Fig. 61

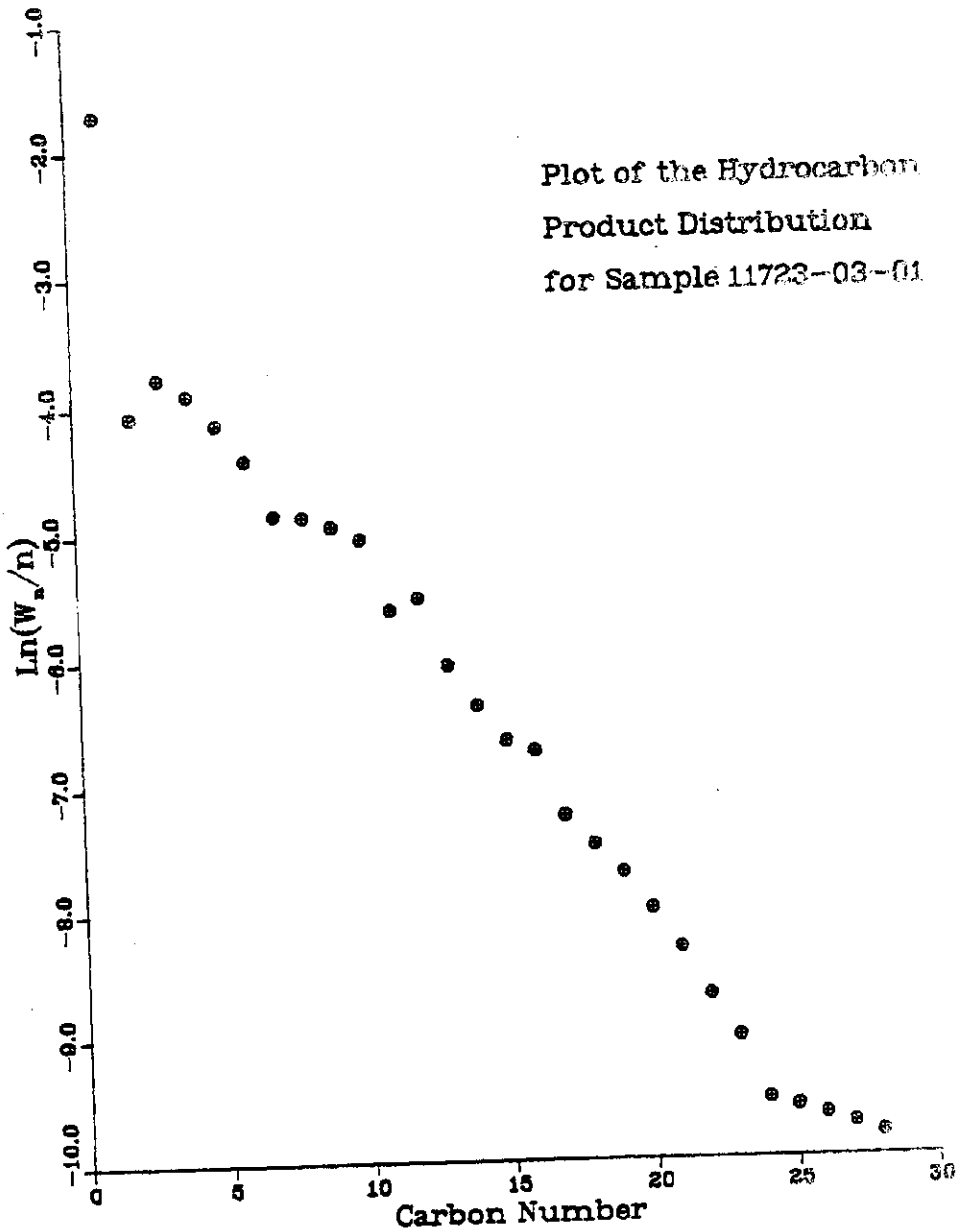
