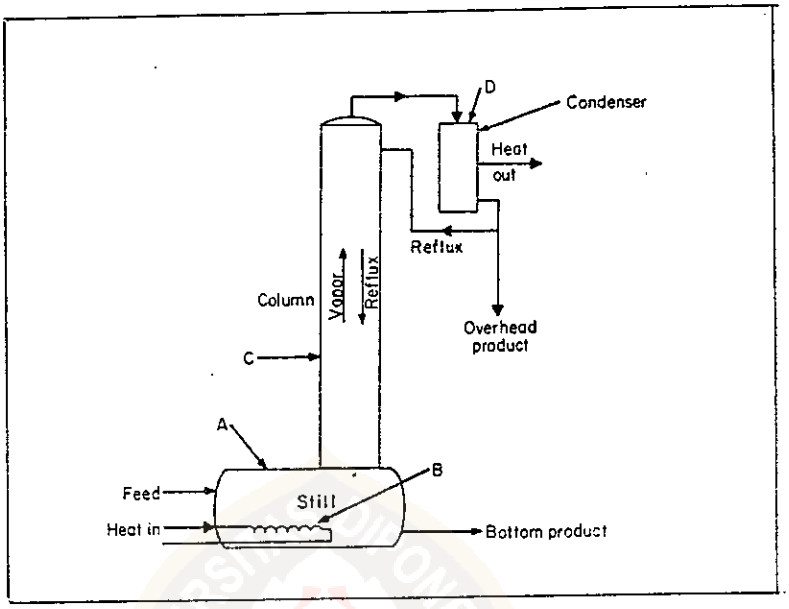
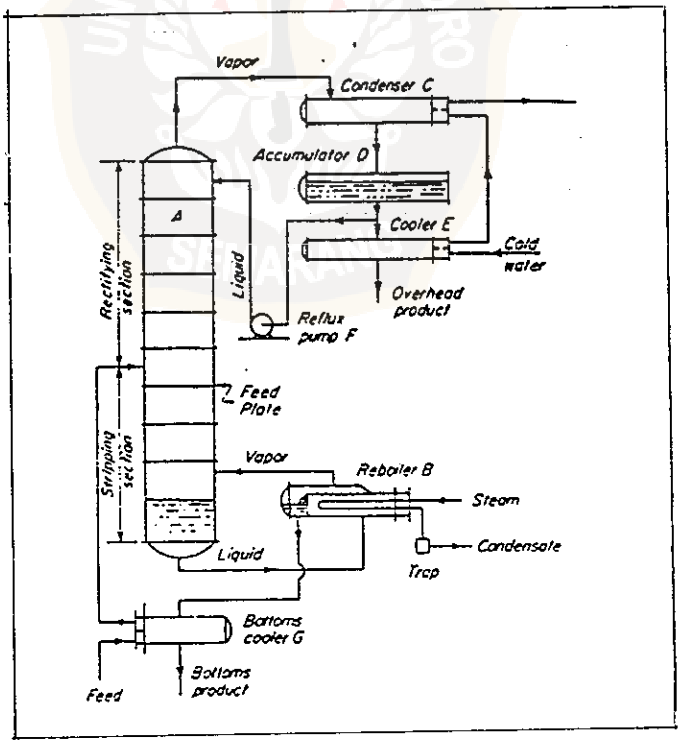
Lampiran 1. Skema proses rektifikasi pada distilasi *batch* dan kontinyu



Gambar skema distilasi *batch*



Gambar skema distilasi kontinyu

Lampiran 2. Metoda Perhitungan

1. Penetapan Kebutuhan Oksigen Kimia (KOK)

KOK (mg O_2/l) = {(a - b) x c x 8000 x d} / e

a = Volume larutan FAS untuk titrasi blanko (ml)

b = Volume larutan FAS untuk titrasi contoh (ml)

c = Normalitas larutan FAS (N)

d = Faktor pengenceran

e = Volume contoh (ml)

2. Penetapan Total Kjeldahl Nitrogen (TKN)

TKN (mg N/l) = {(a - b) x c x 14005 x d} / e

a = Volume larutan NaOH (0,02N) untuk titrasi blanko (ml)

b = Volume larutan NaOH (0,02N) untuk titrasi contoh (ml)

c = Normalitas larutan NaOH (0,02N)

d = Faktor pengenceran

e = Volume contoh (ml)

3. Penetapan Alkalinitas

$$\text{Alkalinitas (mek/l)} = \frac{A \times B \times 1000}{C}$$

A = Volume larutan H_2SO_4 (0,1N) (ml)

B = Normalitas larutan H_2SO_4 (0,1N) (N)

C = Volume contoh (ml)

Lampiran 2. (lanjutan)

4. Penetapan Kadar Garam Anorganik Terlarut (ROI)

ROI (g/l) = {(A - B) / C} x 1000

A = Bobot tetap cawan porselin + contoh (gram)

B = Bobot tetap cawan porselin kosong (gram)

C = Volume contoh (ml)

5. Penetapan Biodegrabilitas dengan Uji OUR

a. Penentuan laju penyuntikan contoh limbah (residu/filtrat residu hasil distilasi)

Konsentrasi KOK contoh x Qrp = Beban di Real Plant

$$Q\ uji = Qrp \times \frac{Vuji}{V\ br} \times \frac{1\ hari}{1440\ menit} \times \text{faktor pengenceran}$$

Q uji = laju penyuntikan contoh limbah (ml/menit)

Q rp = laju alir limbah ke bioreaktor (real plant) (m^3/hari)

V br = Volume bioreaktor (m^3)

V uji = Volume labu uji OUR (± 500 ml)

b. Penetapan dapat didegradasi atau tidak

Dengan mengamati grafik yang diperoleh dan dibandingkan dengan gambar II.7 A - C.

c. Penetapan BD, SD, dan MD

Dihitung dari slope grafik masing-masing, dalam satuan

Lampiran 2. (lanjutan)

mg O_2/liter.jam.

d. Penetapan harga OUR

1. OUR C = SD ATU
2. OUR C-maks = MD ATU
3. OUR N-maks = SD Amon - SD ATU

6. Penetapan Kuantitas Endapan Residu dan LOI Endapan

Kuantitas endapan (gram) = (X - Y)

X = Bobot tetap kertas saring + endapan (gram)

Y = Bobot tetap kertas saring kosong (gram)

$$\text{LOI (\%)} = \frac{(C - D)}{E} \times 100$$

C = Bobot cawan porselin + endapan kering sebelum pemijaran (gram)

D = Bobot cawan porselin + endapan kering setelah pemijaran (gram)

E = Bobot endapan kering (gram)

Sisa pijar endapan = (100 - LOI)%

7. Kadar Air TEA-2 dan Volume TEA-2 Tanpa Air (Vd2)

$$\text{Faktor pereaksi KF (F)} = \frac{W \times A}{V}$$

W = Berat Natrium tartrat dihidrat (mg)

A = Kadar air Natrium tartrat dihidrat = 15,66% (v/w)

Lampiran 2. (lanjutan)

V = Volume pereaksi KF (ml)

$$\text{Kadar air TEA-2 (\% v/w)} = \frac{D \times F}{E} \times 100$$

D = Volume pereaksi KF (ml)

F = Faktor pereaksi KF (mg/gram)

E = Berat TEA-2 yang dititrasi (mg)

Vd2 (ml) = { V - (V x ∫ x Y)}

V = Volume TEA-2 (ml)

∫ = berat jenis TEA-2 (gram/ml)

Y = kadar air TEA-2 (% v/w)

8. Kadar Zat Pengotor

Dibuat grafik hubungan konsentrasi versus luas area masing-masing zat pengotor dimana:

- konsentrasi (%) : sumbu y
- luas area : sumbu x

kemudian tentukan persamaan garis lurusnya y = A + Bx. Berdasarkan persamaan garis lurus yang diperoleh, kadar masing-masing zat pengotor dapat dihitung dari luas area yang diketahui.

9. Beban KOK dan beban TKN

Beban KOK (kg/ton produk) = [KOK] x 10^{-3} x V alk

Beban TKN (kg/ton produk) = [TKN] x 10^{-3} x V alk

Lampiran 2. (lanjutan)

V alk = Volume alkalin (m^3/ton produk)

Volume alkalin					
Eks. AMX			Eks. AMP		
IV	V	VI	IV	V	VI
14,1	13,2	12,5	8,24	8,45	8,84

Lampiran 3. Jumlah penggunaan NaOH 48% (ml), $Ca(OH)_2$ eks. Sumiden (gram), dan campuran $Ca(OH)_2$ eks. Sumiden (gram)-NaOH 48% untuk ML dan FML seri eks. AMX dan eks. AMP

Jumlah Penggunaan NaOH 48 % (ml)

Amoksisilina

Contoh	Ulangan								Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7	8		
MLX IV 1	4.00	4.00	4.00	4.00	4.00	4.00	4.00		4.00	13.3
FMLX IV 1	5.00	5.50	5.50	5.50	5.50	5.50	5.50		5.43	18.1
MLX V 1	6.50	6.50	6.50	6.50	6.50				6.50	21.7
FMLX V 1										
MLX VI 1	6.25	6.25	6.25	6.25	6.25	6.25	6.25		6.25	20.8
FMLX VI 1	6.00	6.00	6.00	6.00	6.00	6.00	6.00		6.00	20.0

Keterangan :

A = Rata-rata jumlah penggunaan NaOH 48% (ml) per 300 ml contoh
B = Rata-rata jumlah penggunaan NaOH 48% (liter) per 1 m3 contoh

Ampisisilina

Contoh	Ulangan								Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7	8		
MLI IV 1	8.25	8.25	8.25	8.25	8.00	8.00			8.17	27.2
FMLI IV 1	7.00	7.00	7.00	7.00	8.50	8.50			7.50	25.0
MLI V 1	8.75	8.75	8.75	8.75	8.75	8.75			8.75	29.2
FMLI V 1	8.00	8.10	8.00	8.00					8.03	26.8
MLI VI 1	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	8.00	26.7
FMLI VI 1	8.25	8.25	8.25	8.25	8.25	8.25	8.25	8.25	8.25	27.5

Keterangan :

A = Rata-rata jumlah penggunaan NaOH 48% (ml) per 300 ml contoh
B = Rata-rata jumlah penggunaan NaOH 48% (liter) per 1 m3 contoh

Jumlah Penggunaan Ca(OH)2 ex Sumiden (gram)

Amoksisilina

Contoh	Ulangan								Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7	8		
MLX IV 2	3.5143	3.5061	3.5055	3.5044	3.5027	3.5016	3.5009		3.5051	11.68
FMLX IV 2	9.0383	5.5210	5.5196	5.2109	5.5060	5.5065	5.5011		5.9719	19.91
MLX V 2	5.5232	5.5244	5.5258	5.5267	5.5266				5.5257	18.42
FMLX V 2										
MLX VI 2	5.5225	5.5227	5.5221	5.5227	5.5220	5.5221	5.5219		5.5223	18.41
FMLX VI 2	5.5215	5.5221	5.5219	5.5220	5.5225	5.5224	5.5220		5.5221	18.41

Keterangan :

A = Rata-rata jumlah penggunaan Ca(OH)2 ex Sumiden (gram) per 300 ml contoh
B = Rata-rata jumlah penggunaan Ca(OH)2 ex Sumiden (kg) per 1 m3 contoh

Lampiran 3. (lanjutan)

Ampisisilina

Contoh	Ulangan								Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7	8		
MLI IV 2	8.0238	8.0245	8.0232	8.0226	8.0231	8.0227			8.0233	26.74
FMLI IV 2	7.0280	7.0294	7.0213	7.0208	8.0312				7.2261	24.09
MLI V 2	8.0241	8.0245	8.0239	8.0241	8.0248	8.0250			8.0246	26.75
FMLI V 2	8.0224	8.0242	8.0221	8.0217					8.0226	26.74
MLI VI 2	8.0249	8.0244	8.0240	8.0243	8.0234	8.0241	8.0236	8.0242	8.0241	26.75
FMLI VI 2	8.0244	8.0242	8.0243	8.0243	8.0237	8.0242	8.0236	8.0237	8.0241	26.75

Keterangan :

A = Rata-rata jumlah penggunaan Ca(OH)2 ex Sumiden (gram) per 300 ml contoh
B = Rata-rata jumlah penggunaan Ca(OH)2 ex Sumiden (kg) per 1 m3 contoh

Jumlah Penggunaan Campuran NaOH 48 % (ml) & Ca(OH)2 ex. Sumiden (gram)

Amoksisilina

Contoh	Ulangan								Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7	8		
MLX IV 3	2.40	2.45	2.40	2.55	2.50	2.50	2.30		2.41	8.03
	0.7372	0.7376	0.7378	0.7374	0.7367	0.7363	0.7366		0.7371	2.46
FMLX IV 3	4.50	4.60	4.85	4.85	4.65	4.95	4.85		4.79	15.97
	0.7374	0.7370	0.7377	0.7375	0.7375	0.7378	0.7369		0.7374	2.46
MLX V 3	5.75	5.75	6.00	6.00	5.90				5.88	19.60
	0.7379	0.7375	0.7381	0.7380	0.7386				0.7380	2.46
FMLX V 3										
MLX VI 3	5.60	5.60	5.60	5.60	5.60	5.60	5.75		5.62	18.73
	0.7376	0.7380	0.7371	0.7377	0.7373	0.7376	0.7371		0.7375	2.46
FMLX VI 3	5.25	5.50	5.25	5.25	5.25	5.25	5.25		5.29	17.63
	0.7370	0.7376	0.7370	0.7374	0.7375	0.7373	0.7373		0.7373	2.46

