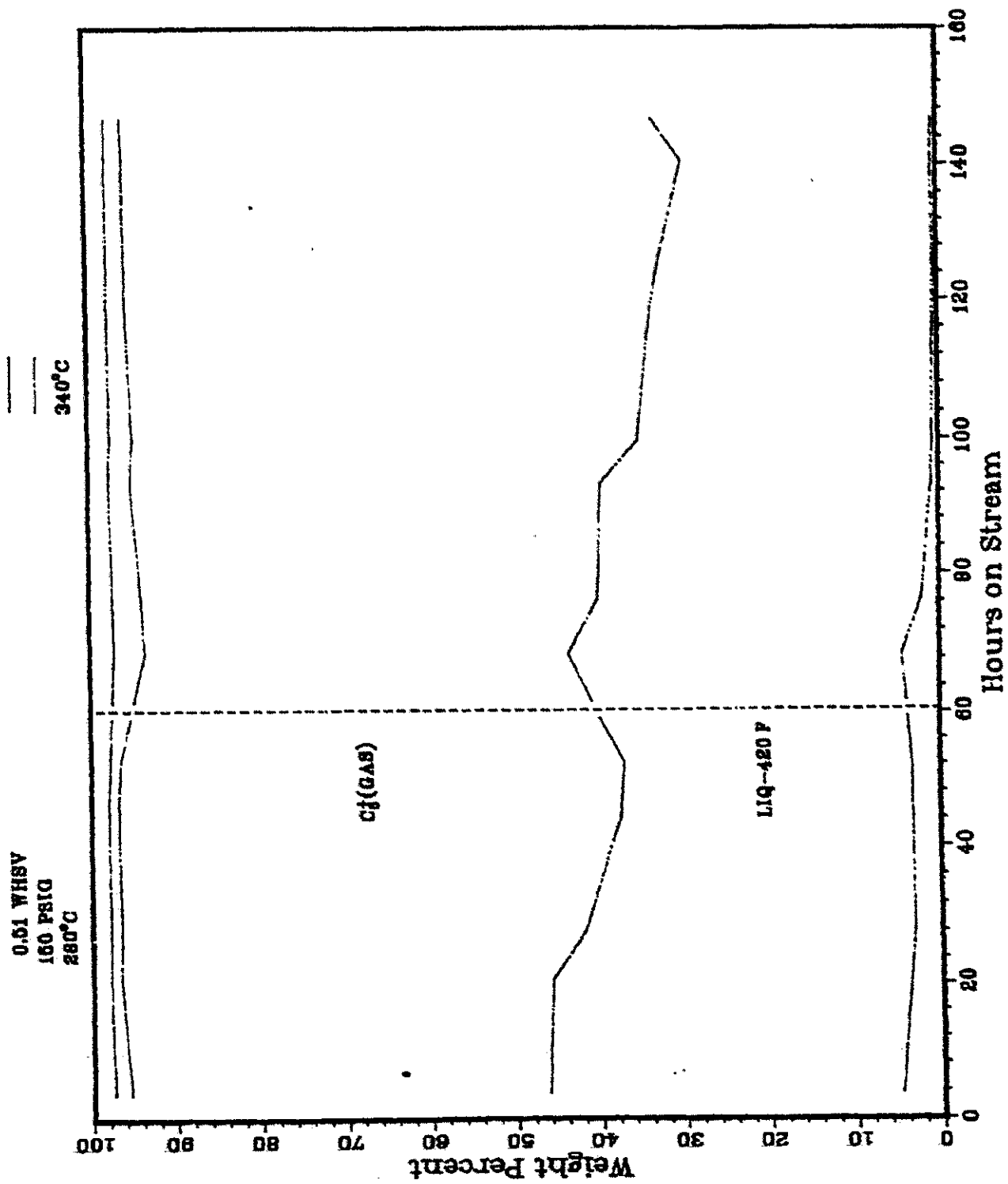


FIGURE 12



997222

FIGURE 13

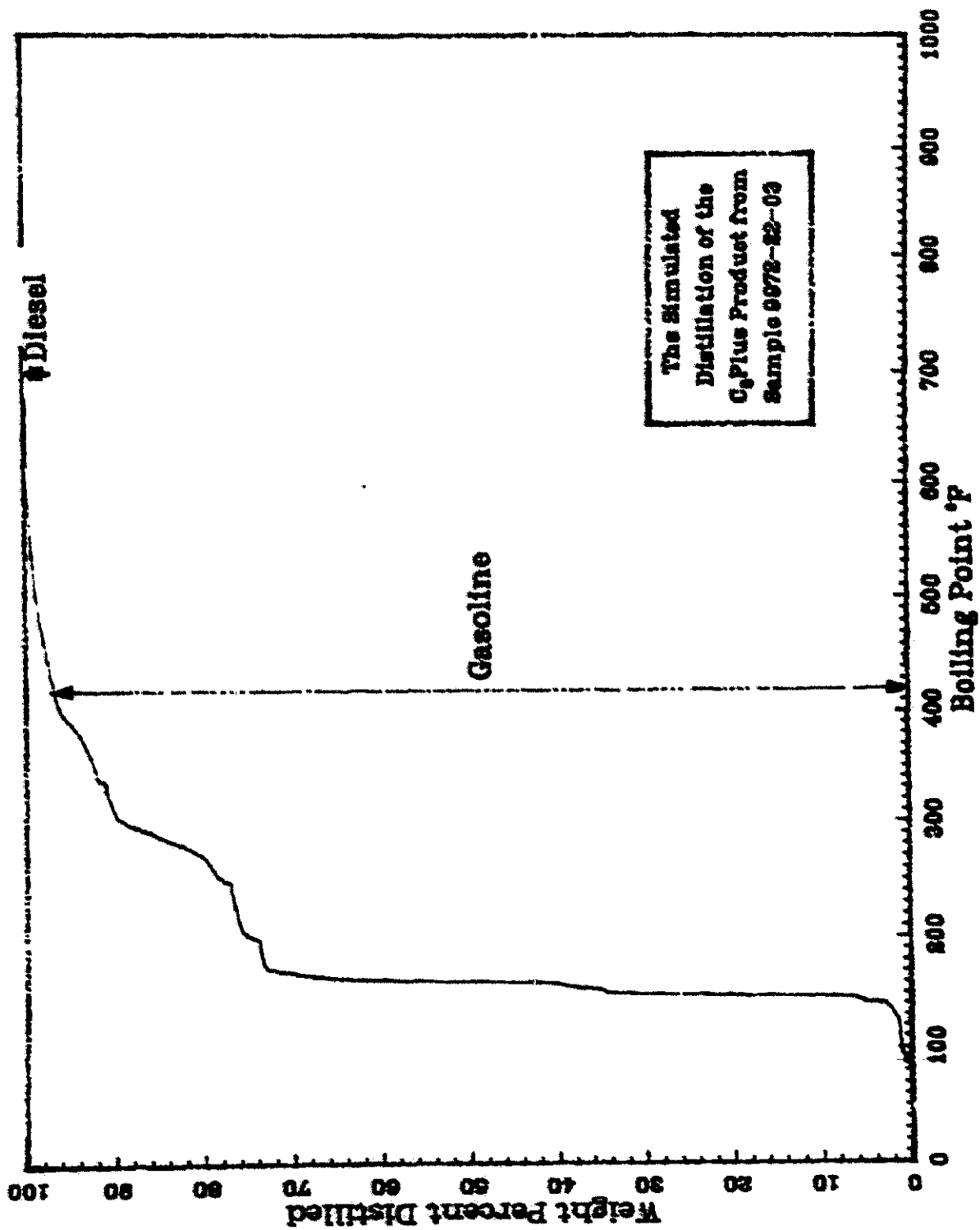


FIGURE 14

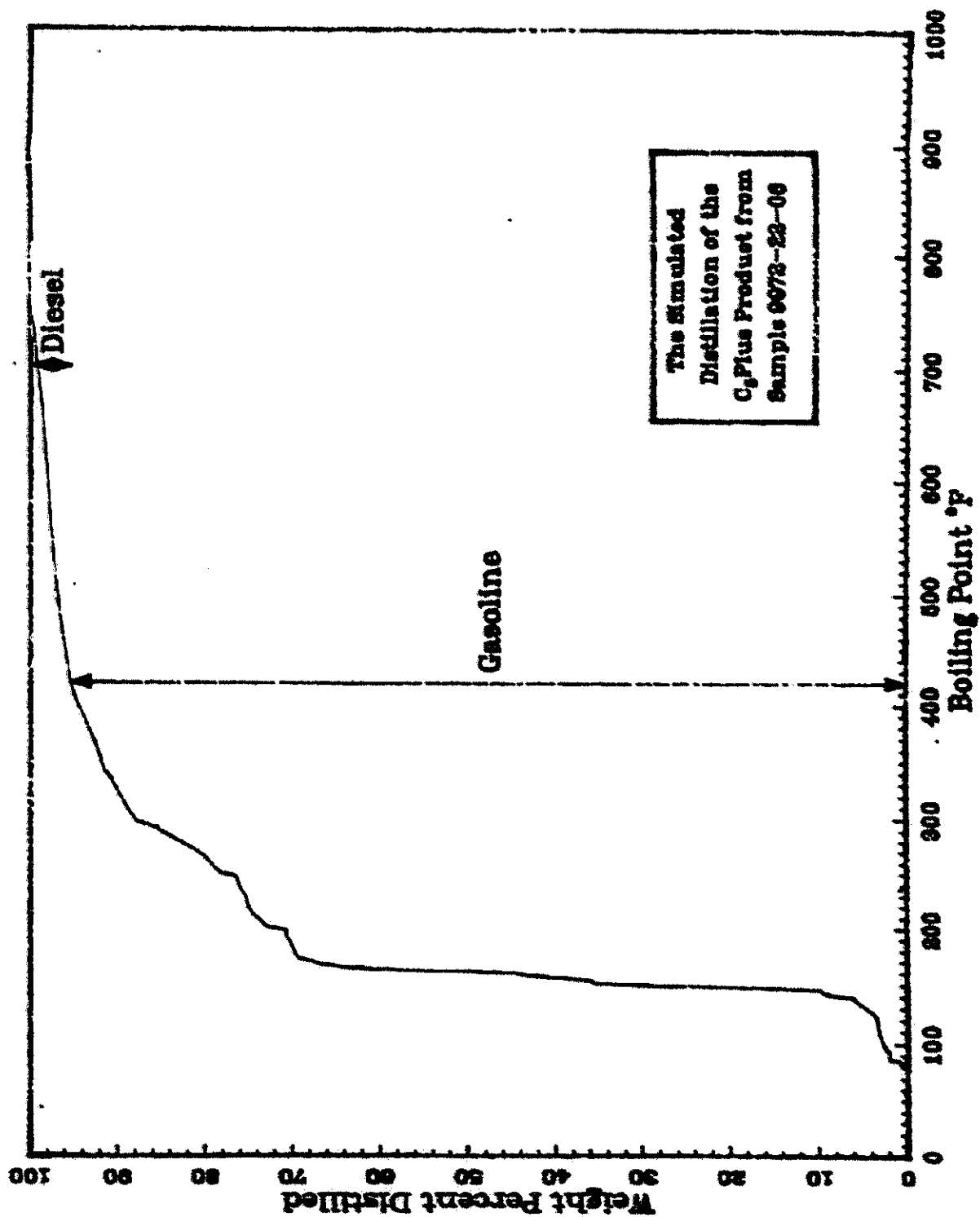


FIGURE 15

Total C₈ Plus Product

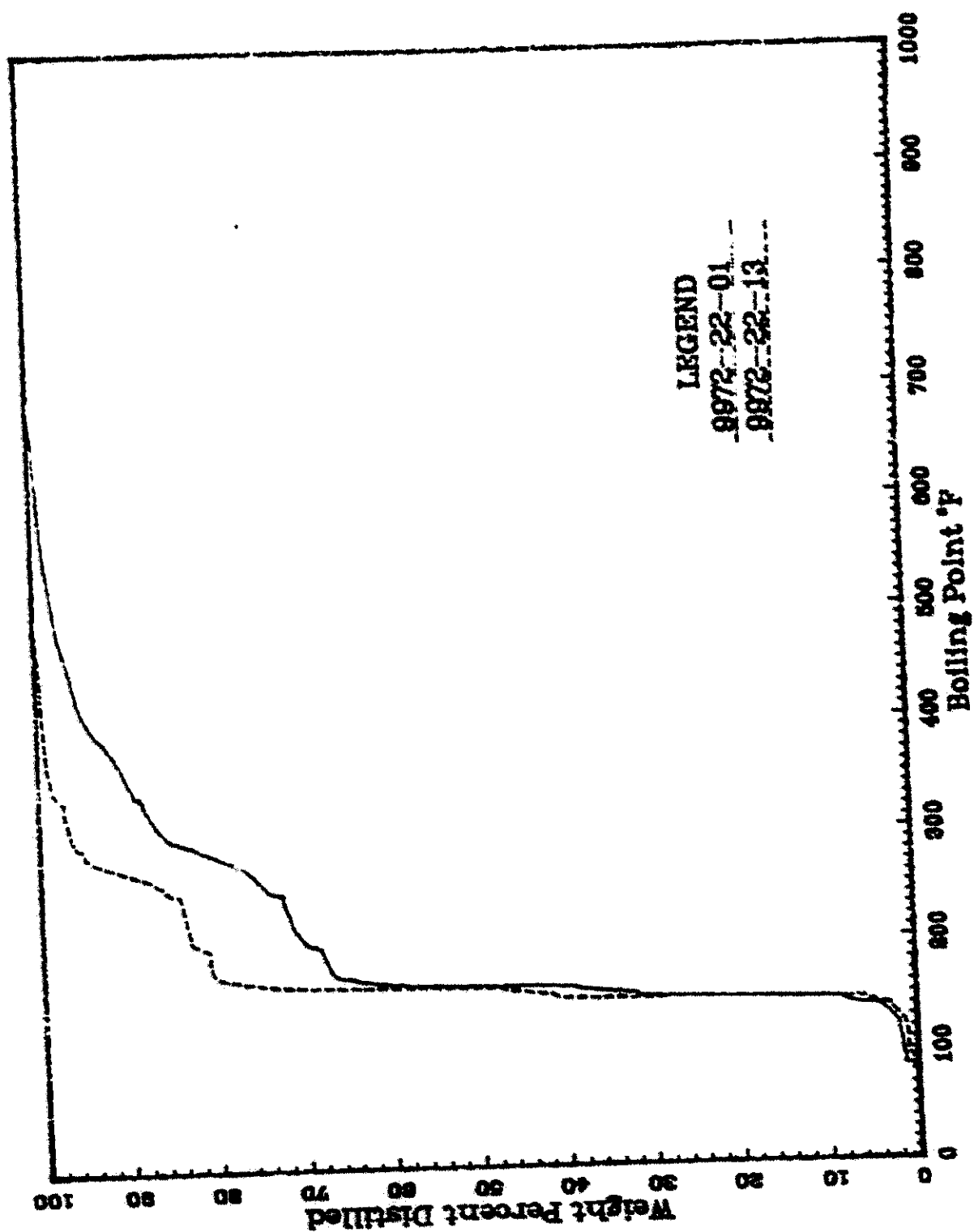


TABLE 3A RESULT OF PROPYLENE OPERATION

RUN NO. 9972-22
 CATALYST UCC-108 #10042-70 50CC 35.0GM (33.11 GM AFTER THE RUN, -1.89G)
 FEED H₂:C₃H₆:H₂O @ 1:1:2 MOLE RATIO, 0.5 C₃H₆ WHSV, CONTINUOUS FEED
 C₃H₆ MW= 42.0813 DENSITY= 0.5087 GM/CC (@ 73 F)
 TARGET FLOW: C₃H₆ 34.3 CC/HR H₂ 168 CCMN, 10.1 L/HR H₂O 15.0 CC/HR
 ACTUAL FLOW: 35.2 CC/HR EFFLUENT 14.6 L/HR AQ LAYR 14.4 CC/HR