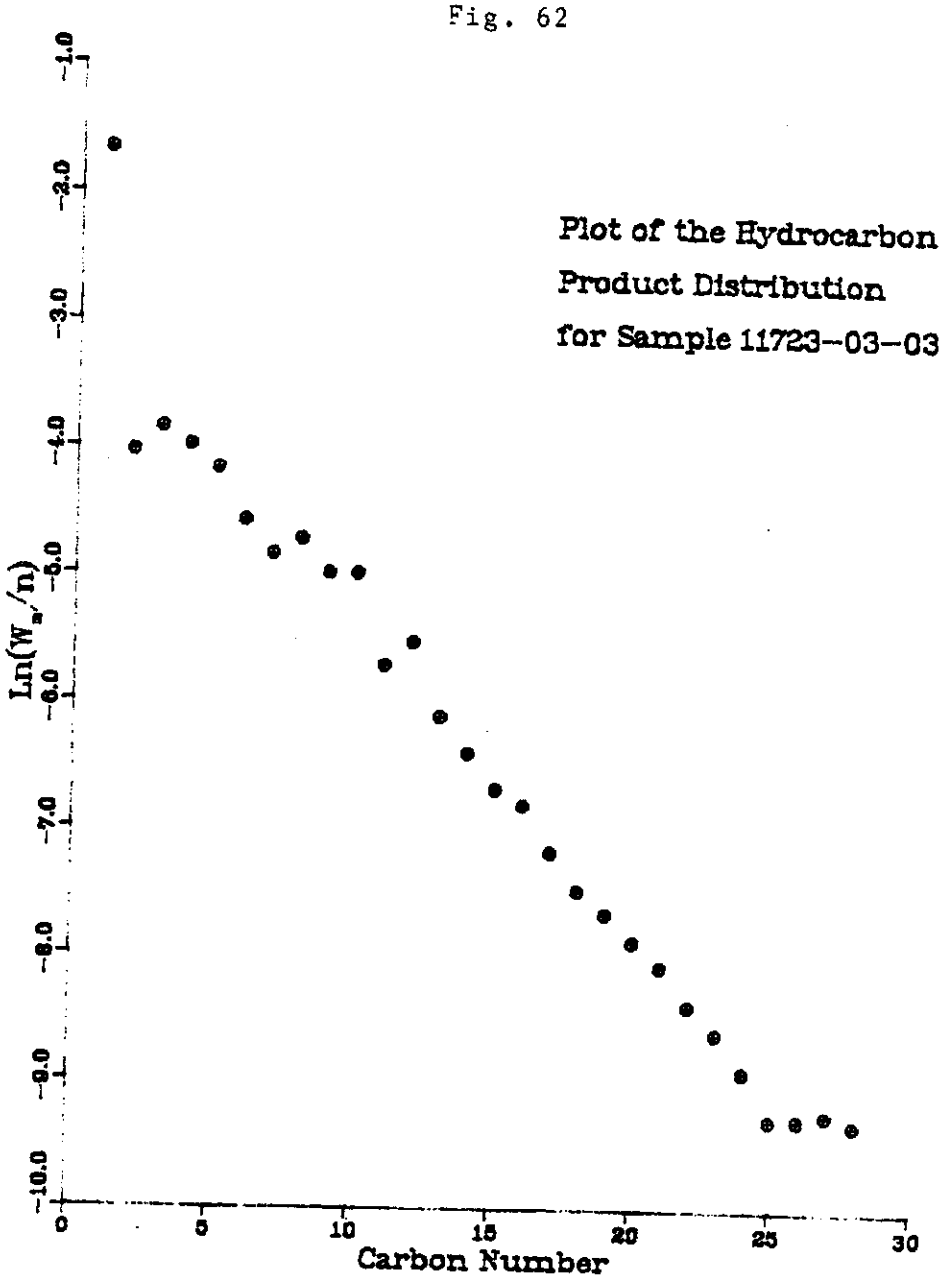