Ampisisilina

Contoh	Ulangan								Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7	8		
MLI IV 3	7.75	7.75	7.75	7.75	7.00	7.00			7.50	25.00
	0.7560	0.7554	0.7559	0.7557	0.7560	0.7552			0.7557	2.52
FMLI IV 3	6.00	6.00	6.00	6.00	7.75				6.35	21.17
	0.7552	0.7564	0.7565	0.7556	0.7561				0.7560	2.52
MLI V 3	8.25	8.25	8.25	8.25	8.25	8.25			8.25	27.50
	0.7557	0.7556	0.7553	0.7561	0.7559	0.7560			0.7558	2.52
FMLI V 3	7.25	7.25	7.25	7.25					7.25	24.17
	0.7550	0.7554	0.7553	0.7556					0.7553	2.52
MLI VI 3	7.00	7.50	7.50	7.50	7.50	7.50	7.50	7.50	7.44	24.80
	0.7560	0.7553	0.7555	0.7554	0.7556	0.7556	0.7552	0.7557	0.7556	2.52
FMLI VI 3	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	7.75	25.83
	0.7555	0.7555	0.7554	0.7552	0.7559	0.7558	0.7556	0.7557	0.7556	2.52

Keterangan :

A = Rata-rata jumlah penggunaan NaOH 48% (ml) dan Ca(OH)2 ex Sumiden (gram) per 300 ml contoh
B = Rata-rata jumlah penggunaan NaOH 48% (liter) dan Ca(OH)2 ex Sumiden (kg) per 1 m3 contoh

= NaOH 48%

= Ca(OH)2 ex Sumiden

Lampiran 4. Volume distilat (ml) yang diperoleh dari seri eks. AMX dan eks. AMP

Contoh	Ulangan							Jumlah	Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7			
MLX IV 1	31.75	35.50	34.75	41.10	37.15	34.30	39.00	253.55	36.22	120.7
MLX IV 2	34.65	29.00	33.00	32.75	29.75	33.00	44.00	236.15	33.74	112.5
MLX IV 3	30.75	31.75	32.50	37.75	32.90	36.00	34.00	237.65	33.95	113.2
FMLX IV 1	28.00	28.00	27.75	29.50	31.50	33.50	35.65	213.90	30.56	101.9
FMLX IV 2	28.00	31.25	31.90	28.00	33.25	30.50	37.00	219.90	31.41	104.7
FMLX IV 3	31.45	31.75	28.00	30.40	29.50	31.05	32.50	214.65	30.66	102.2
MLX V 1	35.80	36.50	47.65	43.00	43.75			206.70	41.34	137.8
MLX V 2	35.75	37.50	34.00	37.50	39.25			184.00	36.80	122.7
MLX V 3	40.40	42.00	38.00	40.75	40.00			201.15	40.23	134.1
FMLX V 1										
FMLX V 2										
FMLX V 3										
MLX VI 1	45.75	45.75	42.30	47.15	46.25	46.75	45.25	319.20	45.60	152.0
MLX VI 2	38.15	36.55	37.15	37.65	36.00	37.25	39.00	261.75	37.39	124.6
MLX VI 3	44.50	45.65	50.55	45.75	48.25	42.75	41.05	318.50	45.50	151.7
FMLX VI 1	30.75	36.15	36.10	40.00	35.75	38.30	35.70	252.75	36.11	120.4
FMLX VI 2	28.80	29.00	27.75	28.65	28.00	31.00	31.30	204.50	29.21	97.4
FMLX VI 3	43.15	38.50	38.40	42.25	34.55	40.30	35.00	268.15	38.31	127.7

Contoh	Ulangan								Jumlah	Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7	8			
MLI IV 1	46.60	48.25	46.00	48.25	46.45	44.50			278.05	46.34	154.5
MLI IV 2	41.15	44.00	40.00	41.25	42.20	40.25			248.85	41.48	138.3
MLI IV 3	46.65	47.25	40.25	41.25	42.00	41.00			258.40	43.07	143.6
FMLI IV 1	34.40	37.00	34.00	34.15	42.75	37.25			219.55	36.59	122.0
FMLI IV 2	26.25	32.75	30.50	32.50	30.90				152.90	30.58	101.9
FMLI IV 3	41.10	40.75	41.65	42.65	43.35				209.50	41.90	139.7
MLI V 1	48.25	49.25	48.00	47.00	51.25	50.50			294.25	49.04	163.5
MLI V 2	44.30	44.55	43.25	43.40	44.55	43.90			263.95	43.99	146.6
MLI V 3	48.25	49.75	47.85	49.25	54.00	50.00			299.10	49.85	166.2
FMLI V 1	37.50	37.25	43.25	44.50					162.50	40.63	135.4
FMLI V 2	32.25	31.25	31.90	32.50					127.90	31.98	106.6
FMLI V 3	45.75	41.90	48.90	41.20					175.75	43.94	146.5
MLI VI 1	61.00	52.80	55.00	49.75	51.40	49.60	51.50	51.45	422.70	52.84	176.1
MLI VI 2	45.65	43.75	45.65	46.30	46.20	46.95	45.80	46.05	366.55	45.82	152.7
MLI VI 3	53.40	53.85	51.15	51.25	54.45	53.60	52.50	50.35	420.55	52.57	175.2
FMLI VI 1	39.50	36.40	38.30	38.05	39.55	40.00	40.55	39.55	311.90	38.99	130.0
FMLI VI 2	30.25	30.05	32.00	33.90	33.10	30.10	32.50	34.25	256.15	32.02	106.7
FMLI VI 3	37.65	38.30	39.15	41.20	42.70	38.00	39.50	41.40	317.90	39.74	132.5

Keterangan :

A = Rata-rata volume destilat (ml) per 300 ml contoh
B = Rata-rata volume destilat (liter) per 1 m3 contoh

Lampiran 5. Hasil analisis LOI untuk endapan dari seri eks. AMX dan eks. AMP

Loss On Ignition (%) Terhadap Endapan Residu

Contoh	Ulangan							Rata-rata
	1	2	3	4	5	6	7	
MLX IV 2	40.78	43.45	41.93	42.38	44.28	44.24	44.13	43.03
MLX IV 3	43.06	42.67	45.50	33.71	50.54	47.12	47.24	44.26
FMLX IV 2	31.28	35.02	36.45	35.11	34.77	36.35	35.32	34.90
FMLX IV 3	42.87	44.81	40.58	58.35	54.06	45.28	46.27	47.46
MLX V 2	36.53	37.66	37.61	36.47	36.22			36.90
MLX V 3	42.81	41.44	42.33	42.78	40.94			42.06
FMLX V 2								
FMLX V 3								
MLX VI 2	37.13	37.21	37.55	37.03	38.22	38.96	37.77	37.70
MLX VI 3	41.74	43.41	43.46	45.60	46.67	44.27	39.81	43.57
FMLX VI 2	36.87	34.50	35.91	35.42	34.47	36.51	40.67	36.34
FMLX VI 3	39.91	40.01	42.94	41.57	48.00	45.86	45.57	43.41

Kuantitas Endapan Residu (gram)

Contoh	Ulangan							Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7		
MLX IV 2	1.5011	1.4427	1.4617	1.4775	1.5435	1.4626	1.4438	1.4761	4.92
MLX IV 3	0.5197	0.5127	0.5503	0.4077	0.6112	0.5412	0.5601	0.5290	1.76
FMLX IV 2	6.2554	2.6441	2.3033	2.6622	2.6437	2.6154	2.6467	3.1104	10.37
FMLX IV 3	1.0110	0.8926	0.8901	0.9018	0.9865	0.9041	0.8758	0.9088	3.03
MLX V 2	2.5799	2.5476	2.5305	2.5248	2.5634			2.5532	8.51
MLX V 3	1.1075	1.1093	1.1071	1.0980	1.0921			1.1028	3.68
FMLX V 2									
FMLX V 3									
MLX VI 2	2.3970	2.3765	2.4225	2.3645	2.4072	2.3590	2.3529	2.3828	7.94
MLX VI 3	1.0822	1.0896	1.0947	1.0782	1.0857	1.0767	1.0678	1.0820	3.61
FMLX VI 2	2.4945	2.5092	2.4988	2.4739	2.4942	2.5115	2.4691	2.4930	8.31
FMLX VI 3	1.0621	1.0502	1.0713	1.0747	1.0526	1.0505	1.0423	1.0577	3.53

Keterangan :

A = Rata-rata kuantites endapan residu (gram) per 300 ml contoh
B = Rata-rata kuantites endapan residu (kg) per 1 m3 contoh

Lampiran 5. (lanjutan)

Loss On Ignition (%) Terhadap Endapan Residu

Contoh	Ulangan								Rata-rata
	1	2	3	4	5	6	7	8	
MLI IV 2	33.20	30.93	30.72	30.18	31.09	30.84			31.16
MLI IV 3	42.01	37.29	39.05	36.71	40.46	38.18			38.95
FMLI IV 2	33.33	33.23	32.51	32.69	30.97				32.55
FMLI IV 3	44.29	40.76	41.55	38.93	37.56				40.61
MLI V 2	33.30	32.61	31.05	31.47	31.57	31.32			31.89
MLI V 3	42.35	41.76	39.80	37.09	37.95	38.68			39.61
FMLI V 2	30.71	31.11	30.20	30.33					30.59
FMLI V 3	42.75	43.67	39.76	38.99					41.29
MLI VI 2	31.10	31.50	31.01	30.57	31.06	30.96	30.16	30.23	30.82
MLI VI 3	43.20	41.23	41.38	38.50	39.56	38.16	35.53	36.91	39.31
FMLI VI 2	30.91	30.82	29.99	33.17	32.85	33.30	32.63	33.12	32.10
FMLI VI 3	37.24	36.45	36.82	42.55	42.15	41.56	39.06	41.53	39.67

Kuantitas Endapan Residu (gram)

Contoh	Ulangan								Rata-rata A	Rata-rata B
	1	2	3	4	5	6	7	8		
MLI IV 2	3.7952	3.7351	3.5391	3.6996	3.6453	3.6577			3.6787	12.26
MLI IV 3	0.8859	0.9026	0.8492	0.8805	0.7984	0.8115			0.8547	2.85
FMLI IV 2	2.7761	2.8477	2.8496	2.9335	3.9417				3.0697	10.23
FMLI IV 3	0.6509	0.6698	0.6308	0.6155	0.8832				0.6900	2.30
MLI V 2	3.5883	3.6249	3.5149	3.4816	3.5235	3.4353			3.5281	11.76
MLI V 3	0.9779	0.9922	0.8798	0.8887	0.9184	0.8957			0.9255	3.09
FMLI V 2	4.1196	4.1370	4.0991	4.0121					4.0920	13.64
FMLI V 3	0.9638	0.9517	0.9299	0.9071					0.9381	3.13
MLI VI 2	3.7874	3.7432	3.7726	3.7872	3.7313	3.7074	3.6848	3.6359	3.7312	12.44
MLI VI 3	0.8599	0.9104	0.8900	0.8662	0.8995	0.8805	0.8723	0.8282	0.8759	2.92
FMLI VI 2	3.5866	3.7327	3.7227	3.5961	3.2656	3.5626	3.5323	3.6150	3.5892	11.96
FMLI VI 3	0.9476	0.9857	1.0069	0.8832	0.8733	0.9588	0.9593	0.9140	0.9414	3.14

Keterangan :

A = Rata-rata kuantitas endapan residu (gram) per 300 ml contoh
B = Rata-rata kuantitas endapan residu (kg) per 1 m3 contoh

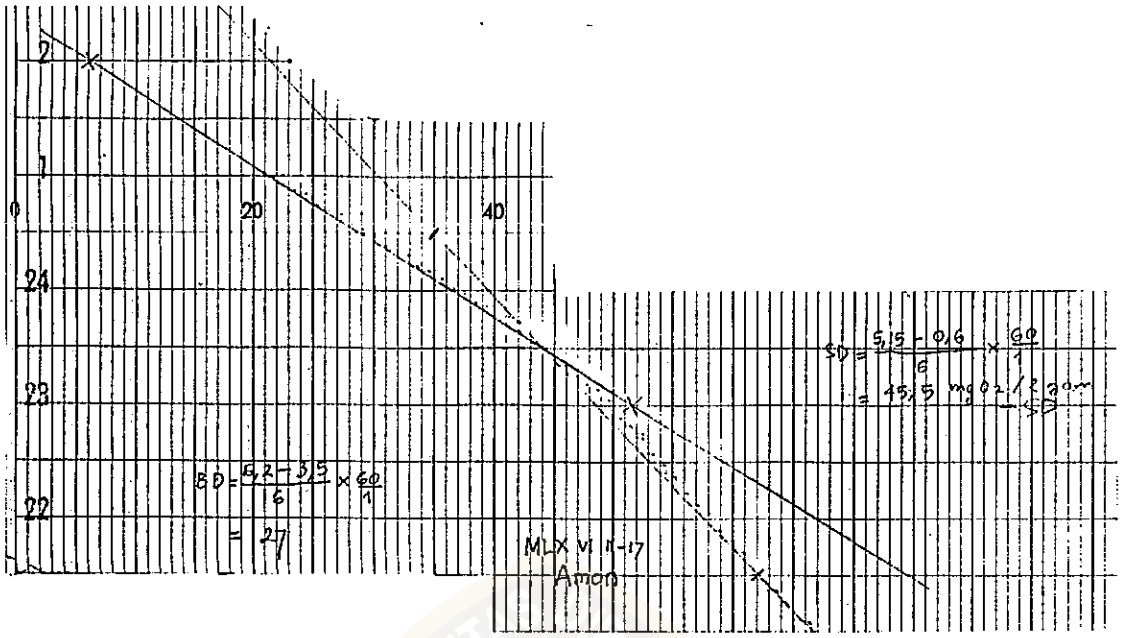
Lampiran 6. Kuantitas perolehan TEA-2 dari seri eks. AMX dan eks. AMP

