.670	104
10	25.0	8.16	7.50	0.660	130

NOTE : Conditions of Experiments

1. Rotor No. 3
2. Depth of Immersion = 10.0 cm.
3. RPM = 100
4. Power consumption.

TABLE A-27 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	28.5°	7.63	0.92	6.71	-
0.5	28.4°	7.64	2.14	5.50	-
1.25	28.4°	7.69	3.16	4.48	-
2	28.4°	7.69	4.27	3.42	-
3	28.1°	7.69	5.20	2.49	-
4	28.1°	7.69	5.68	2.01	-
5	28.1°	7.69	6.12	1.57	-
6	28.0°	7.70	6.80	0.90	7.52

NOTE : Conditions of Experiments

1. Rotor No. 3
2. Depth of Immersion = 5.0 cm.
3. RPM = 120
4. Power consumption

TABLE A-28 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l	Power watt-hr.
0	28.1°	7.69	1.21	6.48	-
0.5	28.1°	7.69	2.53	5.16	-
1.20	28.1°	7.69	4.13	3.56	-
2	28.0°	7.70	5.39	2.31	-
3	28.0°	7.70	6.41	1.29	-
4	28.0°	7.70	6.80	0.90	-
5	28.0°	7.70	7.09	0.61	-
6	28.0°	7.70	7.19	0.51	8.2

NOTE : Conditions of experiments

1. Rotor No. 3
2. Depth/Immersion = 7.5 cm.
3. RPM = 120
4. Power consumption

TABLE A-29 BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s [*] mg./l	C ₁ mg./l	C _s - C ₁ mg./l	Power watt-hr.
0	28.0°	7.70	2.14	5.56	-
0.5	28.0°	7.70	3.40	4.30	-
1.25	28.0°	7.70	5.24	2.46	-
2	28.0°	7.70	6.31	1.39	-
3	27.9°	7.72	6.99	0.73	-
4	27.9°	7.72	7.28	0.44	-
5	27.9°	7.72	7.48	0.24	-
6	27.9°	7.72	7.58	0.14	8.8

Note : Conditions of Experiments

1. Rotor No. 3.
2. Depth^{of}/Immersion = .10 cm.
3. RPM = 120
4. Power consumption

Table A-30 : BASIC DATA OF OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C ₁ mg./l	C _s - C ₁ mg./l
0	27.0	7.85	0.39	7.46
1	27.0	7.85	1.95	5.90
2	27.0	7.85	3.11	4.74
3	27.0	7.85	4.09	3.76
4	27.0	7.85	4.67	3.18
5	27.0	7.85	5.16	2.69
6	27.0	7.85	5.59	2.26
7	27.0	7.85	5.94	1.91

NOTE : Conditions of Experiments

1. Rotor No. 2
2. Depth/Immersion = 10 cm.
3. RPM = 80

Table A-31 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C ₁ mg./l	C _s - C ₁ mg./l
0	28.0	7.70	1.80	5.90
1	28.0	7.70	2.77	4.93
2	28.0	7.70	3.60	4.10
3	28.0	7.70	4.38	3.32
4	28.0	7.70	4.67	3.03
5	28.0	7.70	5.25	2.45
6	28.0	7.70	5.59	2.11
7	28.0	7.70	5.94	1.76
8	28.0	7.70	6.23	1.47

NOTE : Conditions of Experiments

1. Rotor No. 2
2. Depth^{of}/Immersion = 7.5 cm.
3. RPM = 80

Table A-32 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C _s * mg./l	C _l mg./l	C _s - C _l mg./l
0	28.0	7.70	1.75	5.95
1	28.0	7.70	2.24	5.46
2	28.0	7.70	3.02	4.68
3	28.0	7.70	4.04	3.66
4	28.0	7.70	4.57	3.13
5	28.0	7.70	4.87	2.83
6	28.0	7.70	5.35	2.35
7	28.0	7.70	5.55	2.15

NOTE : Conditions of Experiments

1. Rotor No. 2
2. Depth^{of}/Immersion = 5.0 cm.
3. RPM = 80

Table A-33 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C* mg. ^s /l	C ₁ mg. ^l /l	C - C ₁ mg. ^s /l
0	28.5	7.63	1.36	6.27
0.5	28.5	7.63	1.56	6.07
1.16	28.5	7.63	2.43	5.20
2	28.5	7.63	3.45	4.18
3	28.5	7.63	4.14	3.49
4	28.5	7.63	4.96	2.67
5	28.5	7.63	5.35	2.28
6	28.5	7.63	5.89	1.74

NOTE : Conditions of Experiments

1. Rotor No. 2
of
2. Depth/Immersion = 7.5 cm.
3. RPM = 100

Table A-34 : BASIC DATA OBTAINED FROM AERATION EXPERIMENTS

t min.	Temp. °C	C_s^* mg./l	C_l mg./l	$C_s - C_l$ mg./l
0	28.0	7.70	0	7.70
1	28.0	7.70	0.49	7.21
2	28.0	7.70	1.99	5.71
3	28.0	7.70	3.11	4.59
4	28.0	7.70	3.84	3.86
5	28.0	7.70	4.72	2.98
6	28.0	7.70	5.01	2.69
7	28.0	7.70	5.50	2.20