Plot of the Hydrocarbon
Product Distribution
for Sample 11723-03-01
Ln(W_n/n)
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
0
5
10
15
20
25
30
Carbon Number

Fig. 62



Plot of the Hydrocarbon Product Distribution for Sample 11723-03-03

Fig. 63

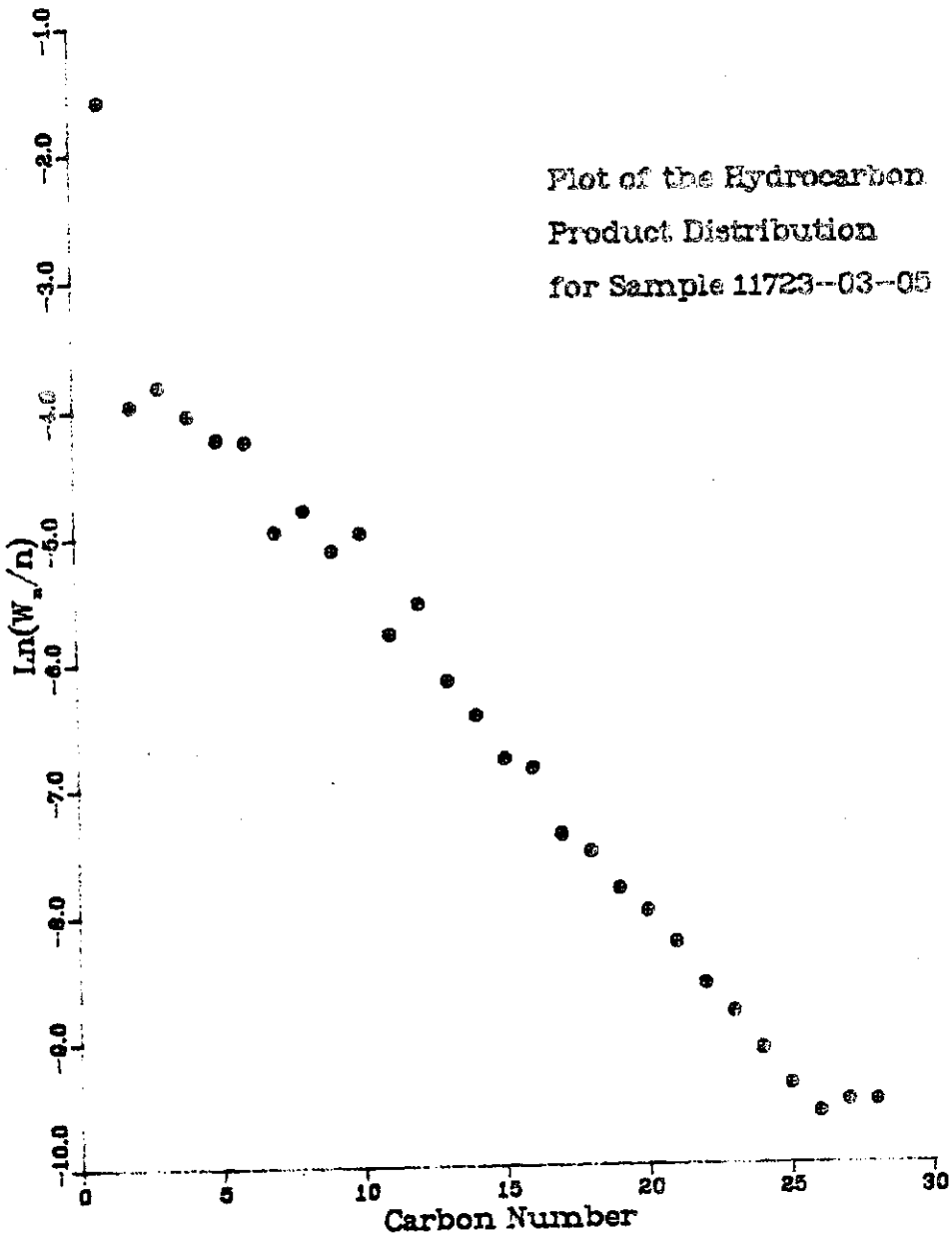

Plot of the Hydrocarbon
Product Distribution
for Sample 11723--03--05
Ln(W_n/n)
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
0
5
10
15
20
25
30
Carbon Number