Contoh TEA–1	Volume TEA – 1 (ml)	TEA – 2			Volume TEA–2 Tanpa Air (ml)
		Volume (ml)	Kadar Air (%v/w)	Berat Jenis (g/ml)	
MLX IV 11 – 17	253.55	132	1.69	0.7824	129.25
MLX IV 21 – 27	236.15	118	1.69	0.7805	116.44
MLX IV 31 – 37	237.65	125	1.13	0.7792	123.90
FMLX IV 11 – 17	213.90	86	0.61	0.7483	85.60
FMLX IV 21 – 27	219.90	88	0.72	0.7506	87.52
FMLX IV 31 – 37	214.65	92	0.63	0.7479	91.57
MLX V 11 – 15	206.70	103	1.03	0.7720	102.18
MLX V 21 – 25	184.00	94	1.99	0.7728	92.55
MLX V 31 – 35	201.15	99	0.86	0.7714	98.34
MLX VI 11 – 17	319.20	176	0.83	0.7687	174.88
MLX VI 21 – 27	261.75	114.5	0.65	0.7680	113.93
MLX VI 31 – 37	318.50	137	0.61	0.7682	136.36
FMLX VI 11 – 17	252.75	77	0.69	0.7476	76.60
FMLX VI 21 – 27	204.50	83.5	0.52	0.7614	83.17
FMLX VI 31 – 37	268.15	85	0.74	0.7597	84.50
MLI IV 11 – 16	278.05	145	0.53	0.7509	144.42
MLI IV 21 – 26	248.85	141	0.68	0.7474	140.28
MLI IV 31 – 36	258.40	142	0.42	0.7435	141.56
FMLI IV 11 – 16	219.55	123	0.45	0.7438	122.59
FMLI IV 21 – 25	152.90	98	0.47	0.7404	97.66
FMLI IV 31 – 35	209.50	94	0.52	0.7408	93.64
MLI V 11 – 16	294.25	182	0.41	0.7580	181.43
MLI V 21 – 26	263.95	174	0.52	0.7609	173.31
MLI V 31 – 36	299.10	176.5	0.57	0.7581	175.74
FMLI V 11 – 14	162.50	77	0.40	0.7442	76.77
FMLI V 21 – 24	127.90	78	0.40	0.7501	77.77
FMLI V 31 – 34	175.75	77	0.44	0.7471	76.75
MLI VI 11 – 18	422.70	247	0.58	0.7643	245.91
MLI VI 21 – 28	366.55	255	0.42	0.7607	254.19
MLI VI 31 – 38	420.55	242	0.39	0.7601	241.28
FMLI VI 11 – 18	311.90	192	0.30	0.7597	191.56
FMLI VI 21 – 28	256.15	188	0.34	0.7574	187.52
FMLI VI 31 – 38	317.90	181	0.43	0.7577	180.41

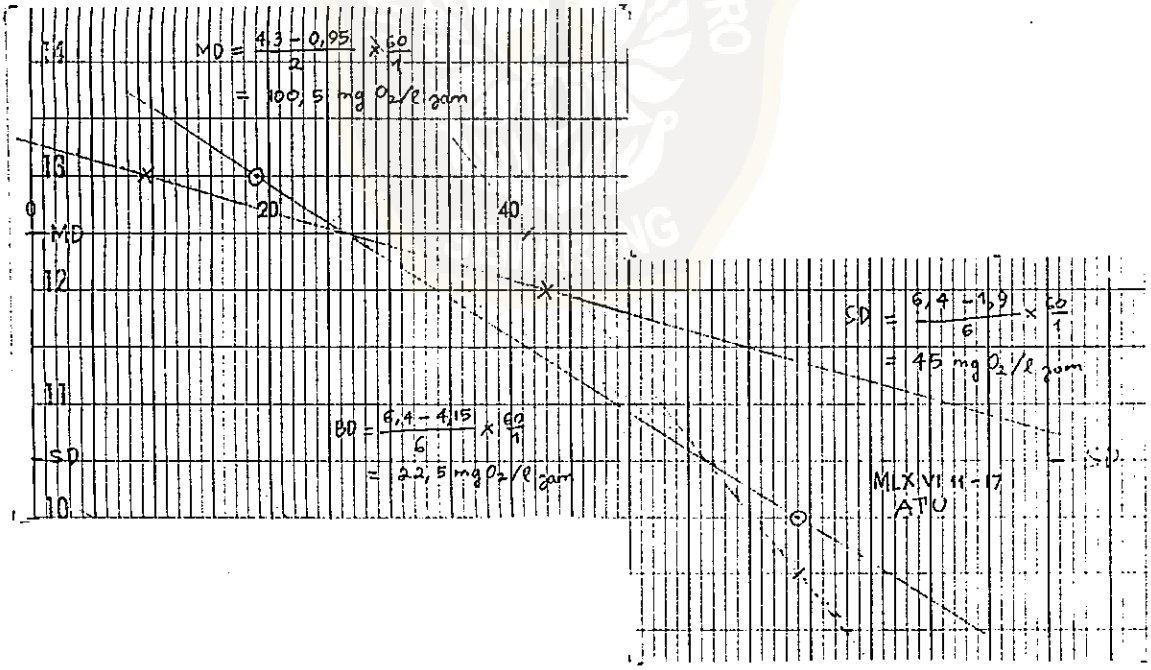
Lampiran 7. Hasil analisis Biodegrabilitas dengan uji OUR untuk residu/filtrat residu seri eks. AMX dan eks. AMP

Contoh	OUR (mg O_2/liter jam) dengan Amon		dengan ATU		
	BD	SD	BD	SD	MD
MLX IV 11-17	34	51	29	56	78
MLX IV 21-27	29	61	35,5	54	90
MLX IV 31-37	34,8	68,4	39	57	96
FMLX IV 11-17	31,5	49,5	27	43,7	98
FMLX IV 21-27	26	47,5	31,5	50,5	117
FMLX IV 31-37	30,5	49,5	39,6	56,5	117
MLX V 11-15	31,25	52	26,14	48,86	114
MLX V 21-25	19	32,25	24,6	44,5	106,5
MLX V 31-35	27,5	46	40	58,2	129
MLX VI 11-17	27	45,5	22,5	45	100,5
MLX VI 21-27	24,5	43,5	33,43	55,5	120
MLX VI 31-37	29,5	53,5	40,5	60	130,5
FMLX VI 11-17	27,75	44,5	25	47	100,5
FMLX VI 21-27	28,2	47	36,6	58	120
FMLX VI 31-37	30,75	50,25	40,2	57,75	114
MLI IV 11-16	36,5	49,2	30,5	40	73,5
MLI IV 21-26	43	50	37,7	52,8	72
MLI IV 31-36	31,5	45,5	37	50,5	82
FMLI IV 11-16	31	43,5	27	39	71
FMLI IV 21-25	31,5	44,5	40,5	52,5	91
FMLI IV 31-35	37,71	51,75	41,5	53	81
MLI V 11-16	30,5	41,5	27	41,5	75
MLI V 21-26	31	39,5	34,8	47,5	75
MLI V 31-36	34	45,5	42	52,5	78
FMLI V 11-14	29	48,5	26,5	47	90
FMLI V 21-24	29,3	46,5	36,43	52,8	97
FMLI V 31-34	32	49	37,5	58	100
MLI VI 11-18	26,4	41,25	24	36,75	68
MLI VI 21-28	24	38	33,33	48,75	76
MLI VI 31-38	34	47	39	51	86
FMLI VI 11-18	31,2	46	27	42	63
FMLI VI 21-28	30	44,25	36	51	83
FMLI VI 31-38	32	42,5	36,5	53	84

Lampiran 8. Salah satu contoh grafik OUR

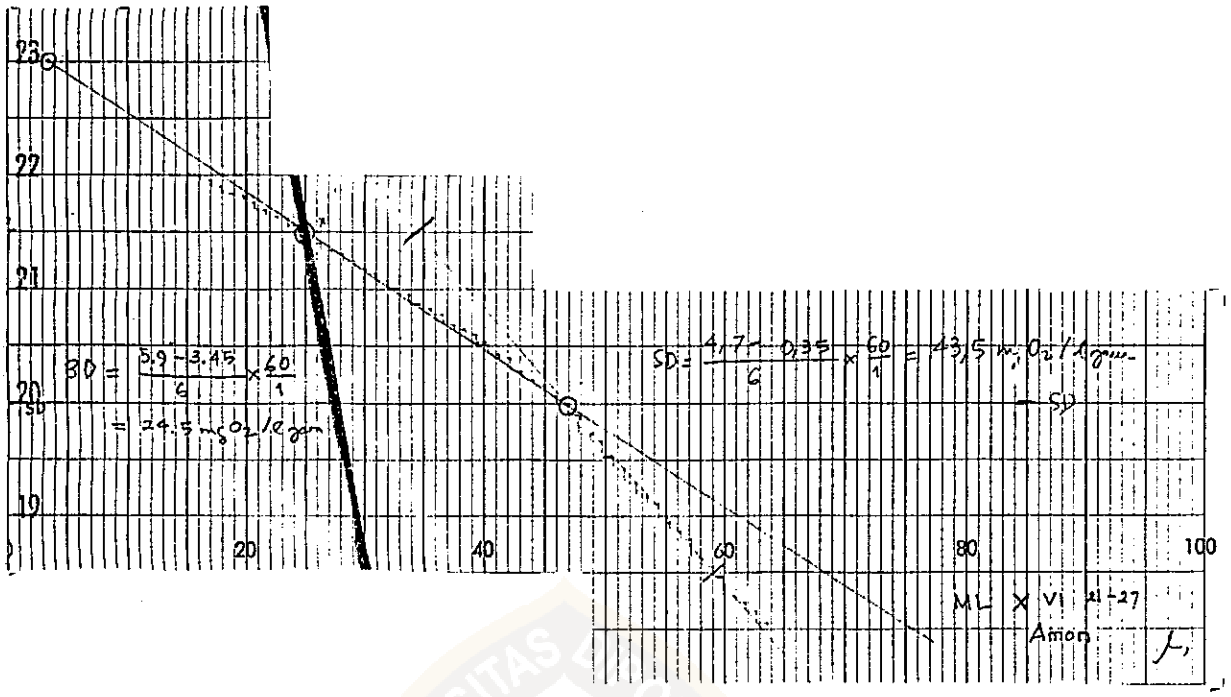


Gambar grafik OUR Residu MLX VI 11-17
pengerjaan dengan Amonium Sulfat

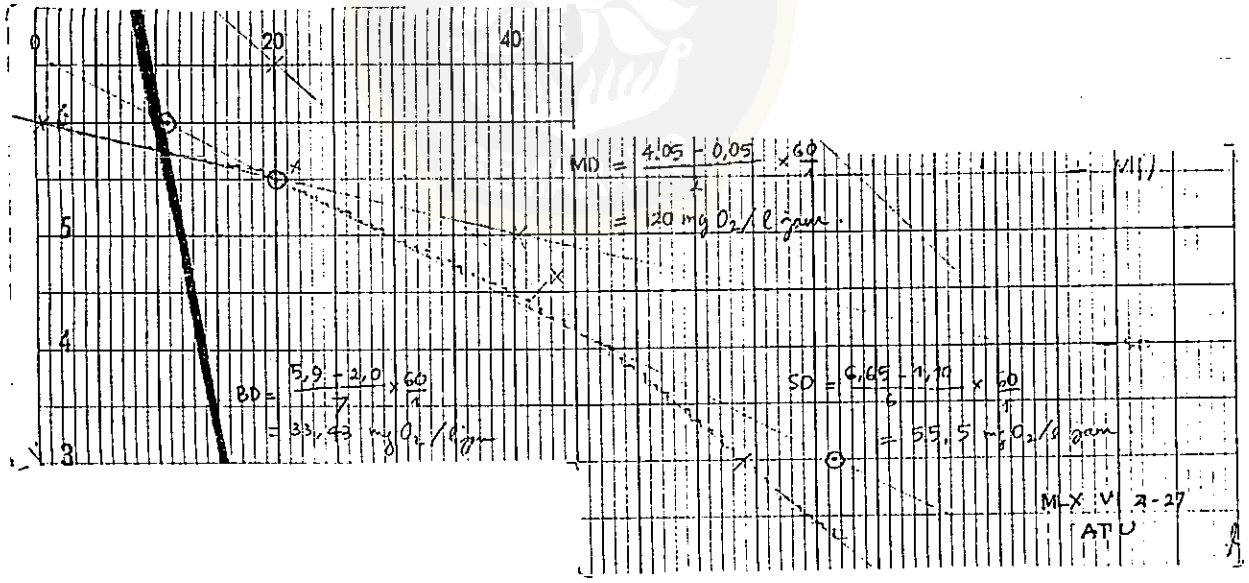


Gambar grafik OUR Residu MLX VI 11-17
pengerjaan dengan ATU

Lampiran 8. (lanjutan)