NOTE: Conditions of Experiments

1. Rotor No. 2
2. Depth^{of} Immersion = 5.0 cm.
3. RPM = 100

SAMPLE CALCULATION

TABLE B-1 Sample Computation (from Table A-24) for $K_{La(T)}$,
 $K_{La(20^{\circ}C)}$ and Pearson's r

Time (min.) = X	$C_s - C_1$ mg/L	$\log(C_s - C_1)$ = Y
0	7.711	0.88705
2	4.233	0.62634
4	2.668	0.42488
6	1.726	0.23553
8	1.161	0.06446

n = 5
 $\Sigma X = 20$
 $\Sigma X^2 = 120$
 $\Sigma Y = 2.23826$
 $\Sigma X.Y = 4.888106$

from : $n.A + \Sigma X.B = \Sigma Y$ (1)
 $\Sigma X.A + \Sigma X^2.B = \Sigma XY$ (2)
 There fore $5.A + 20.B = 2.23826$ (3)
 $20.A + 120.B = 4.88106$ (4)
 from 4 $A + 4.B = 0.447652$ (5)
 from 5 $A + 6.B = 0.244053$ (6)
 (5)-(6) $\therefore -2B = 0.203599$
 $B = -0.1017995$
 $K_{La(T)} = \frac{0.1017995}{0.4343} = 0.248665 \text{ (min}^{-1}\text{)}$

average temperature = $21.8^{\circ}C$
 and $K_{La(20^{\circ}C)} = K_{LaT} \cdot \theta^{(20-T)}$
 $= 0.248665 \times 1.024^{-1.8}$
 $= \frac{0.248665}{1.024^{1.8}}$
 $= 0.2382 \text{ (min}^{-1}\text{)}$
 $= 14.297 \text{ (hr}^{-1}\text{)}$

r = $\frac{N \cdot \Sigma X.Y - (\Sigma X)(\Sigma Y)}{\sqrt{[N \cdot \Sigma X^2 - (\Sigma X)^2][N \cdot \Sigma Y^2 - (\Sigma Y)^2]}}$

$$\begin{aligned}
 \text{and } N. \Sigma X.Y &= 24.405300 \\
 \Sigma X. \Sigma Y &= 44.765200 \\
 N. \Sigma X^2 &= 600 \\
 (\Sigma X)^2 &= 400 \\
 N. \Sigma Y^2 &= 7.096560 \\
 (\Sigma Y)^2 &= 5.009808
 \end{aligned}$$

substitute in (7) we get.

$$\begin{aligned}
 r &= \frac{24.405300 - 44.765200}{\sqrt{(600-400)(7.096560-5.009808)}}^{\frac{1}{2}} \\
 r &= \frac{-20.35990}{\sqrt{(200)(2.086752)}}^{\frac{1}{2}} \\
 &= \frac{-20.35990}{\sqrt{417.35024}}^{\frac{1}{2}} \\
 &= \frac{-20.35990}{20.427} \\
 &= -0.996715
 \end{aligned}$$

If $n = 5$, degrees of freedom, $df = (5-2) = 3$ and with level of significance of 0.1 percent, r should at least be equal to 0.9916. An r value of 0.9967 therefore indicates that a straight line relationship between $\log(C_s - C_L)$ and (t) is real or significant and not due to chance.