Fig. 64

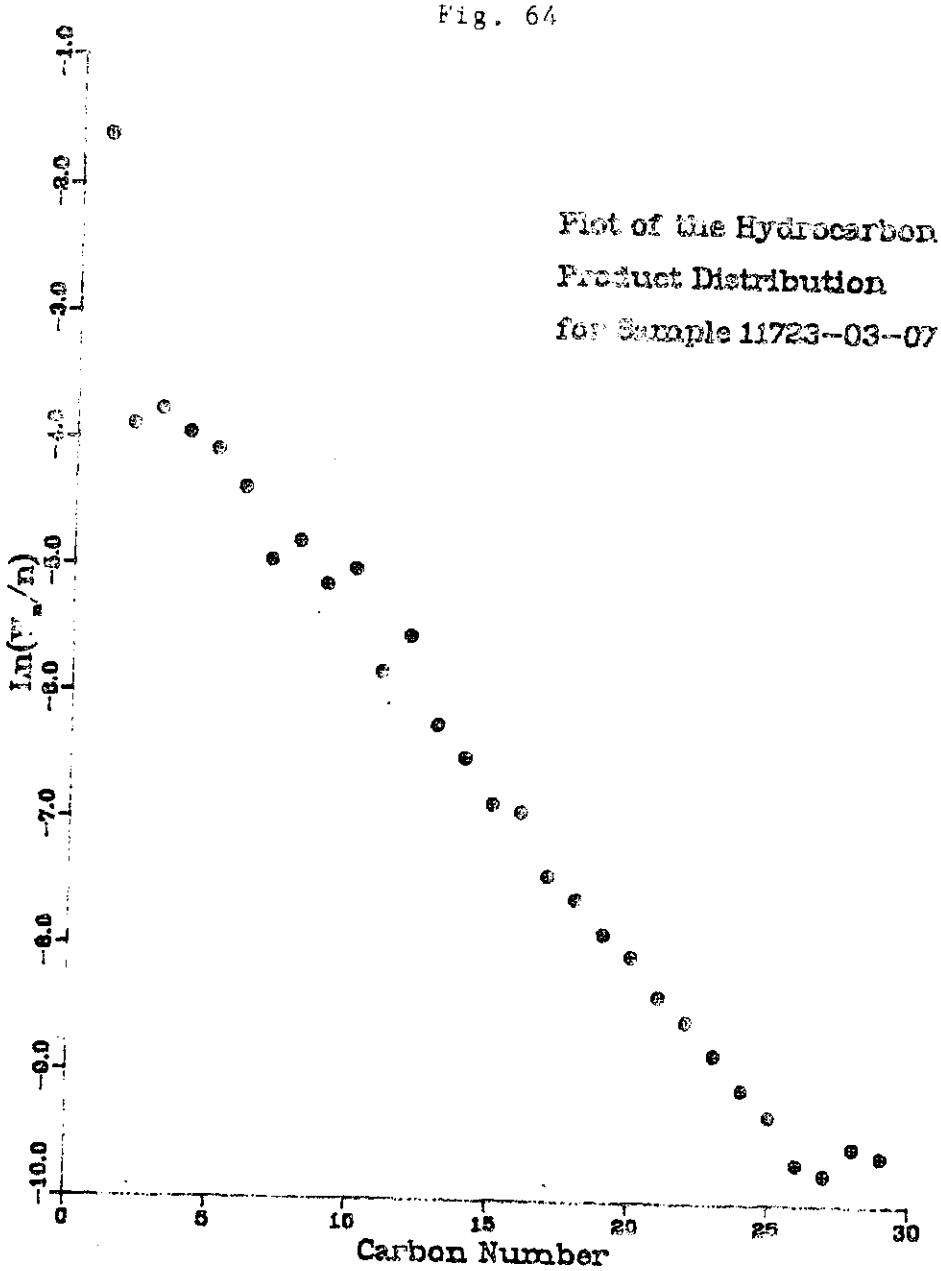

Plot of the Hydrocarbon
Product Distribution
for Sample 11723--03--07
ln(Y_n/n)
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
0
5
10
15
20
25
30
Carbon Number