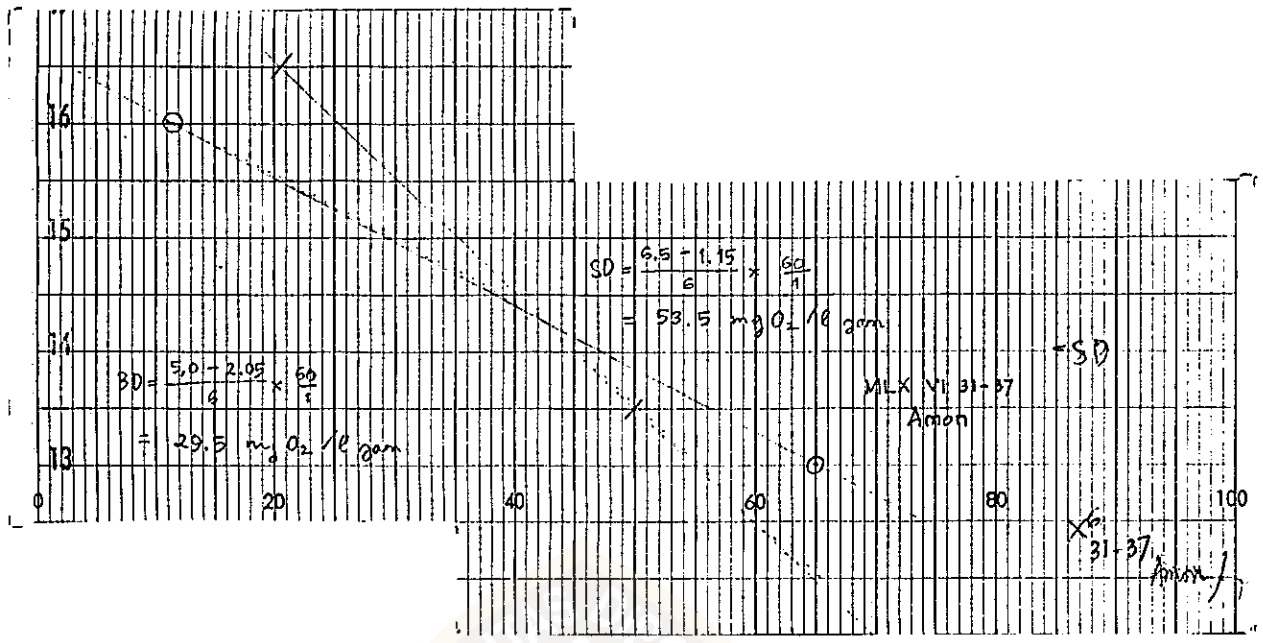


Gambar grafik OUR Filtrat Residu MLX VI 21-27
pengerjaan dengan Amonium Sulfat

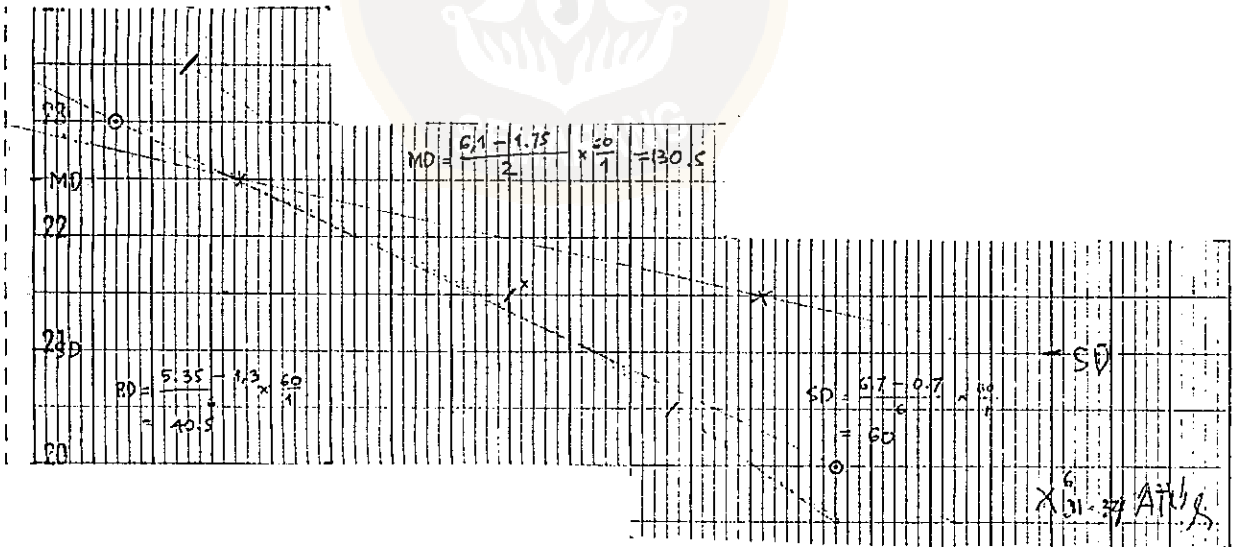


Gambar grafik OUR Filtrat Residu MLX VI 21-27
pengerjaan dengan ATU

Lampiran 8. (lanjutan)



Gambar grafik OUR Filtrat Residu MLX VI 31-37
pengerjaan dengan Amonium Sulfat



Gambar grafik OUR Filtrat Residu MLX VI 31-37
pengerjaan dengan ATU

Lampiran 9. Data area vs konsentrasi larutan standar dan data area contoh TEA-1

Analisis tanggal 27 September 1996

Data area (A) vs konsentrasi (C) deret larutan standar

Senyawa	deret larutan standar (%)									
	140		120		100		80		60	
	A	C	A	C	A	C	A	C	A	C
MeOH	1251	0,1678	1086,5	0,1475	914	0,1241	694	0,0942	548,5	0,0745
DMeA	365.5	0,1391	304	0,1391	229,5	0,1050	153	0,0699	93	0,0425
EtOH	5457,5	0,5014	4653,5	0,4275	3830	0,3519	2923	0,2686	2176,5	0,19996
ACT	317917	24,7249	274517,5	21,3497	225064,5	17,5036	171935	13,3717	128172,5	9,9682
MED	119275	29,7723	103286	25,7813	84580	21,1121	64555,5	16,1137	48560	12,1211
DEA	1904	0,0855	1755,5	0,0788	1535	0,0689	1368	0,0614	1281,5	0,05755
DMF	1264,5	0,1792	1096	0,1553	894,5	0,1268	701,5	0,0994	531,5	0,0753
Tol	5420,5	0,1729	4612	0,1471	3802	0,1213	2905	0,0927	2186,5	0,0697
DMAA	1691	0,1722	1443,5	0,1470	1177,5	0,1199	902	0,0919	689	0,0702

Data area untuk contoh TEA-1

Contoh TEA-1	A		A	A	E	A			
	MeOH	DMeA	EtOH	ACT	MED	DEA	DMF	Tol	DMAA
Eks. AMX V	3018	-	94294	118783	8107	1069	47	-	1734
MLX V 11-15	5684	3405	1615	402696	12688	529	-	83	1261
MLX V 21-25	5759	2167	1396	397436	10755	699	-	94	759
MLX V 31-35	5073	4871	990	375939	11898	38	-	37	975
MLI V 11-16	124	-	7907	391767	6622	802	-	-	-
MLI V 21-26	141	-	8273	413960	7168	902	-	-	-
MLI V 31-36	117	-	7724	377620	6076	771	-	-	1215
FMLI V 11-14	1598	1928	6174	187326	1488	167	-	-	1157
FMLI V 21-24	1511	1176	7335	205046	11684	361	-	-	1527
FMLI V 31-34	1570	1972	5959	171757	1399	108	-	-	-

Lampiran 9. (lanjutan)

Analisis tanggal 28 September 1996

Data area (A) vs konsentrasi (C) deret larutan standar

Senyawa	deret larutan standar (%)									
	140		120		100		80		60	
	A	C	A	C	A	C	A	C	A	C
MeOH	1061	0,1698	856	0,13699	720	0,1152	604	0,0967	451	0,0722
DMeA	325	0,1672	254	0,13067	213	0,1096	161	0,0828	0	0,0000
EtOH	4753	0,5014	3762	0,3969	3179	0,3354	2552	0,2692	1829	0,1929
ACT	277095	24,7249	224426	20,0253	181580	16,2022	150664	13,4436	109467	9,7676
MED	103379	29,7723	103286	25,7813	84580	21,1121	64555,5	16,1137	48560	12,1211
DEA	1664	0,0855	1376	0,0788	1276	0,0656	1138	0,0585	1117	0,0574
DMF	1135,5	0,1792	865	0,1366	731	0,1154	595	0,0939	476	0,0752
Tol	4780	0,1729	3693	0,1336	3022	0,1093	2431	0,0879	1789	0,0647
DMAA	1491	0,1722	1183	0,1366	935	0,10799	780	0,09008	588	0,0679

Data area untuk contoh TEA-1

Contoh TEA-1	A	R	E	A			
	MeOH	DMeA	EtOH	ACT	MED	DEA	DMF	Tol	DMAA
Eks. AMX V	2250	-	106514	99533	3345	768	48	55	1308
Eks. AMX VI	1856	-	84744	76296	2493	497	39	31	1663
MLX VI 11-17	3299	1216	960	225710	6895	168	-	-	908
MLX VI 21-27	4083	1107	793	306760	9706	373	-	-	670
MLX VI 31-37	3366	1553	841	233329	6583	333	-	-	900
FMLX VI 11-17	3401	2512	481	79781	1044	-	-	-	811
FMLX VI 21-27	5018	2976	855	129249	1887	-	-	-	714
FMLX VI 31-37	3748	2839	514	91300	1322	24	-	-	714

Lampiran 9. (lanjutan)

Analisis tanggal 30 September 1996

Data area (A) vs konsentrasi (C) deret larutan standar

Senyawa	deret larutan standar (%)									
	140		120		100		80		60	
	A	C	A	C	A	C	A	C	A	C
MeOH	1121	0,1698	948	0,1436	799	0,1210	648	0,0982	455	0,0689
DMeA	261	0,1672	251	0,1608	178	0,1140	154	0,0987	97	0,0621
EtOH	5102	0,5014	4168	0,4096	3549	0,3488	2753	0,2706	1910	0,1877
ACT	292276	24,7249	245684	20,7835	203148	17,1852	160115	13,5448	102303	8,6543
MED	108982	29,7723	91937	25,1159	76309	20,8465	60522	16,5337	39147	10,6944
DEA	1867	0,0855	1664	0,0762	1579	0,0723	1432	0,0656	1083	0,0496
DMF	1182	0,1792	937	0,1421	821	0,1245	656	0,0995	434	0,0658
Tol	5042	0,1729	4090	0,14025	3517	0,1206	2669	0,0915	1820	0,0624
DMAA	1571	0,1722	1265	0,1387	1078	0,1182	872	0,0956	575	0,0630

Data area untuk contoh TEA-1

Contoh TEA-1	MeOH	DMeA	A EtOH	R ACT	E MED	A DEA	DMF	Tol	DMAA
Eks. AMP VI	730	240	5855	150769	33873	5440	-	-	-
MLI VI 11-18	72	-	5190	311093	3830	126	-	-	-
MLI VI 21-28	75	-	5525	330728	4234	200	-	-	-
MLI VI 31-38	73	-	5488	317111	3885	179	-	-	-
FMLI VI 11-18	129	-	6141	161466	5463	156	-	-	-
FMLI VI 21-28	139	-	7181	173679	15751	410	-	-	-
FMLI VI 31-38	167	-	6785	167976	2530	400	-	-	-
Eks. AMP IV	47	-	4337	103985	40927	2002	-	-	-
Eks. AMX IV	897	-	37499	83960	51772	1033	-	-	1351

Lampiran 9. (lanjutan)

Analisis tanggal 20 - 21/8/1996 dan 24/9/1996

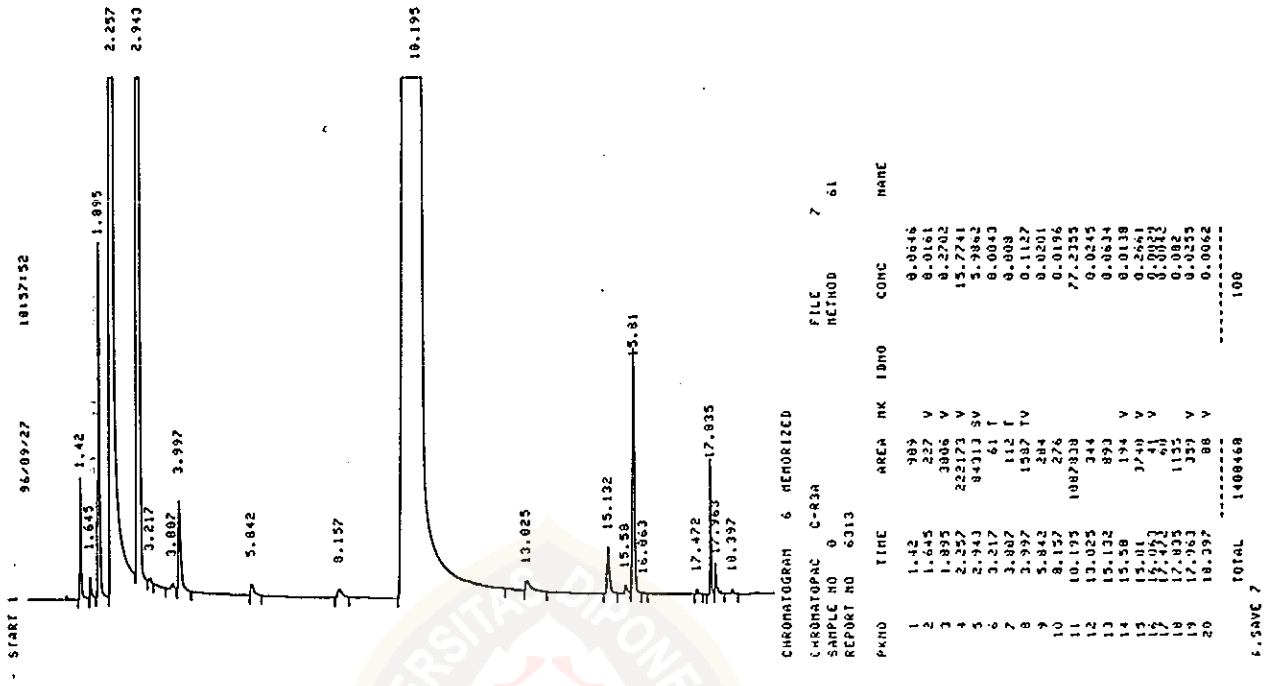
Data area (A) vs konsentrasi (C) deret larutan standar