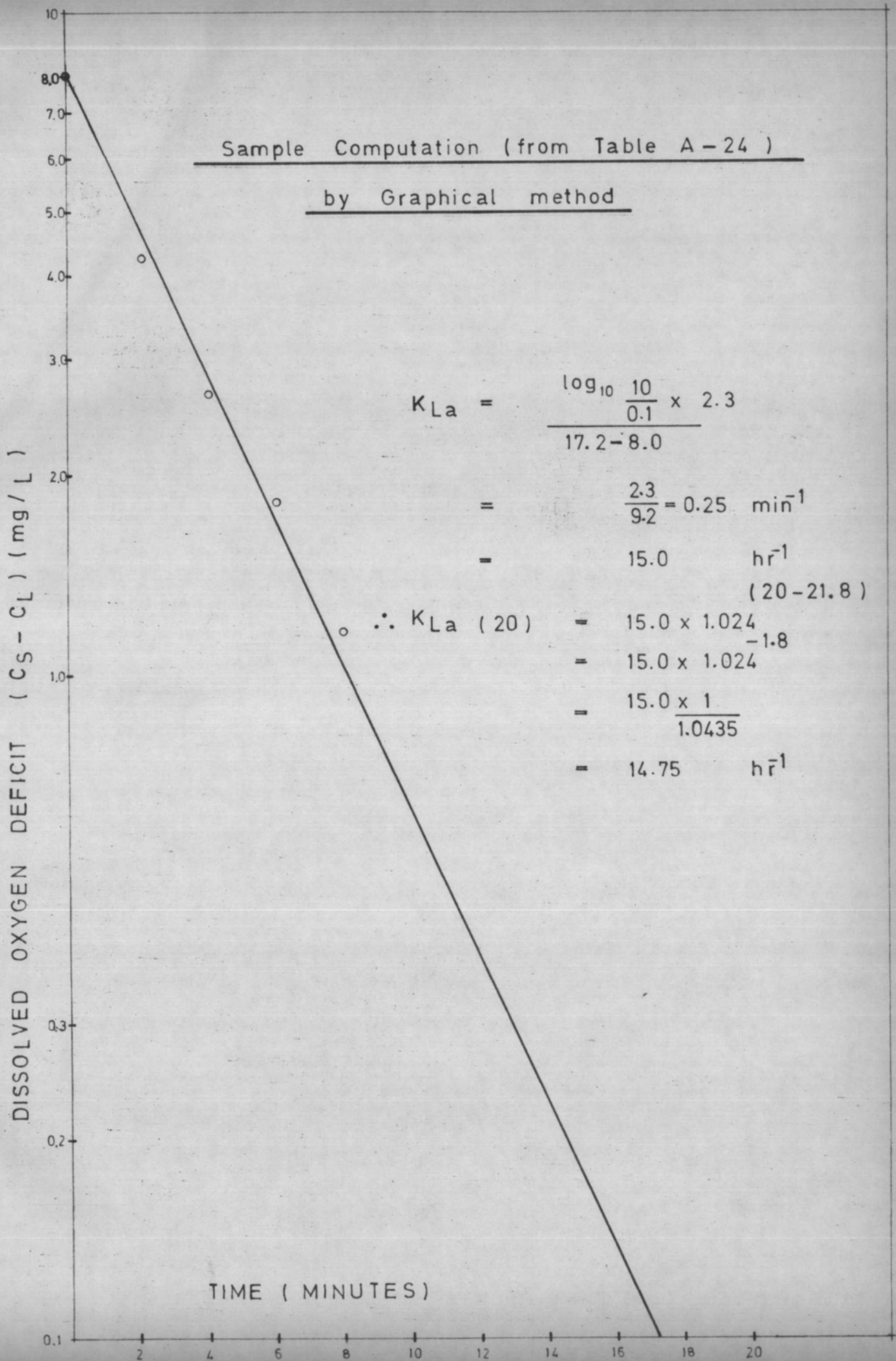


TABLE C - 1 : Pearson r and level of significance of $K_{La(20)}$ for specified aeration operational conditions (RPM and depth of immersion) for Rectangular Rotor NO 1

Rotor speed RPM	Blade immersion cm.	$K_{La(20)}$ hr^{-1}	Pearson r	level of significance %
60	5.0	3.782	0.9895	99.0
45	7.5	3.628	0.9726	99.0
45	5.0	3.553	0.9872	99.0
30	7.5	2.796	0.9997	99.9
30	5.0	2.149	0.9893	99.0

TABLE C - 2 : Pearson r and level of significance of $K_{La(20)}$ for specified aeration operational conditions (RPM and depth of immersion) for Rectangular Rotor NO 2.

Rotor speed RPM	Blade immersion cm.	$K_{La(20)}$ hr. ⁻¹	Pearson r	level of significance %
100	7.5	10.692	0.9910	99.9
100	5.0	9.746	0.9721	99.0
80	10	9.002	0.9089	99.9
80	7.5	8.483	0.9780	99.0
80	5.0	7.686	0.9890	99.9
60	10	3.686	0.9991	99.9
60	7.5	2.903	0.9831	99.0
60	5.0	2.507	0.9977	99.9
45	10	2.422	0.9996	99.9
45	7.5	1.831	0.9963	99.9
45	5.0	0.870	0.9938	99.9
30	10	1.671	0.9970	99.9
30	7.5	1.484	0.9990	99.9
30	5.0	1.036	0.9824	99.9

TABLE C - 3 : Pearson r and level of significance of $K_{Lc(20)}$ for specified aeration operational conditions (RPM and depth of immersion) for Rectangular Rotor NO 3.

Rotor speed RPM	Blade immersion cm.	$K_{Lc(20)}$ hr^{-1}	Pearson r	level of significance %
120	10	34.366	0.9993	99.9
120	7.5	24.177	0.9986	99.9
120	5.0	15.431	0.9609	99.9
100	10	20.561	0.9931	99.9
100	7.5	15.948	0.9890	99.9
100	5.0	15.386	0.9967	99.9
80	10	15.720	0.9960	99.9
80	7.5	15.504	0.9872	99.9
80	5.0	9.840	0.9550	95.0
60	10	8.054	0.9710	99.0
60	7.5	4.105	0.9488	95.0
60	5.0	2.465	0.9937	99.9
45	10	4.155	0.9950	99.9
45	7.5	2.481	0.9714	99.0
45	5.0	2.090	0.9873	99.0