RUN & SAMPLE NO.	9972-22-01	972-22-02	972-22-03	972-22-04	972-22-05
C ₃ H ₆ WHSV	0.52	0.50	0.51	0.51	0.50
HRS ON STREAM	3.67	20.59	27.92	44.08	52.33
PRESSURE, PSIG	152	149	149	150	152
TEMP. C	281	281	280	281	280
FEED C ₃ H ₆ CC	130.26	587.73	256.11	566.96	285.68
HOURS FEEDING	3.67	16.92	7.33	16.17	8.25
EFFLNT GAS LITER	51.07	239.50	105.62	241.27	123.58
GM AQUEOUS LAYER	49.40	248.69	107.32	234.07	117.51
GM LIQ HYDROCARBON	21.33	96.18	35.73	70.47	32.10
WT FR. LIQ HC/FEED	0.3219	0.3217	0.2742	0.2443	0.2209
MATERIAL BALANCE WT %	100.08	102.34	101.43	103.22	101.03
C ₃ H ₆ CONVERSION %	73.60	69.46	66.41	63.68	60.22
PRDT SELECTIVITY, WT %					
CH ₄	0.00	0.02	0.00	0.02	0.03
C ₂ HC'S	0.02	0.02	0.07	0.01	0.02
C ₃ H ₈	2.53	2.15	2.20	2.11	2.29
C ₄ H ₁₀	0.40	0.21	0.21	0.19	0.20
C ₄ H ₈ =	1.51	1.07	1.05	0.93	0.99
C ₅ H ₁₂	0.58	0.30	0.29	0.25	0.26
C ₅ H ₁₀ =	1.00	0.79	0.68	0.59	0.65
C ₆ H ₁₄	6.80	4.83	4.90	4.75	5.02
C ₆ H ₁₂ = & CYCLO'S	36.57	41.03	45.16	49.62	48.96
C ₇ + IN GAS	4.27	3.80	3.59	3.92	4.35
LIQ HC'S	46.30	45.78	41.86	37.62	37.23
TOTAL	100.00	100.00	100.00	100.00	100.00
SUB-GROUPING					
C ₁ -C ₄	4.47	3.48	3.52	3.26	3.53
C ₅ -420 F	90.71	92.86	93.34	93.54	93.20
420-700 F	4.82	3.66	3.14	3.20	3.28
700-END PT	0.00	0.00	0.00	0.00	0.00
C ₅ + -END PT	95.53	96.52	96.48	96.74	96.47
ISO/NORMAL MOLE RATIO					
C ₄	9.7520	7.9481	6.9744	3.9533	4.0000
C ₅	6.0090	4.2365	4.1630	3.5984	3.6068
C ₆	4.0698	2.4837	2.1467	1.8975	1.7727
C ₄ =	0.6719	0.6849	0.6951	0.7009	0.7067

PARAFFIN/OLEFIN RATIO

C3	0.0676	0.0468	0.0417	0.0354	0.0332
C4	0.2592	0.1933	0.1906	0.1957	0.1940
C5	0.5659	0.3675	0.4098	0.4051	0.3892

LIQ HC COLLECTION

PHYS. APPEARANCE	YLW OIL	YLW OIL	GRN OIL	GRN OIL	GRN OIL
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DENSITY	0.728	0.722	0.724	0.724	0.725
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N, REFRACTIVE INDEX	1.4205	1.4165	1.4160	1.4175	1.4192
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SIMULT'D DISTILLATE

10 WT % @ DEG F	154	155	155	157	157
16	161	160	161	162	161
50	257	217	215	230	249
84	388	372	368	377	380
90	424	402	398	405	407

RANGE(16-84 %)	227	212	207	215	219
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WT % @ 420 F	89.6	92.0	92.5	91.5	91.2
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WT % @ 700 F	100	100	100	100	100
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TABLE 3B

RESULT OF PROPYLENE OPERATION

RUN NO. 9972-22
 CATALYST UCC-108 #10042-70 50CC 35.0GM (33.1GM AFTER THE RUN, -1.89G)
 FEED H₂:C₃H₆:H₂O @ 1:1:2 MOLE RATIO, 0.5 C₃H₆ WHSV, CONTINUOUS FEED
 C₃H₆ MW= 42.0813 DENSITY= 0.5087 GM/CC (@ 73 F)
 TARGET FLOW: C₃H₆ 34.3 CC/HR H₂ 168 CCMN, 10.1 L/HR H₂O 15.0 CC/HR
 ACTUAL FLOW: 35.2 CC/HR EFFLUENT 14.6 L/HR AQ LAYR 14.4 CC/HR

RUN & SAMPLE NO.	9972-22-06	972-22-07	972-22-08	972-22-09	972-22-10
C ₃ H ₆ WHSV	0.52	0.50	0.52	0.49	0.53
HRS ON STREAM	62.58	76.17	93.08	99.58	116.60
PRESSURE, PSIG	149	147	149	149	146
TEMP. C	340	340	340	340	340
FEED C ₃ H ₆ CC	580.81	263.15	604.09	220.24	614.79
HOURS FEEDING	16.25	7.59	16.92	6.50	17.00
EFFLUENT GAS LITER	226.84	107.58	244.97	94.65	252.10
GM AQUEOUS LAYER	232.0	109.99	242.92	92.07	241.87
GM LIQ HYDROCARBON	96.23	37.86	82.05	28.73	73.28
WT FR. LIQ HC/FEED	0.3257	0.2828	0.2670	0.2564	0.2343
MATERIAL BALANCE WT. %	103.33	102.01	99.35	110.19	103.46
C ₃ H ₆ CONVERSION %	72.86	70.62	68.27	67.82	67.40
PRDT SELECTIVITY, WT %					
CH ₄	0.04	0.05	0.02	0.03	0.03
C ₂ HC'S	0.11	0.11	0.09	0.08	0.07
C ₃ H ₈	2.82	2.68	2.46	2.57	2.44
C ₄ H ₁₀	0.69	0.57	0.31	0.34	0.20
C ₄ H ₈ =	2.91	2.85	2.19	2.38	1.97
C ₅ H ₁₂	0.82	0.66	0.36	0.34	0.24
C ₅ H ₁₀ =	1.55	1.43	1.20	1.17	0.99
C ₆ H ₁₄	7.04	6.14	4.95	4.94	4.52
C ₆ H ₁₂ = & CYCLO'S	35.63	40.86	44.76	49.02	51.93
C ₇ + IN GAS	4.68	4.45	3.89	3.81	3.68
LIQ HC'S	43.72	40.20	39.77	35.32	33.94
TOTAL	100.00	100.00	100.00	100.00	100.00
SUB-GROUPING					
C ₁ -C ₄	6.57	6.26	5.08	5.41	4.70
C ₅ -420 F	89.05	91.73	94.09	93.92	94.72
420-700 F	3.50	2.01	0.84	0.67	0.58
700-END PT	0.87	0.00	0.00	0.00	0.00
C ₅ + -END PT	93.43	93.74	94.92	94.59	95.30
ISO/NORMAL MOLE RATIO					
C ₄	4.7396	3.0085	3.6132	1.8819	3.3581
C ₅	4.1857	3.1803	2.3820	2.0100	1.6966
C ₆	3.4520	2.4091	1.6323	1.3962	1.1172
C ₄ =	0.5350	0.5227	0.5370	0.5231	0.5329

PARAFFIN/OLEFIN RATIO					
C3	0.0725	0.0617	0.0507	0.0518	0.0482
C4	0.2274	0.1931	0.1369	0.1392	0.0959
C5	0.5157	0.4465	0.2885	0.2796	0.2329
LIQ HC COLLECTION					
PHYS. APPEARANCE	YLW OIL	YLW OIL	YLW OIL	YLW OIL	YLW OIL
DENSITY	0.726	0.719	0.717	0.707	0.712
N. REFRACTIVE INDEX	1.4240	1.4170	1.4175	1.4144	1.4119
SIMULT'D DISTILLATE					
10 WT % @ DEG F	146	148	149	149	149
16	157	157	158	158	158
50	208	178	173	173	172
84	366	321	292	274	273
90	420	377	324	288	285
RANGE(16-84 %)	209	164	134	116	115
WT % @ 420 F	90.0	95.0	97.9	98.1	98.3
WT % @ 700 F	98.0	100	100	100	100