Senyawa	Larutan standar pengotor TEA					
	20/8/1996		21/8/1996		24/9/1996	
	A	C	A	C	A	C
MeOH	2476,5	0,7079	2565	0,7079	917,5	0,1379
DMeA	231,5	0,2218	234,5	0,2218	269	0,1317
EtOH	777,5	0,1544	807	0,1544	3359,5	0,3779
ACT	147489	22,9215	150386	22,9215	185913	18,5144
MED	7297	3,6049	7435	3,6049	69133,5	22,6728
DEA	907	0,0849	940	0,0849	1503,5	0,0813
DMF	532,5	0,1704	5595	0,1704	1123,5	0,2007
Tol	1418,5	0,0894	1434,5	0,0894	3893,5	0,1687
DMAA	353	0,0819	363	0,0819	1149,5	0,1477

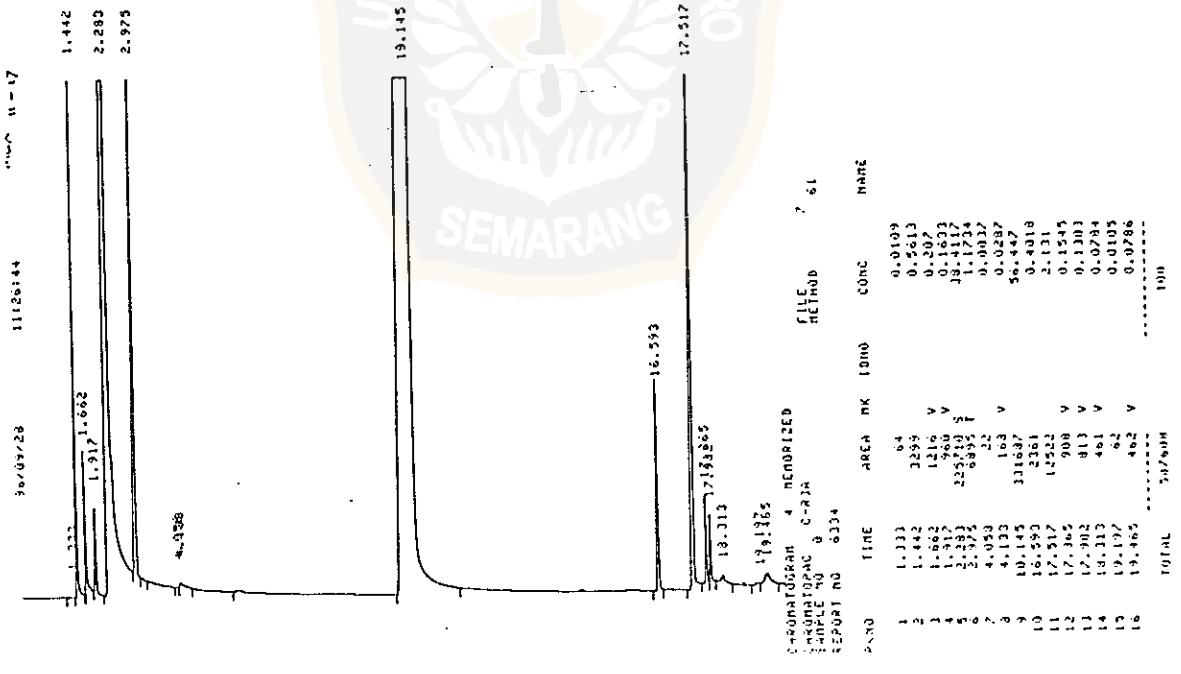
Data area untuk contoh TEA-1

Contoh TEA-1	A		A	R	E	A			
	MeOH	DMeA	EtOH	ACT	MED	DEA	DMF	Tol	DMAA
20/8/1996									
Eks. AMX IV	496	103	traces	83496	68182	70	-	-	293
MLX IV 11-17	2283	-	186	235824	6067	-	-	-	465
MLX IV 31-37	2873	-	220	275243	5526	-	-	-	447
21/8/1996									
MLX IV 21-27	2959	-	232	272778	5933	-	-	-	359
FMLX IV 11-17	3353	5300	214	112494	561	-	-	-	579
FMLX IV 21-27	2569	1613	161	94461	496	-	-	-	471
FMLX IV 31-37	3654	4303	223	133980	776	-	-	-	684
24/9/1996									
Eks. AMP IV	-	-	2341	116500	47963	972	-	-	140
MLI IV 11-16	54	-	3198	193583	1079	146	-	-	-
MLI IV 21-26	133	-	6730	232337	1438	243	-	-	-
MLI IV 31-36	119	-	6373	220598	1164	192	-	-	-
FMLI IV 11-16	73	-	5972	163479	861	282	-	-	-
FMLI IV 21-26	114	158	7493	150053	7175	383	-	-	-
FMLI IV 31-36	123	-	7213	152768	1821	133	-	-	-

Lampiran 10.Salah satu contoh kromatogram larutan standar dan contoh TEA-1

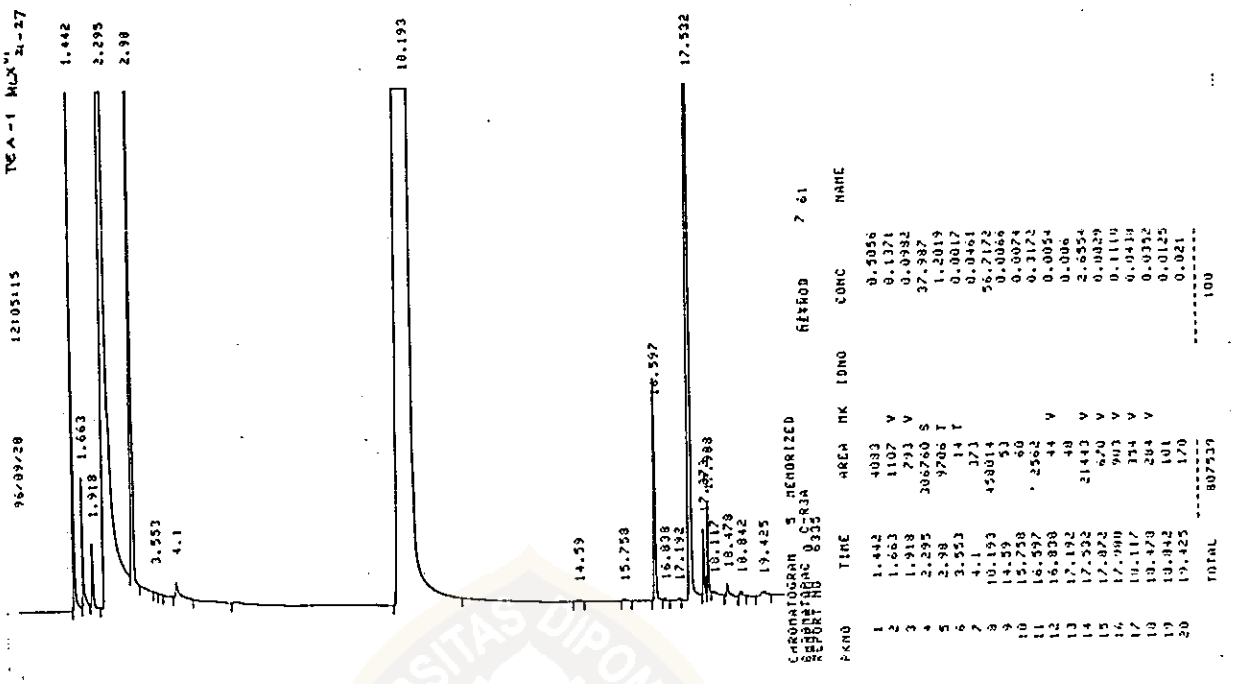


Gambar kromatogram larutan standar pengotor TEA (100%)

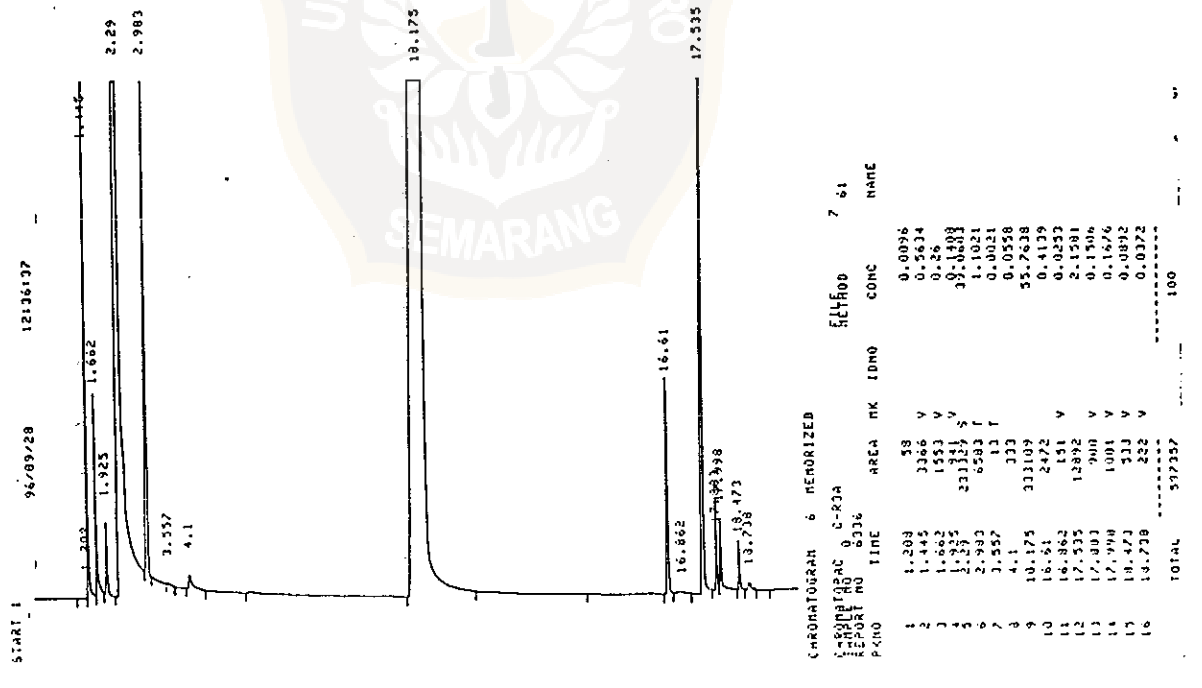


Gambar kromatogram TEA-1 MLX VI 11-17

Lampiran 10. (lanjutan)



Gambar kromatogram TEA-1 MLX VI 21-27



Gambar kromatogram TEA-1 MLX VI 31-37

Lampiran 11. Data volume residu (ml), hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMX

CONTROL: C4 = MLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	--
B	270.70	270.75	266.10	
	270.00	269.00	264.50	
	258.85	272.50	268.50	
	263.50	269.00	265.75	
	262.75	267.25	266.50	
	265.16	269.70	266.27	267.04
C	260.50	268.10	261.75	
	260.50	269.70	260.60	
	263.95	269.10	255.70	
	259.10	268.60	260.50	
	260.00	270.25	258.00	
	259.50	269.00	263.50	
	261.00	267.25	265.20	
	260.65	268.86	260.75	263.42
ALL	--	--	--	--
	262.53	269.21	263.05	264.93

CONTROL: C4 = FMLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	276.25	277.00	273.55	
	277.50	274.25	273.75	
	277.75	273.60	277.50	
	276.00	277.50	275.10	
	274.00	272.25	276.00	
	272.00	275.00	274.45	
	269.85	268.50	273.00	
	274.76	274.01	274.76	274.51
B	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	--
C	275.25	277.20	262.85	
	269.85	277.00	269.50	
	269.90	278.25	269.60	
	266.00	277.35	263.75	
	270.25	278.00	271.45	
	267.70	275.00	265.70	
	270.30	274.70	271.00	
	269.89	276.79	267.69	271.46
ALL	--	--	--	--
	272.33	275.40	271.23	272.99

CELL CONTENTS --
C1:DATA
MEAN

Keterangan :

A : Masa produksi IV
B : Masa produksi V
C : Masa produksi VI
1 : Perlakuan dengan NaOH 48%
2 : Perlakuan dengan $Ca(OH)_2$
3 : Perlakuan dengan NaOH 48% - $Ca(OH)_2$
- MLX di A diperoleh tetapi menggunakan instrumen yang berbeda.
- FMLX di B contoh FMLX tidak ada

Lampiran 11. (lanjutan)

Sun Jan 5 1997 10:35:32 AM

Analysis of Variance for T1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T1.var2	419.90942	2	209.95471	20.634	.0000
B:T1.var3	213.06945	2	106.53472	10.470	.0001
C:T1.var4	678.41524	1	678.41524	66.673	.0000
RESIDUAL	732.61443	72	10.175200		
TOTAL (CORRECTED)	2623.8891	77			

All F-ratios are based on the residual mean square error.