Fig. 65

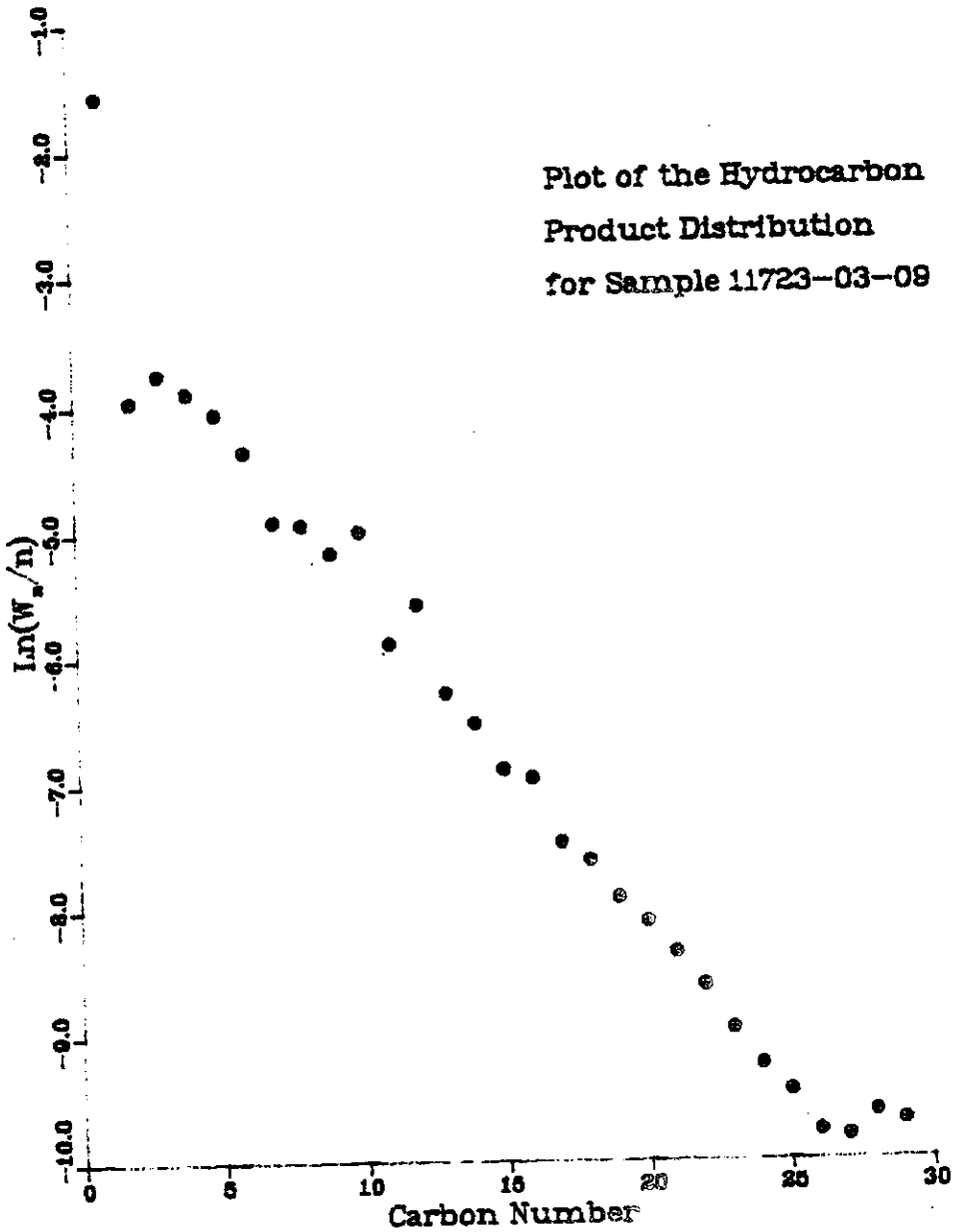

Plot of the Hydrocarbon
Product Distribution
for Sample 11723-03-09
ln(W_n/n)
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
0
5
10
15
20
25
30
Carbon Number