TABLE 3C RESULT OF PROPYLENE OPERATION

RUN NO. 9972-22
 CATALYST UCC-108 #10042-70 50CC 35.0GM (33.11GM AFTER THE RUN, -1.89G)
 FEED H₂:C₃H₆:H₂O @ 1:1:2 MOLE RATIO, 0.5 C₃H₆ WHSV, CONTINUOUS FEED
 C₃H₆ MW= 42.0813 DENSITY= 0.5057 GM/CC (@ 73 F)
 TARGET FLOW: C₃H₆ 34.3 CC/HR H₂ 168 CC/HR, 10.1 L/HR H₂O 15.0 CC/HR
 ACTUAL FLOW: 35.2 CC/HR EFFLUENT 14.6 L/HR AQ LAYR 14.4 CC/HR

RUN & SAMPLE NO. 9972-22-11 972-22-12 972-22-13

C ₃ H ₆ WHSV	0.51	0.51	0.50
HRS ON STREAM	124.00	140.5	146.5
PRESSURE, PSIG	145	149	149
TEMP. C	340	340	340
FEED C ₃ H ₆ CC	258.63	374.65	207.66
HOURS FEEDING	7.42	16.50	6.00
EFFLUENT GAS LITER	109.21	246.55	89.70
GM AQUEOUS LAYER	105.5	236.60	86.29
GM LIQ HYDROCARBON	30.10	58.73	21.49
WT FR. LIQ HC/FEED	0.2288	0.2009	0.2034
MATERIAL BALANCE WT %	108.21	105.47	102.01
C ₃ H ₆ CONVERSION %	65.67	64.43	61.56
PRDT SELECTIVITY, WT %			
CH ₄	0.03	0.03	0.03
C ₂ HC'S	0.07	0.06	0.07
C ₃ H ₈	2.43	2.43	2.43
C ₄ H ₁₀	0.20	0.21	0.15
C ₄ H ₈ =	1.91	1.86	1.69
C ₅ H ₁₂	0.21	0.16	0.12
C ₅ H ₁₀ =	0.98	0.89	0.91
C ₆ H ₁₄	4.39	4.19	4.04
C ₆ H ₁₂ = & CYCLO'S	53.38	56.70	53.79
C ₇ + IN GAS	3.43	3.58	3.36
LIQ HC'S	32.98	29.88	33.41
TOTAL	100.00	100.00	100.00
SUB-GROUPING			
C ₁ -C ₄	4.63	4.60	4.36
C ₅ -420 F	94.84	94.74	95.03
420-700 F	0.53	0.66	0.60
700-END PT	0.00	0.00	0.00
C ₅ + -END PT	95.37	95.40	95.64
ISO/NORMAL MOLE RATIO			
C ₄	2.1550	1.0220	2.4348
C ₅	1.3559	1.1587	0.9014
C ₆	0.9939	0.8506	0.8757
C ₄ =	0.5276	0.5095	0.5489

PARAFFIN/OLEFIN RATIO

C3	0.0444	0.0422	0.0373
C4	0.0993	0.1082	0.0841
C5	0.2132	0.1807	0.1328

LIQ HC COLLECTION

PHYS. APPEARANCE	YLW OIL	YLW OIL	YLW OIL
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DENSITY	0.712	0.711	0.701
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N, REFRACTIVE INDEX	1.4131	1.4135	1.4121
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SIMULT'D DISTILATN

10 WT % @ DEG F	150	152	150
16	158	158	157
50	172	171	170
84	276	286	279
90	288	310	294

RANGE(16-84 %)	118	128	122
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WT % @ 420 F	98.4	97.8	98.2
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WT % @ 700 F	100	100	100
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UCC-109, Run 10112-1

UCC-109 is a new Union Carbide proprietary molecular sieve which has a large pore structure.

Figure 16, the conversion of propylene, shows the catalyst has quite low activity for propylene conversion. This was due to rapid coking of the catalyst. This result suggests that UCC-109 is a very strong acid. Figure 17, the product selectivity, shows propane is a significant product. The detailed material balances and selectivities are given in tables 4A and 4B.

UCC-109 is not an important catalyst for propylene oligomerization, but it does have some aspects of its chemistry which are of interest. This interesting chemistry is revealed by the refractive index of the liquid product. The liquid samples are almost purely aromatic. The simulated distillation of the condensed product, figure 18, shows that no single aromatic is formed in high yield. A wide spectrum of aromatics from toluene to multiply alkylated aromatics is present. UCC-109 must be a very strong acid with little shape-selective control. This high acidity may be useful to isomerize the products of F-T synthesis in Task 2.