Sun Jan 5 1997 10:36:25 AM

Multiple range analysis for T1.var1 by T1.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	36	265.64619	X
2	42	273.68429	X

contrast	difference
1 - 2	-8.03810 *

* denotes a statistically significant difference.

Lampiran 11. (lanjutan)

Uji beda perlakuan pada MLX

Tue Jan 21 1997 12:43:09 PM

Analysis of Variance for T1A1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T1A1.var2	358.69312	2	179.34736	27.375	.0000
B:T1A1.var3	83.89432	1	83.89432	12.805	.0012
RESIDUAL	203.89530	31	6.5514612		
TOTAL (CORRECTED)	656.79786	34			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:43:27 PM

Multiple range analysis for T1A1.var1 by T1A1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	11	262.21786	X
3	12	263.31369	X
2	12	269.47202	X

contrast	difference
1 - 2	-7.25417 *
1 - 3	-1.09583
2 - 3	6.15833 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:43:46 PM

Multiple range analysis for T1A1.var1 by T1A1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	21	263.41905	X
2	14	266.33333	X

contrast	difference
2 - 3	3.16429 *

* denotes a statistically significant difference.

Lampiran 11. (lanjutan)

Uji beda perlakuan pada FMLX

Tue Jan 21 1997 12:44:17 PM

Analysis of Variance for T1A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T1A2.var2	130.87429	2	65.437143	5.581	.0075
B:T1A2.var3	98.13429	1	98.134286	8.370	.0063
RESIDUAL	445.53286	38	11.724549		
TOTAL (CORRECTED)	674.54143	41			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:44:36 PM

Multiple range analysis for T1A2.var1 by T1A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	14	271.22857	X
1	14	272.32857	X
2	14	275.40000	X

contrast	difference
1 - 2	-3.07143 *
1 - 3	1.10000
2 - 3	4.17143 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:44:55 PM

Multiple range analysis for T1A2.var1 by T1A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	21	271.45714	X
1	21	274.51429	X

contrast	difference
1 - 3	3.05714 *

* denotes a statistically significant difference.

Lampiran 12. Data konsentrasi KOK (mg O_2/l) terhadap residu/filtrat residu, hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMX

CONTROL: C4 = MLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	--
B	29959	27497	27086	
	27907	26676	27907	
	29138	27497	29138	
	28318	27086	27497	
	28318	27497	29708	
	28728	27251	28267	28082
C	30400	28031	28031	
	30794	28426	28820	
	28426	27636	28820	
	29652	27958	27958	
	29228	27534	28635	
	29228	26568	29228	
	29228	27110	29652	
	29565	27609	28735	28636
ALL	--	--	--	--
	29216	27480	28540	28405

CONTROL: C4 = FMLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	26687	27534	28220	
	25416	25452	26664	
	25840	27472	26260	
	24992	24644	23836	
	23836	24644	26260	
	26260	28588	27378	
	29063	26536	24998	
	26013	26410	26231	26218
B	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	--
C	28805	26687	29228	
	29228	27534	26687	
	27958	25840	27534	
	27534	27110	28424	
	26752	25498	27003	
	27337	27170	28842	
	28842	27170	28424	
	28065	26716	28020	27600
ALL	--	--	--	--
	27039	26563	27126	26909

CELL CONTENTS --
C1:DATA
MEAN

Lampiran 12. (lanjutan)

Sun Jan 5 1997 10:38:48 AM

Analysis of Variance for T2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T2.var2	16034732	2	8017366	6.756	.0020
B:T2.var3	22750387	2	11375233	9.574	.0002
C:T2.var4	11269608	1	11269608	9.485	.0029
RESIDUAL	85543156	72	1188099.4		
TOTAL (CORRECTED)	1.6774E8008	77			

All F-ratios are based on the residual mean square error.

Sun Jan 5 1997 10:39:54 AM

Multiple range analysis for T2.var1 by T2.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	42	26954.787	X
1	36	27990.787	X

contrast	difference
1 - 2	1036.00 *

* denotes a statistically significant difference.

Lampiran 12. (lanjutan)

Uji beda perlakuan pada MLX

Tue Jan 21 1997 12:45:20 PM

Analysis of Variance for T2A1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T2A1.var2	18841699	2	9420849.3	17.817	.0000
B:T2A1.var3	2689394	1	2689394.4	5.086	.0311
RESIDUAL	16920049	32	528751.53		
TOTAL (CORRECTED)	38451142	35			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:45:38 PM

Multiple range analysis for T2A1.var1 by T2A1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	12	27413.467	X
3	12	28493.900	X
1	12	29170.133	X

contrast	difference
1 - 2	1756.67 *
1 - 3	676.333 *
2 - 3	-1080.33 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:45:55 PM

Multiple range analysis for T2A1.var1 by T2A1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	15	28091.933	X
3	21	28636.333	X

contrast	difference
2 - 3	-554.400 *

* denotes a statistically significant difference.

Lampiran 12. (lanjutan)

Uji beda perlakuan pada FMLX

Tue Jan 21 1997 12:41:35 PM

Analysis of Variance for T2A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T2A2.var2	1636534	2	818267	.492	.6156
B:T2A2.var3	17761978	1	17761978	10.669	.0024
RESIDUAL	61597942	37	1664809.2		
TOTAL (CORRECTED)	80640906	40			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:41:51 PM

Multiple range analysis for T2A2.var1 by T2A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	13	26659.707	X
1	14	27039.286	X
3	14	27125.571	X

contrast	difference
1 - 2	379.579
1 - 3	-86.2857
2 - 3	-465.865

* denotes a statistically significant difference.

Tue Jan 21 1997 12:42:11 PM

Multiple range analysis for T2A2.var1 by T2A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	20	26280.789	X
3	21	27603.333	X

contrast	difference
1 - 3	-1317.62 *

* denotes a statistically significant difference.

Lampiran 13.Data konsentrasi TKN (mg N /l) terhadap residu/filtrat residu, hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMX

CONTROL: C4 = MLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
B	2067.1	2110.2	1981.0	--
	1975.3	2009.7	2116.0	
	2081.5	2038.4	2009.7	
	2167.6	2067.1	1712.3	
	1785.5	1756.2	1712.3	
	2015.4	1996.3	1906.3	1972.7
C	2098.1	2068.5	2112.9	--
	2127.6	2031.6	2039.0	
	2044.9	2024.2	2098.1	
	2107.0	2024.2	2039.0	
	2112.9	2053.8	2024.2	
	2098.1	2009.4	1976.1	
	2112.9	2024.2	1952.9	
	2100.2	2033.7	2034.6	2056.2
ALL	--	--	--	--
	2064.9	2018.1	1981.1	2021.4

CONTROL: C4 = FMLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	1743.3	1866.9	1703.0	--
	1649.4	1979.5	1966.1	
	1569.0	2033.0	1926.0	
	1595.8	1966.1	1992.8	
	2110.6	1925.7	2156.8	
	2079.7	1952.7	1832.3	
	2006.2	2011.6	2079.7	
	1822.0	1962.2	1951.0	1911.7
B	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
C	1955.8	1903.5	1932.5	--
	1990.6	1932.5	1801.7	
	2005.2	1947.1	1932.5	
	2063.3	1918.0	1976.1	
	1932.5	1932.5	1976.1	
	1976.1	1947.1	2005.2	
	1947.1	1787.2	1874.4	
	1981.5	1909.7	1928.4	1939.9
ALL	--	--	--	--
	1901.8	1936.0	1939.7	1925.8

CELL CONTENTS --
C1:DATA
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Lampiran 13. (lanjutan)

Analysis of Variance for T3.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T3.var2	4944.01	2	2472.01	.173	.8415
B:T3.var3	69334.48	2	34667.24	2.426	.0956
C:T3.var4	142054.64	1	142054.64	9.941	.0024
RESIDUAL	1028846.1	72	14289.529		
TOTAL (CORRECTED)	1290230.2	77			

All F-ratios are based on the residual mean square error.

Sun Jan 5 1997 10:41:11 AM

Multiple range analysis for T3.var1 by T3.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	42	1902.6422	X
1	36	2018.9565	X

contrast	difference
1 - 2	116.314 *

* denotes a statistically significant difference.

Lampiran 13. (lanjutan)

Uji beda perlakuan pada MLX

Tue Jan 21 1997 12:46:16 PM

Analysis of Variance for T3A1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T3A1.var2	42274.500	2	21137.250	2.008	.1509
B:T3A1.var3	61023.889	1	61023.889	5.796	.0220
RESIDUAL	336920.14	32	10528.754		
TOTAL (CORRECTED)	440218.53	35			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:46:32 PM

Multiple range analysis for T3A1.var1 by T3A1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	12	1974.1667	X
2	12	2011.1667	X
1	12	2057.9167	X

contrast	difference
1 - 2	46.7500
1 - 3	83.7500
2 - 3	37.0000

* denotes a statistically significant difference.

Tue Jan 21 1997 12:46:59 PM

Multiple range analysis for T3A1.var1 by T3A1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	15	1972.6600	X
3	21	2056.1714	X

contrast	difference
2 - 3	-83.5114 *

* denotes a statistically significant difference.

Lampiran 13. (lanjutan)

Uji beda perlakuan pada FMLX

Tue Jan 21 1997 12:47:27 PM

Analysis of Variance for T3A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T3A2.var2	12225.453	2	6112.7267	.362	.6989
B:T3A2.var3	8318.587	1	8318.5867	.492	.4949
RESIDUAL	642370.00	38	16904.474		
TOTAL (CORRECTED)	662906.04	41			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:47:57 PM

Multiple range analysis for T3A2.var1 by T3A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	14	1901.7571	X
2	14	1935.9571	X
3	14	1939.6571	X

contrast	difference
1 - 2	-34.2000
1 - 3	-37.9000
2 - 3	-3.70000

* denotes a statistically significant difference.

Tue Jan 21 1997 12:48:39 PM

Multiple range analysis for T3A2.var1 by T3A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	21	1911.7238	X
3	21	1939.8571	X

contrast	difference
1 - 3	-38.1333

* denotes a statistically significant difference.

Lampiran 14. Data kadar ROI (g/l) terhadap residu/filtrat residu, hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMX

CONTROL: C4 = MLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
B	56.260	51.840	55.040	--
	56.980	52.040	52.140	
	59.720	50.580	54.460	
	56.260	52.440	56.280	
	55.800	54.140	54.340	
	57.004	52.208	54.452	54.555
C	55.260	53.860	47.460	--
	57.200	52.220	46.480	
	57.300	53.400	45.280	
	57.740	52.140	59.060	
	58.220	51.880	55.120	
	57.700	53.260	53.680	
	57.200	55.560	54.020	
	57.231	53.189	51.586	54.002
ALL	--	--	--	--
	57.137	52.780	52.780	54.232

CONTROL: C4 = FMLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	50.140	46.200	49.760	--
	50.760	47.180	47.080	
	50.660	46.780	46.200	
	51.680	46.840	48.260	
	50.940	46.780	47.060	
	52.620	47.680	46.980	
	50.760	47.800	46.620	
	51.080	47.037	47.423	48.513
B	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
	--	--	--	--
C	53.700	50.600	55.040	--
	53.020	49.000	53.960	
	49.920	49.920	51.060	
	50.900	49.220	51.980	
	54.580	49.900	51.320	
	54.080	51.740	53.600	
	51.240	51.320	50.460	
	52.491	50.243	52.520	51.751
ALL	--	--	--	--
	51.786	48.640	49.971	50.132

CELL CONTENTS --
C1:DATA
MEAN

Lampiran 14. (lanjutan)

Analysis of Variance for T4.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T4.var2	200.75865	2	100.37932	21.922	.0000
B:T4.var3	112.76876	2	56.38438	12.314	.0000
C:T4.var4	53.17875	1	53.17875	11.614	.0011
RESIDUAL	329.68477	72	4.5789552		
TOTAL (CORRECTED)	969.84234	77			

All F-ratios are based on the residual mean square error.

Sun Jan 5 1997 10:42:26 AM

Multiple range analysis for T4.var1 by T4.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	42	50.856317	X
1	36	53.106794	X

contrast		difference
1 - 2	.	2.25048 *

* denotes a statistically significant difference.

Lampiran 14. (lanjutan)

Uji beda perlakuan pada MLX

Tue Jan 21 1997 12:49:03 PM

Analysis of Variance for T4A1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T4A1.var2	151.84436	2	75.922175	10.723	.0003
B:T4A1.var3	2.67353	1	2.673525	.378	.5497
RESIDUAL	226.56634	32	7.0801982		
TOTAL (CORRECTED)	381.08422	35			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:49:24 PM

Multiple range analysis for T4A1.var1 by T4A1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	12	52.826063	X
2	12	52.826063	X
1	12	57.182730	X

contrast	difference
1 - 2	4.35667 *
1 - 3	4.35667 *
2 - 3	0.00000

* denotes a statistically significant difference.

Tue Jan 21 1997 12:49:45 PM

Multiple range analysis for T4A1.var1 by T4A1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	21	54.881905	X
2	15	54.554667	X

contrast	difference
2 - 3	0.33275

* denotes a statistically significant difference.

Lampiran 14. (lanjutan)

Uji beda perlakuan pada FMLX

Tue Jan 21 1997 12:50:07 PM

Analysis of Variance for T4A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T4A2.var2	69.81265	2	34.90632	16.133	.0000
B:T4A2.var3	110.09524	1	110.09524	50.883	.0000
RESIDUAL	82.220076	38	2.1636862		
TOTAL (CORRECTED)	262.12796	41			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:50:26 PM

Multiple range analysis for T4A2.var1 by T4A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	14	48.640000	X
3	14	49.971429	X
1	14	51.785714	X

contrast	difference
1 - 2	3.14571 *
1 - 3	1.81429 *
2 - 3	-1.33143 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:50:48 PM

Multiple range analysis for T4A2.var1 by T4A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	21	48.313333	X
3	21	51.751429	X

contrast	difference
1 - 3	-3.23810 *

* denotes a statistically significant difference.