1011201

0.49 WHSV
150 PSIG
280°C

340°C

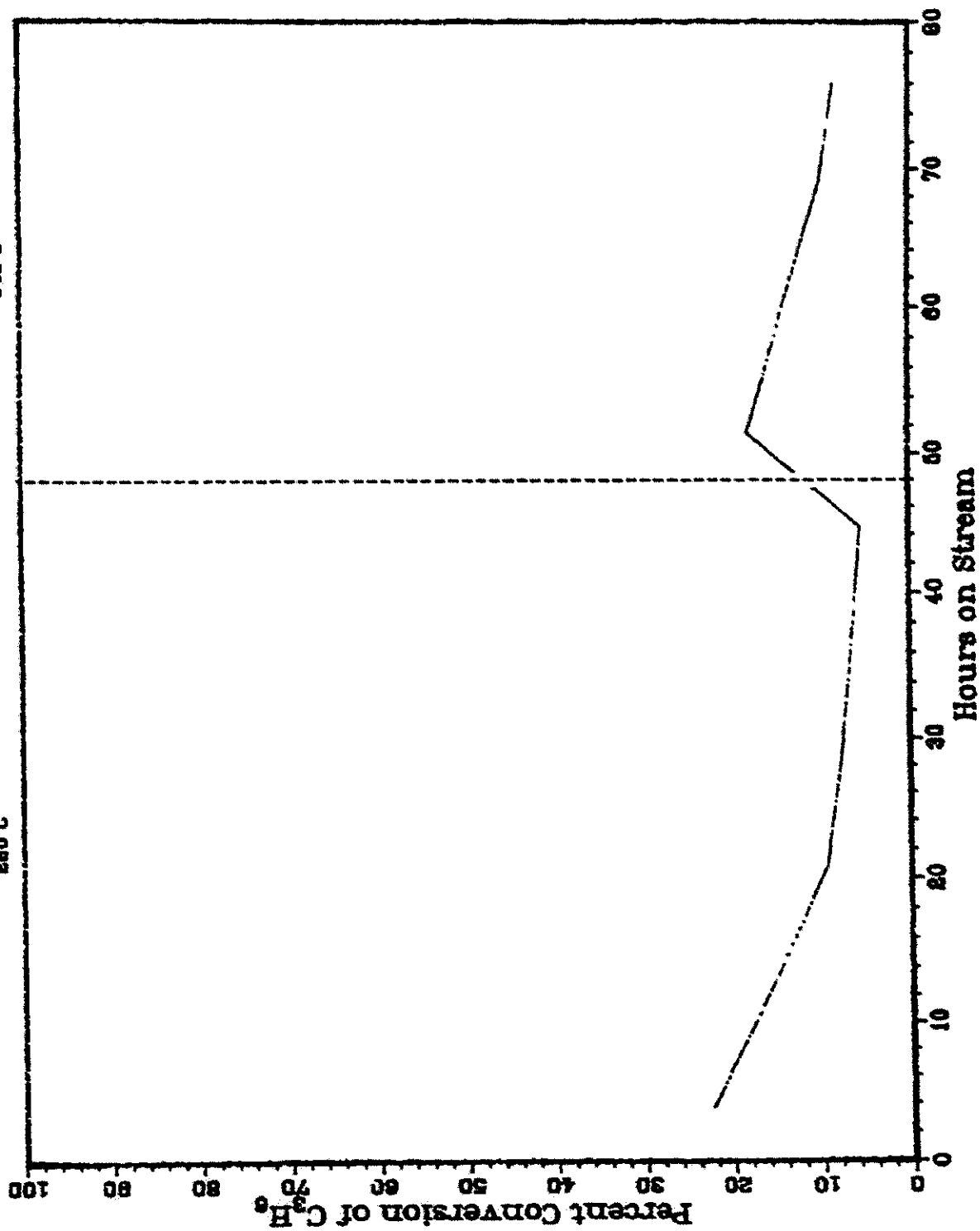


FIGURE 16

1011201

0.49 WHSV
150 PSIG
280°C

340°C

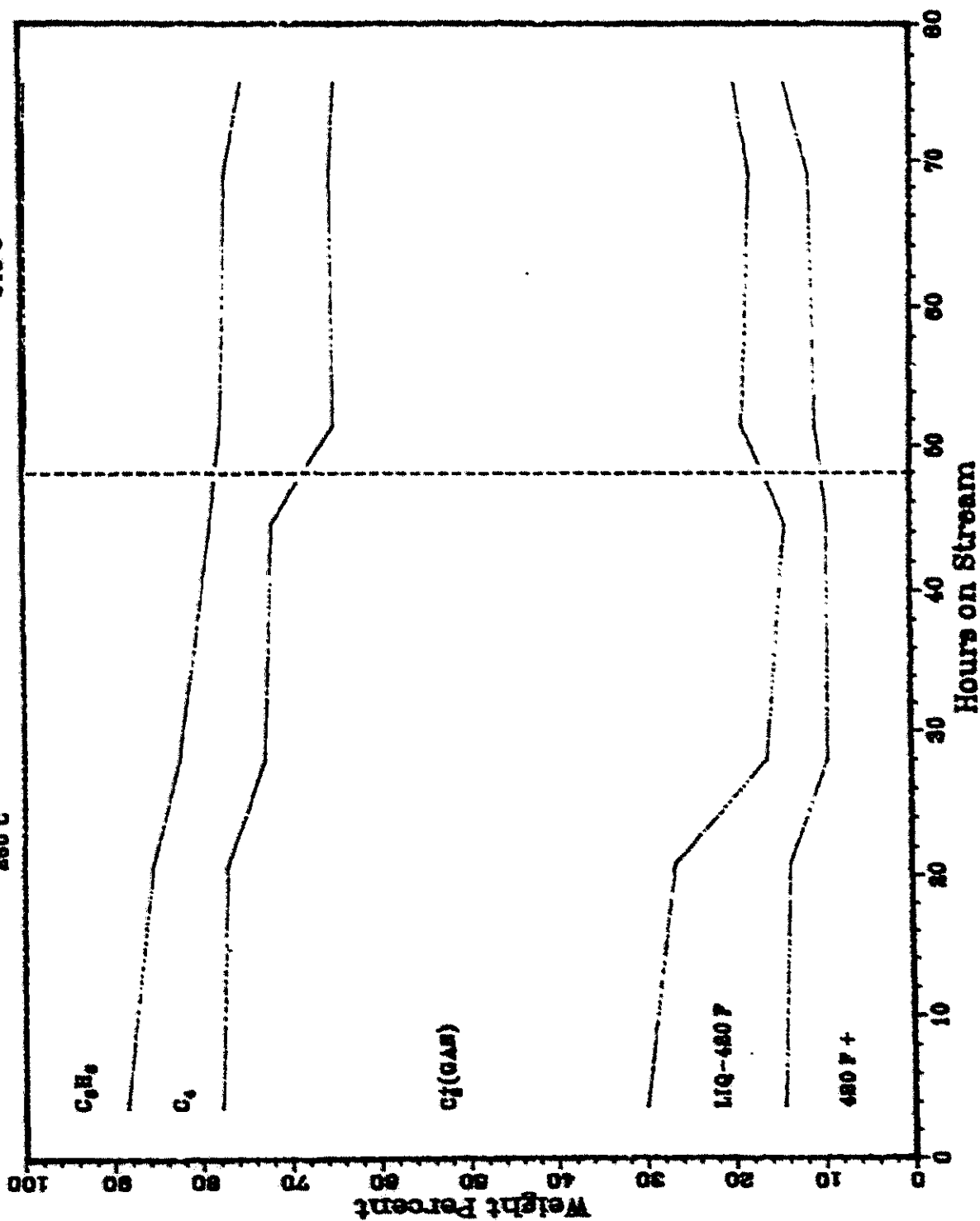


FIGURE 17

FIGURE 18

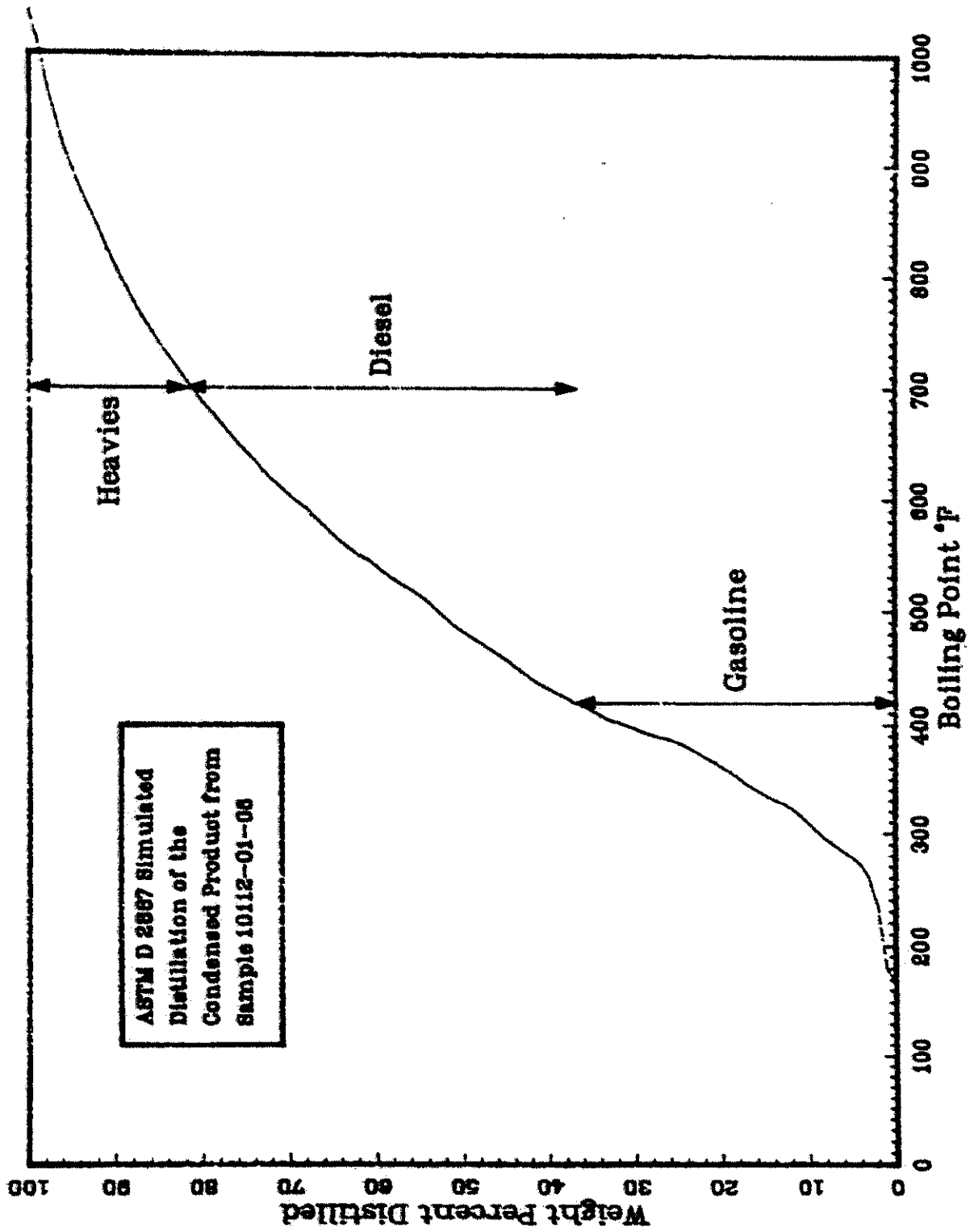


TABLE 4A

RESULT OF PROPYLENE OPERATION

RUN NO. 10112-01
 CATALYST UCC-109 #10042-75 54CC 35.0GM (39.29GM AFTER THE RUN, +4.29G)
 FEED H₂:C₃H₆:H₂O @ 1:1:2 MOLE RATIO 0.5 C₃H₆ WHSV, CONTINUOUS FEED
 C₃H₆ MW= 42.0813 DENSITY= 0.5087 GM/CC (@ 73 F)
 TARGET FLOW: C₃H₆ 34.3 CC/HR H₂ 168 CC/HR, 10.1 L/HR H₂O 15.0 CC/HR
 ACTUAL FLOW: 34.2 CC/HR EFFLUENT 18.2 L/HR AQ LAYR 14.1 CC/HR