Lampiran 15.Data alkalinitas (mek/l) terhadap residu/filtrat residu, hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMX

CONTROL: C4 = MLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	--
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	--
B	110.060	62.930	88.430	--
	111.790	63.750	80.270	
	102.100	63.340	101.590	
	105.980	62.630	92.210	
	100.370	64.360	94.660	
	106.060	63.402	91.432	86.965
C	79.210	59.980	65.100	--
	74.090	60.710	55.490	
	84.120	59.880	66.670	
	79.520	60.190	67.720	
	75.760	59.770	67.510	
	74.510	59.570	60.820	
	79.110	59.880	70.020	
	78.046	59.997	64.761	67.601
ALL	--	--	--	--
	89.718	61.416	75.874	75.669

CONTROL: C4 = FMLX
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	80.660	63.080	61.860	--
	71.990	64.310	41.500	
	73.430	62.310	52.400	
	76.990	64.980	50.960	
	71.990	63.200	62.420	
	72.540	66.760	64.420	
	75.430	65.870	42.840	
	74.719	64.359	53.771	64.283
B	--	--	--	--
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	
	--	--	--	--
C	79.480	58.390	65.980	--
	76.160	54.440	72.940	
	74.180	57.770	54.440	
	70.860	58.810	53.400	
	73.930	59.020	52.370	
	75.430	57.560	56.630	
	65.460	59.120	52.160	
	73.650	57.873	58.274	63.266
ALL	--	--	--	--
	74.184	61.116	56.023	63.774

CELL CONTENTS --
C1:DATA
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Lampiran 15. (lanjutan)

Analysis of Variance for T5.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T5.var2	5900.9346	2	2950.4673	48.315	.0000
B:T5.var3	3291.5442	2	1645.7721	26.950	.0000
C:T5.var4	197.3834	1	197.3834	3.232	.0764
RESIDUAL	4396.8076	72	61.066772		
TOTAL (CORRECTED)	16332.109	77			

All F-ratios are based on the residual mean square error.

Sun Jan 5 1997 10:43:33 AM

Multiple range analysis for T5.var1 by T5.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	42	70.059175	X
1	36	74.394389	X

contrast	difference
1 - 2	4.33571 *

* denotes a statistically significant difference.

Lampiran 15. (lanjutan)

Uji beda perlakuan pada MLX

Tue Jan 21 1997 12:51:20 PM

Analysis of Variance for T5A1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T5A1.var2	4806.9434	2	2403.4717	45.554	.0000
B:T5A1.var3	3280.6812	1	3280.6812	62.191	.0000
RESIDUAL	1688.3362	32	52.760306		
TOTAL (CORRECTED)	9775.9608	35			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:51:46 PM

Multiple range analysis for T5A1.var1 by T5A1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	12	63.009437	X
3	12	77.487778	X
1	12	91.331937	X

contrast	difference
1 - 2	28.3025 *
1 - 3	13.8442 *
2 - 3	-14.4583 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:52:07 PM

Multiple range analysis for T5A1.var1 by T5A1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	21	67.681429	X
2	15	86.964667	X

contrast	difference
2 - 3	19.3632 *

* denotes a statistically significant difference.

Lampiran 15. (lanjutan)

Uji beda perlakuan pada FMLX

Tue Jan 21 1997 12:52:27 PM

Analysis of Variance for T5A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T5A2.var2	2457.2905	2	1228.6452	34.788	.0000
B:T5A2.var3	10.8631	1	10.8631	.307	.5887
RESIDUAL	1345.1721	38	35.399265		
TOTAL (CORRECTED)	3813.3256	41			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:52:45 PM

Multiple range analysis for T5A2.var1 by T5A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	14	56.022857	X
2	14	61.113714	X
1	14	74.184286	X

contrast	difference
1 - 2	13.0686 *
1 - 3	18.1614 *
2 - 3	5.09286 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:53:16 PM

Multiple range analysis for T5A2.var1 by T5A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	21	63.365714	X
1	21	64.292857	X

contrast	difference
1 - 3	1.01714

* denotes a statistically significant difference.

Lampiran 16. Data volume residu (ml), hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMP

CONTROL: C4 = MLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	261.65	267.10	261.60	--
	260.00	264.25	261.05	
	262.25	268.25	268.00	
	262.00	267.00	267.00	
	261.55	265.80	266.00	
	263.50	267.75	267.00	
	261.83	266.69	265.11	264.54
B	260.50	264.45	260.50	--
	259.50	264.20	259.00	
	260.75	265.50	260.90	
	261.75	265.35	259.50	
	257.50	264.20	254.75	
	258.25	264.85	258.75	
	259.71	264.76	258.90	261.12
C	247.00	262.35	254.60	--
	255.20	264.25	254.15	
	253.00	262.15	256.65	
	258.25	261.70	256.75	
	256.60	261.80	253.55	
	258.20	261.05	254.40	
	256.50	262.20	255.50	
	256.55	261.95	257.65	
	255.16	262.18	255.43	257.59
ALL	--	--	--	--
	258.52	264.31	259.37	260.74

CONTROL: C4 = FMLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	--
	--	--	--	
	--	--	--	
	--	--	--	
	265.75	277.60	265.15	
	265.75	277.60	265.15	269.50
B	270.50	275.75	262.25	--
	270.75	276.00	266.10	
	264.75	276.10	261.10	
	263.50	275.50	266.80	
	267.37	275.84	264.06	269.09
C	268.75	278.00	270.60	--
	271.85	278.20	269.95	
	269.95	276.25	269.10	
	270.20	274.35	267.05	
	268.70	275.15	265.55	
	268.25	278.15	270.25	
	267.70	275.75	268.75	
	268.70	274.00	266.85	
	269.26	276.23	268.51	271.34
ALL	--	--	--	--
	268.41	276.22	266.88	270.50

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Keterangan

FMLI di A ulangan 1 - 4 diperoleh data tetapi terjadi kerusakan pada instrumen yang sama dan baru diketahui pada ulangan ke-4

Lampiran 16. (lanjutan)

Tue Jan 21 1997 04:08:16 PM

Analysis of Variance for T6A.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T6A.var2	964.8337	2	482.4168	59.200	.0000
B:T6A.var3	294.7905	2	147.3953	18.088	.0000
C:T6A.var4	2537.7688	1	2537.7688	311.425	.0000
RESIDUAL	757.84817	93	8.1489031		
TOTAL (CORRECTED)	4272.7141	98			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 04:09:04 PM

Multiple range analysis for T6A.var1 by T6A.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	60	260.92145	X
2	39	271.71794	X

contrast	difference
1 - 2	-10.7965 *

* denotes a statistically significant difference.

Lampiran 16. (lanjutan)

Uji beda perlakuan pada MLI

Tue Jan 21 1997 12:53:50 PM

Analysis of Variance for T6A1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T6A1.var2	389.92986	2	194.96454	38.803	.0000
B:T6A1.var3	500.66476	2	250.33238	49.823	.0000
RESIDUAL	276.34661	55	5.0244838		
TOTAL (CORRECTED)	1166.9405	59			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:54:17 PM

Multiple range analysis for T6A1.var1 by T6A1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	20	258.87435	X
3	20	259.72435	X
2	20	264.65685	X

contrast	difference
1 - 2	-5.78250 *
1 - 3	-0.85000
2 - 3	4.93250 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:54:38 PM

Multiple range analysis for T6A1.var1 by T6A1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	24	257.59167	X
2	13	261.12222	X
1	13	264.54167	X

contrast	difference
1 - 2	3.41944 *
1 - 3	6.95000 *
2 - 3	3.53056 *

* denotes a statistically significant difference.

Lampiran 16. (lanjutan)

Uji beda perlakuan pada FMLI

Tue Jan 21 1997 12:55:01 PM

Analysis of Variance for T6A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T6A2.var2	651.27731	2	325.63865	71.107	.0000
B:T6A2.var3	43.55036	2	21.77518	4.755	.0151
RESIDUAL	155.70425	34	4.5795369		
TOTAL (CORRECTED)	850.53192	38			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:55:15 PM

Multiple range analysis for T6A2.var1 by T6A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	13	266.35646	X
1	13	267.88339	X
2	13	275.68723	X

contrast	difference
1 - 2	-7.80385 *
1 - 3	1.52692
2 - 3	9.33077 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:55:30 PM

Multiple range analysis for T6A2.var1 by T6A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	12	269.09167	X
1	3	269.50000	X
3	24	271.33542	X

contrast	difference
1 - 2	0.40833
1 - 3	-1.83542
2 - 3	-2.24375

* denotes a statistically significant difference.

Lampiran 17.Data konsentrasi KOK (mg O_2/l) terhadap residu/filtrat residu, hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMP

CONTROL: C4 = MLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	28220	26114	27378	--
	27799	25693	26114	
	27799	26114	25742	
	27430	25320	24969	
	27430	24898	27008	
	26164	24898	26164	
	27474	25506	26229	26403
B	28859	28435	27907	--
	29708	26313	28435	
	28435	26313	29138	
	24624	28728	27907	
	25855	24624	28728	
	24545	24624	28728	
	27004	26506	28474	27328
C	29427	27421	28424	--
	27755	27170	28591	
	29678	25128	25296	
	27222	24960	25798	
	26803	25128	26384	
	28060	25128	26803	
	26662	23699	25138	
	26238	24546	25815	
	27731	25397	26531	26553
ALL	--	--	--	--
	27436	25763	27023	26741

CONTROL: C4 = FMLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	--
	--	--	--	
	--	--	--	
	--	--	--	
	26038	23393	24624	
	26038	23393	24624	24685
B	23064	22441	25594	--
	26006	25662	25594	
	24935	21038	24545	
	24155	22207	26452	
	24540	22837	25546	24308
C	25392	23699	25815	--
	25392	25392	26238	
	25815	25392	25646	
	26831	24800	28642	
	24969	23530	23445	
	24122	23699	26114	
	26114	26114	26536	
	26957	26114	27378	
	25699	24843	26227	25589
ALL	--	--	--	--
	25368	24114	25894	25125

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Lampiran 17. (lanjutan)

Analysis of Variance for T7A.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T7A.var2	48657136	2	24328568	12.883	.0000
B:T7A.var3	3644811	2	1822405	1.012	.3676
C:T7A.var4	65380445	1	65380445	34.406	.0000
RESIDUAL	1.7673E0008	93	1900271.1		
TOTAL (CORRECTED)	2.9008E0008	98			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 04:10:11 PM

Multiple range analysis for T7A.var1 by T7A.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	39	24985.734	X
1	60	26718.661	X

contrast	difference
1 - 2	1732.93 *

* denotes a statistically significant difference.

Lampiran 17. (lanjutan)

Uji beda perlakuan pada MLI

Tue Jan 21 1997 12:55:56 PM

Analysis of Variance for T7A1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T7A1.var2	30386609	2	15193305	8.236	.0007
B:T7A1.var3	9108475	2	4554238	2.469	.0948
RESIDUAL	1.0147E0008	55	1844850.1		
TOTAL (CORRECTED)	1.4096E0008	59			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:56:13 PM

Multiple range analysis for T7A1.var1 by T7A1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	20	25783.531	X
3	20	27044.181	X
1	20	27456.481	X

contrast	difference
1 - 2	1672.95 *
1 - 3	412.300
2 - 3	-1260.65 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:56:35 PM

Multiple range analysis for T7A1.var1 by T7A1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	18	26403.388	X
3	24	26553.083	XX
2	18	27328.111	X

contrast	difference
1 - 2	-925.111 *
1 - 3	-150.083
2 - 3	775.028

* denotes a statistically significant difference.

Lampiran 17. (lanjutan)

Uji beda perlakuan pada FMLI

Tue Jan 21 1997 12:57:03 PM

Analysis of Variance for T7A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T7A2.var2	21749373	2	10874686	7.010	.0028
B:T7A2.var3	13771950	2	6885975	4.439	.0194
RESIDUAL	52743989	34	1551293.8		
TOTAL (CORRECTED)	88265312	38			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:57:20 PM

Multiple range analysis for T7A2.var1 by T7A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	13	23849.158	X
1	13	25103.697	X
3	13	25629.312	X

contrast	difference
1 - 2	1254.54 *
1 - 3	-525.615
2 - 3	-1780.15 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:57:35 PM

Multiple range analysis for T7A2.var1 by T7A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	12	24307.758	X
1	3	24685.008	X
3	24	25589.417	X

contrast	difference
1 - 2	377.250
1 - 3	-904.417
2 - 3	-1281.67

* denotes a statistically significant difference.