RUN & SAMPLE NO.	10112-01-01	112-01-02	112-01-03	112-01-04	112-01-05
C ₃ H ₆ WHSV	0.49	0.50	0.47	0.51	0.50
HRS ON STREAM	3.67	20.84	28.01	44.51	51.43
PRESSURE, PSIG	154	153	146	145	146
TEMP. C	278	277	277	277	338
FEED C ₃ H ₆ CC	122.71	587.73	231.57	574.51	236.60
HOURS FEEDING	3.67	17.17	7.17	16.50	6.92
EFFLUENT GAS LITER	62.17	309.67	131.13	307.06	124.68
GM AQUEOUS LAYER	59.9	243.56	100.17	233.12	97.09
GM LIQ HYDROCARBON	4.28	7.74	1.57	2.28	4.32
WT FR. LIQ HC/FEED	0.0686	0.0259	0.0133	0.0078	0.0359
MATERIAL BALANCE WT %	106.62	104.23	107.87	102.23	106.40
C ₃ H ₆ CONVERSION %	22.53	9.34	7.74	5.40	18.04
PRDT SELECTIVITY, WT %					
CH ₄	0.01	0.00	0.00	0.00	0.11
C ₂ HC'S	0.08	0.06	0.06	0.05	0.39
C ₃ H ₈	11.37	14.39	17.40	21.06	21.92
C ₄ H ₁₀	7.44	4.42	4.93	3.67	7.80
C ₄ H ₈	3.27	4.02	4.76	3.34	4.85
C ₅ H ₁₂	7.98	4.31	4.26	3.82	5.81
C ₅ H ₁₀	1.20	0.11	0.08	0.90	3.19
C ₆ H ₁₄	11.63	9.93	10.27	9.59	7.98
C ₆ H ₁₂ & CYCLO'S	5.95	10.77	15.54	17.17	12.92
C ₇ + IN GAS	21.01	25.33	26.44	26.30	16.06
LIQ HC'S	30.06	26.66	16.25	14.10	18.96
TOTAL	100.00	100.00	100.00	100.00	100.00
SUB-GROUPING					
C1 -C4	22.17	22.89	27.15	28.12	35.08
C5 -420 F	63.31	63.43	63.42	62.57	54.30
420-700 F	12.68	10.42	7.05	6.61	7.54
700-END PT	1.83	3.25	2.37	2.69	3.07
C5+-END PT	77.83	77.11	72.85	71.88	64.92
ISO/NORMAL MOLE RATIO					
C4	10.8029	4.0518	2.8941	12.4444	5.4264
C5	41.9225	20.5263	37.3333	37.0625	9.0826
C6	26.2500	13.2470	12.6691	9.7647	9.6246
C4=	0.5430	0.6179	0.5959	0.7051	0.5333

PARAFFIN/OLEFIN RATIO					
C3	0.0320	0.0143	0.0141	0.0116	0.0468
C4	2.1941	1.0612	1.0000	1.0599	1.5522
C5	6.4384	39.5806	51.1111	4.1149	1.7669
LIQ HC COLLECTION					
PHYS. APPEARANCE	YL-GR OIL	YL-GR OIL	YL-GR OIL	YL-GR OIL	YL-GR OIL
DENSITY	0.838	0.838			0.879
N. REFRACTIVE INDEX	1.4770	1.4822			1.5095
SIMULT'D DISTILLATN					
10 WT % @ DEG F	245	283	311	327	276
16	273	308	342	364	300
50	414	425	452	493	450
84	623	661	684	725	702
90	663	726	758	777	776
RANGE(16-84 %)	350	353	342	361	402
WT % @ 420 F	51.7	48.7	42.0	34.0	44.0
WT % @ 700 F	93.9	87.8	85.4	80.9	83.8

TABLE 4B RESULT OF PROPYLENE OPERATION

RUN NO. 10112-01
 CATALYST UCC-109 #10042-75 54 CC 35.0 GM (39.3 AFTER RUN +4.3G)
 FEED H₂:C₃H₆:H₂O @ 1:1:2 MOLE RATIO, 0.5 C₃H₆ WHSV, CONTINUOUS FEED
 C₃H₆ MW= 42.0813 DENSITY= 0.5087 GM/CC (@ 73 F)
 TARGET FLOW: C₃H₆ 34.3 CC/HR H₂ 168 CC/HR, 10.1 L/HR H₂O 15.0 CC/HR
 ACTUAL FLOW: 34.2 CC/HR EFFLUENT 18.2 L/HR AQ LAYER 14.1 CC/HR

RUN & SAMPLE NO. 10112-01-06 112-01-07

	10112-01-06	112-01-07
C ₃ H ₆ WHSV	0.52	0.48
HRS ON STREAM	69.01	76.30
PRESSURE, PSIG	146	145
TEMP. C	338	338

FEED C ₃ H ₆ CC	626.74	216.35
HOURS FEEDING	17.58	6.50
EFFLUENT GAS LITER	327.86	121.93
GM AQUEOUS LAYER	247.57	90.83
GM LIQ HYDROCARBON	5.88	1.97
WT FR. LIQ HC/FEED	0.0184	0.0179

MATERIAL BALANCE WT %	102.95	110.00
C ₃ H ₆ CONVERSION %	9.85	8.35
PROD SELECTIVITY, WT %		

CH ₄	0.10	0.12
C ₂ HC'S	0.41	0.47
C ₃ H ₈	22.55	24.36
C ₄ H ₁₀	6.65	6.14
C ₄ H ₈ =	5.14	4.27
C ₅ H ₁₂	4.77	4.62
C ₅ H ₁₀ =	0.03	0.04
C ₆ H ₁₄	6.90	6.63
C ₆ H ₁₂ = & CYCLO'S	19.12	18.74
C ₇ + IN GAS	16.21	14.82
LIQ HC'S	18.12	19.77

TOTAL	100.00	100.00
SUB-GROUPING		
C1 -C ₄	34.84	35.37
C ₅ -420 F	53.74	50.56
420-700 F	8.05	9.85
700-END PT	3.37	4.23
C ₅ +--END PT	65.16	64.63