Lampiran 18.Data konsentrasi TKN (mg N /l) terhadap residu/filtrat residu, hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMP

CONTROL: C4 = MLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	1255.6	1224.7	1247.9	--
	1263.3	1155.4	1130.1	
	1123.0	1066.1	1087.5	
	1115.9	1037.7	1051.9	
	1137.2	1023.5	1002.2	
	1115.9	1009.3	1073.2	
	1168.5	1086.1	1098.8	1117.8
B	1112.3	995.2	1112.3	--
	1061.1	995.2	1068.4	
	1083.0	995.2	1053.7	
	1053.7	980.6	1144.3	
	1039.1	965.9	1140.1	
	1068.4	936.7	1108.8	
	1069.6	978.1	1104.6	1050.8
C	1285.9	1212.6	1265.0	--
	1256.9	1155.2	1261.7	
	1256.9	1179.8	1258.4	
	1256.9	1138.8	1261.7	
	1228.9	1174.9	1286.3	
	1245.3	1176.5	1256.8	
	1274.8	1179.8	1283.0	
	1202.7	1106.0	1261.7	
	1251.0	1165.4	1266.8	1227.8
ALL	--	--	--	--
	1171.8	1085.5	1167.7	1141.7

CONTROL: C4 = FMLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	--
	--	--	--	
	--	--	--	
	--	--	--	
	1108.8	1030.6	1094.6	
	1108.8	1030.6	1094.6	1078.0
B	1265.1	1229.6	1293.6	--
	1258.0	1243.8	1300.7	
	1319.2	1229.6	1343.3	
	1319.2	1250.9	1307.8	
	1290.4	1238.5	1311.3	1280.1
C	1220.8	1155.0	1196.4	--
	1215.8	1132.7	1199.6	
	1209.3	1143.8	1215.5	
	1212.6	1151.8	1223.5	
	1220.3	1215.5	1244.2	
	1204.4	1175.7	1194.8	
	1179.8	1180.5	1183.7	
	1223.5	1158.2	1170.9	
	1210.8	1164.2	1203.6	1192.8
ALL	--	--	--	--
	1227.4	1176.7	1228.4	1210.8

CELL CONTENTS --
C1:DATA
MEAN

Lampiran 18. (lanjutan)

Analysis of Variance for T8A.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T8A.var2	111818.87	2	55909.437	10.155	.0001
B:T8A.var3	116453.82	2	58226.588	10.577	.0001
C:T8A.var4	58391.85	1	58591.849	10.643	.0015
RESIDUAL	511983.40	93	5505.1978		
TOTAL (CORRECTED)	853325.57	98			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 04:11:18 PM

Multiple range analysis for T9A.var1 by T8A.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	60	1136.9385	X
2	39	1188.8156	X

contrast	difference
1 - 2	-51.8770 *

* denotes a statistically significant difference.

Lampiran 18. (lanjutan)

Uji beda perlakuan pada MLI

Tue Jan 21 1997 12:58:02 PM

Analysis of Variance for TBA1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:TBA1.var2	95010.42	2	47505.21	17.397	.0000
B:TBA1.var3	336881.59	2	168440.79	61.658	.0000
RESIDUAL	150272.10	55	2732.2200		
TOTAL (CORRECTED)	582164.11	59			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:58:16 PM

Multiple range analysis for TBA1.var1 by TBA1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	20	1075.8895	X
3	20	1158.1845	X
1	20	1162.2745	X

contrast	difference
1 - 2	86.3850 *
1 - 3	4.09000
2 - 3	-82.2950 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:58:35 PM

Multiple range analysis for TBA1.var1 by TBA1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	18	1058.7778	X
1	18	1117.9888	X
3	24	1227.7708	X

contrast	difference
1 - 2	67.8222 *
1 - 3	-109.971 *
2 - 3	-176.993 *

* denotes a statistically significant difference.

Lampiran 18. (lanjutan)

Uji beda perlakuan pada FMLI

Tue Jan 21 1997 12:59:05 PM

Analysis of Variance for T8A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T8A2.var2	22683.56	2	11341.780	22.444	.0000
B:T8A2.var3	119218.33	2	59109.166	116.971	.0000
RESIDUAL	17181.286	34	505.33193		
TOTAL (CORRECTED)	158083.18	38			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 12:59:20 PM

Multiple range analysis for T8A2.var1 by T8A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	13	1149.5349	X
1	13	1200.2349	X
3	13	1201.1426	X

contrast	difference
1 - 2	50.7000 *
1 - 3	-0.90769
2 - 3	-51.6077 *

* denotes a statistically significant difference.

Tue Jan 21 1997 12:59:34 PM

Multiple range analysis for T8A2.var1 by T8A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	3	1079.0000	X
3	24	1192.9458	X
2	12	1282.0667	X

contrast	difference
1 - 2	-202.267 *
1 - 3	-114.946 *
2 - 3	87.3209 *

* denotes a statistically significant difference.

Lampiran 19.Data kadar ROI (g/l) terhadap residu/filtrat residu, hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMP

CONTROL: C4 = MLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	81.380	77.820	81.200	--
	82.040	77.620	81.080	
	81.760	78.160	78.960	
	82.240	76.920	79.460	
	80.720	77.740	78.020	
	79.960	76.400	77.080	
	81.350	77.443	79.300	79.364
B	85.300	80.660	83.960	--
	86.480	80.780	85.000	
	86.220	80.860	82.320	
	83.060	81.560	84.360	
	80.780	82.280	88.160	
	86.800	81.120	84.820	
	84.773	81.210	84.770	83.584
C	84.280	78.060	78.820	--
	81.940	77.200	80.560	
	81.080	78.600	80.700	
	81.240	77.540	79.900	
	80.680	78.660	80.600	
	80.360	78.900	80.540	
	80.920	77.440	83.960	
	80.740	78.420	78.440	
	81.405	78.103	80.440	79.983
ALL	--	--	--	--
	82.399	78.837	81.397	80.878

CONTROL: C4 = FMLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	--
	--	--	--	
	--	--	--	
	--	--	--	
	81.320	73.440	82.800	
	81.320	73.440	82.800	79.187
B	75.220	70.000	74.560	--
	74.380	69.800	72.880	
	75.060	69.920	73.080	
	74.820	70.960	72.400	
	74.870	70.170	73.230	72.757
C	84.380	78.500	81.820	--
	82.320	77.120	81.000	
	83.740	79.000	81.280	
	83.760	80.400	82.700	
	84.060	79.160	83.800	
	82.980	79.240	82.740	
	82.680	79.600	81.880	
	83.140	78.420	81.760	
	83.382	78.930	82.122	81.478
ALL	--	--	--	--
	80.605	75.812	79.438	78.618

CELL CONTENTS --
C1:DATA
MEAN

Lampiran 19. (lanjutan)

Analysis of Variance for T10A.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T10A.var2	290.33058	2	145.16529	15.756	.0000
B:T10A.var3	98.79170	2	49.39585	5.362	.0063
C:T10A.var4	167.93916	1	167.93916	18.228	.0000
RESIDUAL	856.81410	93	9.2130549		
TOTAL (CORRECTED)	1366.5766	98			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 04:13:54 PM

Multiple range analysis for T10A.var1 by T10A.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	39	77.962368	X
1	60	80.739730	X

contrast	difference
1 - 2	2.77736 *

* denotes a statistically significant difference.

Lampiran 19. (lanjutan)

Uji beda perlakuan pada MLI

Tue Jan 21 1997 01:02:38 PM

Analysis of Variance for T10A1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T10A1.var2	134.96965	2	67.484827	34.075	.0000
B:T10A1.var3	192.32853	2	96.164267	48.556	.0000
RESIDUAL	108.92589	55	1.9804706		
TOTAL (CORRECTED)	436.22407	59			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 01:02:55 PM

Multiple range analysis for T10A1.var1 by T10A1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	20	78.936463	X
3	20	81.496463	X
1	20	82.498463	X

contrast	difference
1 - 2	3.56200 *
1 - 3	1.00200 *
2 - 3	-2.56000 *

* denotes a statistically significant difference.

Tue Jan 21 1997 01:03:09 PM

Multiple range analysis for T10A1.var1 by T10A1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	18	79.364444	X
3	24	79.982500	X
2	18	83.594444	X

contrast	difference
1 - 2	-4.23000 *
1 - 3	-0.61806
2 - 3	3.61194 *

* denotes a statistically significant difference.

Uji beda perlakuan pada FMLI

Tue Jan 21 1997 01:03:45 PM

Analysis of Variance for T10A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T10A2.var2	162.39216	2	81.19609	73.157	.0000
B:T10A2.var3	609.52904	2	304.79452	274.635	.0000
RESIDUAL	37.731062	34	1.1097377		
TOTAL (CORRECTED)	809.71231	38			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 01:03:59 PM

Multiple range analysis for T10A2.var1 by T10A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	13	75.001868	X
3	13	78.627222	X
1	13	79.793376	X

contrast	difference
1 - 2	4.79231 *
1 - 3	1.16615 *
2 - 3	-3.62615 *

* denotes a statistically significant difference.

Tue Jan 21 1997 01:04:12 PM

Multiple range analysis for T10A2.var1 by T10A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	12	72.756667	X
1	3	79.136667	X
3	24	81.478333	X

contrast	difference
1 - 2	6.47333 *
1 - 3	-2.29167 *
2 - 3	-8.76167 *

* denotes a statistically significant difference.

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Lampiran 20.Data alkalinitas (mek/l) terhadap residu/filtrat residu, hasil analisis rancangan 3 faktor dan 2 faktor seri eks. AMP

CONTROL: C4 = MLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	66.860	49.270	66.220	--
	62.830	49.900	75.440	
	61.140	47.360	66.540	
	68.340	51.280	57.960	
	52.340	49.590	29.670	
	50.750	48.740	27.970	
	60.377	49.357	53.967	54.567
B	86.000	55.040	82.990	--
	76.970	54.610	76.220	
	75.900	55.790	76.760	
	71.810	54.610	76.110	
	76.760	51.170	83.310	
	85.890	54.500	79.340	
	78.888	54.287	79.122	70.766
C	58.220	49.280	34.310	--
	59.260	49.590	68.090	
	49.690	48.860	56.970	
	55.820	49.480	63.100	
	54.370	49.170	63.410	
	50.000	50.940	56.760	
	47.090	50.420	54.270	
	49.900	51.460	56.140	
	53.044	49.900	56.631	53.192
ALL	--	--	--	--
	62.997	51.053	62.579	58.876

CONTROL: C4 = FMLI
ROWS: C3 COLUMNS: C2

	1	2	3	ALL
A	--	--	--	--
	--	--	--	
	--	--	--	
	--	--	--	
	100.870	48.850	91.650	
	100.870	48.850	91.650	80.457
B	88.280	57.810	80.820	--
	93.430	53.710	80.400	
	73.250	55.390	62.320	
	57.170	56.440	65.270	
	78.033	55.838	72.202	68.691
C	74.360	45.070	75.190	--
	59.820	44.450	61.790	
	62.520	44.450	64.080	
	65.630	44.340	64.080	
	59.400	43.200	66.670	
	60.030	43.820	62.520	
	60.230	45.490	60.860	
	65.430	45.900	66.780	
	63.427	44.590	65.246	57.755
ALL	--	--	--	--
	70.802	48.378	69.418	62.866

CELL CONTENTS --
C1:DATA
MEAN

Lampiran 20. (lanjutan)

Analysis of Variance for T9A.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T9A.var2	5414.5809	2	2707.2904	29.218	.0000
B:T9A.var3	4132.1937	2	2066.0968	22.298	.0000
C:T9A.var4	519.9064	1	519.9064	5.611	.0199
RESIDUAL	8617.3516	93	92.659694		
TOTAL (CORRECTED)	18540.337	98			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 04:12:32 PM

Multiple range analysis for T9A.var1 by T9A.var4

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
1	60	59.525953	X
2	39	64.412692	X

contrast	difference
1 - 2	-4.88674 *

* denotes a statistically significant difference.

Lampiran 20. (lanjutan)

Uji beda perlakuan pada MLI

Tue Jan 21 1997 12:59:58 PM

Analysis of Variance for T9A1.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T9A1.var2	1837.8836	2	918.9418	11.012	.0001
B:T9A1.var3	3654.2534	2	1827.1267	21.894	.0000
RESIDUAL	4589.8440	55	83.451709		
TOTAL (CORRECTED)	10081.981	59			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 01:00:11 PM

Multiple range analysis for T9A1.var1 by T9A1.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	20	51.684630	X
3	20	63.210630	X
1	20	63.628630	X

contrast	difference
1 - 2	11.9440 *
1 - 3	0.41800
2 - 3	-11.5260 *

* denotes a statistically significant difference.

Tue Jan 21 1997 01:00:47 PM

Multiple range analysis for T9A1.var1 by T9A1.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	24	53.191667	X
1	19	54.566667	X
2	18	70.765556	X

contrast	difference
1 - 2	-16.1989 *
1 - 3	1.37500
2 - 3	17.5739 *

* denotes a statistically significant difference.

Lampiran 20. (lanjutan)

Uji beda perlakuan pada FMLI

Tue Jan 21 1997 01:01:11 PM

Analysis of Variance for T9A2.var1 - Type III Sums of Squares

Source of variation	Sum of Squares	d.f.	Mean square	F-ratio	Sig. level
MAIN EFFECTS					
A:T9A2.var2	4105.2208	2	2052.6104	34.644	.0000
B:T9A2.var3	1962.4768	2	981.2384	16.561	.0000
RESIDUAL	2014.4476	34	59.248458		
TOTAL (CORRECTED)	8082.1451	38			

All F-ratios are based on the residual mean square error.

Tue Jan 21 1997 01:01:46 PM

Multiple range analysis for T9A2.var1 by T9A2.var2

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
2	13	54.479925	X
3	13	75.519158	X
1	13	76.903002	X

contrast	difference
1 - 2	22.4231 *
1 - 3	1.38385
2 - 3	-21.0392 *

* denotes a statistically significant difference.

Tue Jan 21 1997 01:02:01 PM

Multiple range analysis for T9A2.var1 by T9A2.var3

Method: 95 Percent Duncan

Level	Count	LS Mean	Homogeneous Groups
3	24	57.754583	X
2	12	69.490833	X
1	3	80.436667	X

contrast	difference
1 - 2	11.7658 *
1 - 3	22.7821 *
2 - 3	10.9362 *

* denotes a statistically significant difference.