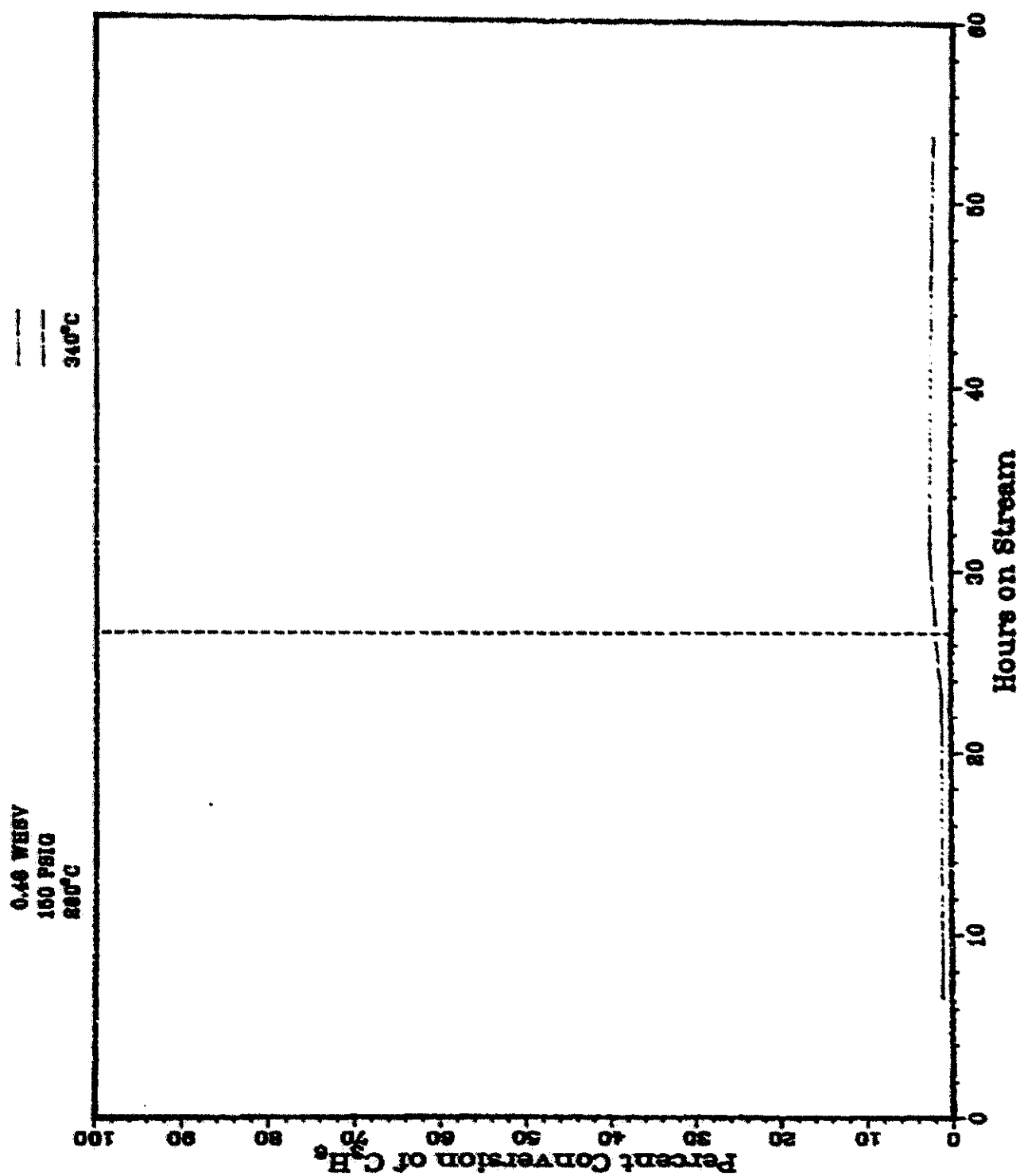
ISO/NORMAL MOLE RATIO		
C ₄	3.2213	4.3629
C ₅	9.8593	9.1121
C ₆	5.2756	4.6627
C ₄ =	0.5059	0.5441

PARAFFIN/OLEFIN RATIO		
C3	0.0239	0.0215
C4	1.2498	1.3898
C5	146.6000	106.6364
LIQ HC COLLECTION		
PHYS. APPEARANCE	YLW OIL	YLW OIL
DENSITY	0.902	
N. REFRACTIVE INDEX	1.5235	
SIMULT'D DISTILLATE		
10 WT % @ DEG F	309	344
16	340	380
50	482	517
84	728	754
90	807	839
RANGE(16-84 %)	388	374
WT % @ 420 F	37.0	28.8
WT % @ 700 F	81.4	78.6

Modified AlPO_4 -11, Run 9972-21

AlPO_4 -11, a recently announced new Union Carbide molecular sieve, was tested and found to have no activity for propylene oligomerization. This material was modified to try to introduce acidity into the AlPO_4 -11. The modification had no effect on activity as can be seen in figures 19 and 20. The results are detailed in Table 5. AlPO_4 -11 seems to have little capability to modify small olefins.

FIGURE 19



997221

0.48 WDSV
150 PSIG
250°C

340°C

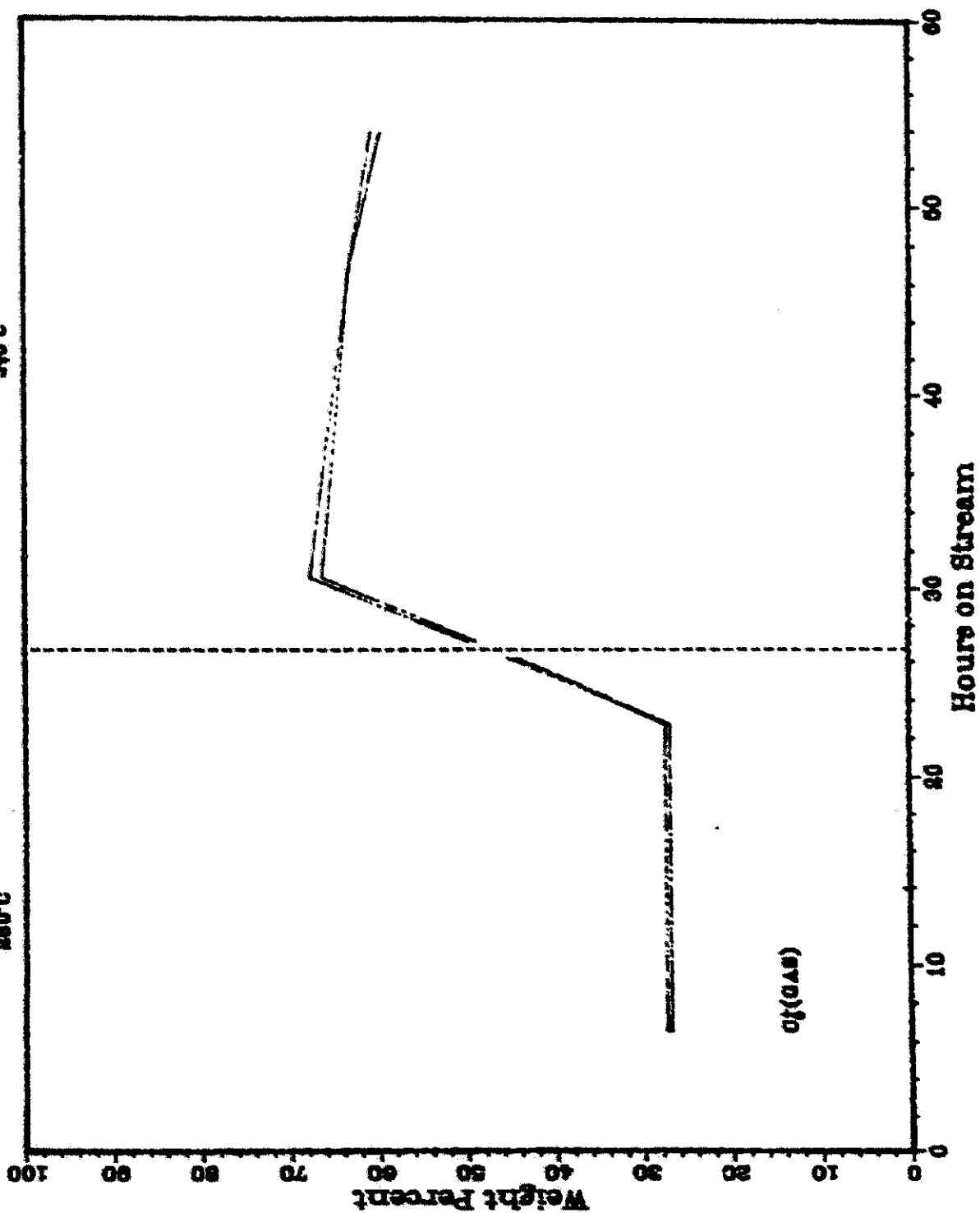


FIGURE 20

TABLE 5

RESULT OF PROPYLENE OPERATION

RUN NO. 9972-21
 CATALYST ALPO4-11 #10042-59 55CC 35.0GM (31.6GM AFTER THE RUN, -3.4G)
 FEED H2:C3H6:H2O @ 1:1:2 MOLE RATIO, 0.5 C3H6 WHSV, CONTINUOUS FEED
 C3H6 MW= 42.0813 DENSITY= 0.5087 GM/CC (@ 73 F)
 TARGET FLOW: C3H6 34.3 CC/HR H2 168 CC/HR, 10.1 L/HR H2O 15.0 CC/HR
 ACTUAL FLOW: 34.5 CC/HR EFFLUENT 18.4 L/HR AQ LAYER 14.3 CC/HR

RUN & SAMPLE NO.	9972-21-01	972-21-02	972-21-03	972-21-04	972-21-05
C3H6 WHSV	0.46	0.51	0.50	0.52	0.48
HRS ON STREAM	6.58	22.75	30.58	46.75	53.75
PRESSURE, PSIG	154	151	150	150	149
TEMP. C	280	280	340	340	340
FEED C3H6 CC	210.17	571.37	268.06	573.88	229.68
HOURS FKKDING	6.58	16.17	7.83	16.17	7.00
EFFLUENT GAS LITER	121.90	298.85	143.89	297.57	126.49
GM AQUEOUS LAYER	89.77	238.01	115.49	228.33	98.28
GM LIQ HYDROCARBON	0.00	0.00	0.00	0.00	0.00
WT FR. LIQ HC/FEED	0.0000	0.0000	0.0000	0.0000	0.0000
MATERIAL BALANCE WT %	118.98	105.01	106.00	97.79	100.02
C3H6 CONVERSION %	1.06	1.06	2.46	2.29	2.16
PRDT SELECTIVITY, WT %					
CH4	0.00	0.00	0.00	0.00	0.00
C2 HC'S	0.00	0.00	0.23	0.00	0.34
C3H8	72.50	72.50	32.00	36.82	38.97
C4H10	0.51	0.51	0.35	0.00	0.00
C4H8=	0.00	0.00	1.01	0.00	1.13
C5H12	0.00	0.00	0.17	0.00	0.26
C5H10+	0.00	0.00	0.00	0.00	0.00
C6H14	0.61	0.61	4.91	3.00	6.50
C6H12+ & CYCLO'S	16.78	16.78	53.18	52.69	44.86
C7+ 1N GAS	9.60	9.60	8.15	7.49	7.95
LIQ HC'S	0.00	0.00	0.00	0.00	0.00
TOTAL	100.00	100.00	100.00	100.00	100.00
SUB-GROUPING					
C1 -C4	73.01	73.01	33.59	36.82	40.43
C5 -420 F	26.99	26.99	66.41	63.18	59.57
420-700 F	0.00	0.00	0.00	0.00	0.00
700-END PT	0.00	0.00	0.00	0.00	0.00
C5+ END PT	26.99	26.99	66.41	63.18	59.57
ISO/NORMAL MOLE RATIO					
C4	0.0000	0.0000	0.0000	0.0000	0.0000
C5	0.0000	0.0000	0.0000	0.0000	0.0000
C6	0.0000	0.0000	0.4905	0.0000	0.7059
C4=	0.0000	0.0000	0.8485	0.0000	0.7529

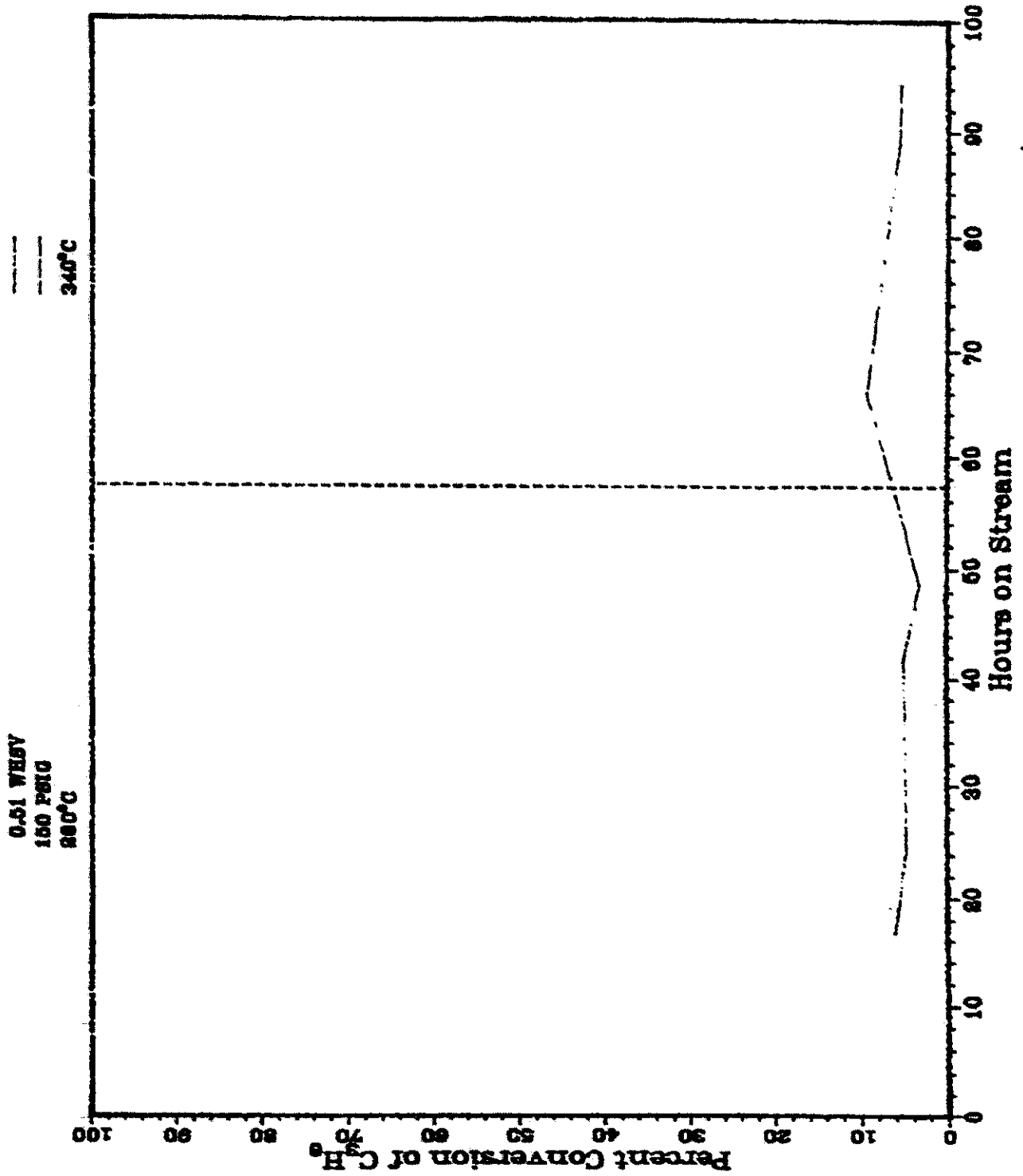
PARAFFIN/OLEFIN RATIO					
C3	0.0077	0.0077	0.0078	0.0084	0.0084
C4	0.0000	0.0000	0.3333	0.0000	0.0000
C5	0.0000	0.0000	0.0000	0.0000	0.0000
LIQ HC COLLECTION					
PHYS. APPEARANCE	---	---	---	---	---
DENSITY	---	---	---	---	---
N, REFRACTIVE INDEX	---	---	---	---	---
SIMULT'D DISTILLATN					
10 WT % @ DEG F	---	---	---	---	---
16	---	---	---	---	---
50	---	---	---	---	---
84	---	---	---	---	---
90	---	---	---	---	---
RANGE(16-84 %)					
WT % @ 420 F	---	---	---	---	---
WT % @ 700 F	---	---	---	---	---

LZ-Y-82, Run 9972-19

LZ-Y-82 is the acid form of ultrastable Y zeolite. Figure 21 shows that it has little activity for propylene conversion. The activity of this material is again limited by rapid coking of the strongly acidic sites. Figure 22 shows propane to be a major product along with some C₄'s, the products of cracking. Very little of the hydrocarbon product was condensed to liquid. The detailed material balances and product selectivities are given in Tables 6A and 6B. The refractive index of sample 1 shows the liquid does contain significant amounts of aromatics.

Because of the low activity and rapid coking of this catalyst, LZ-Y-82 is not an important Task 1 catalyst. Again the strong acid may be useful in certain Task 2 catalysts.

FIGURE 21



997219