Fig. 66

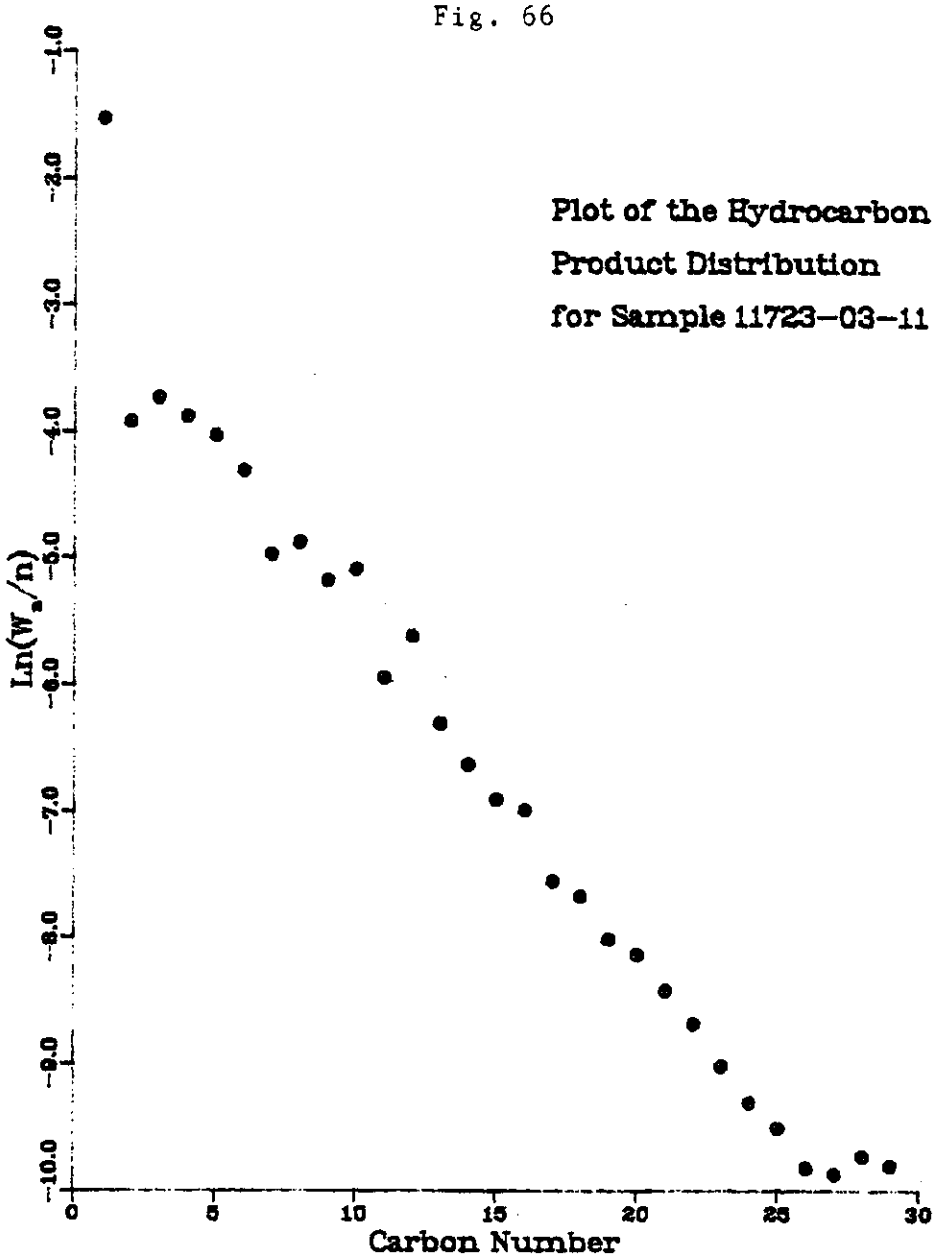

Plot of the Hydrocarbon
Product Distribution
for Sample 11723-03-11
Ln(W_n/n)
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
0
5
10
15
20
25
30
Carbon Number

Fig. 67

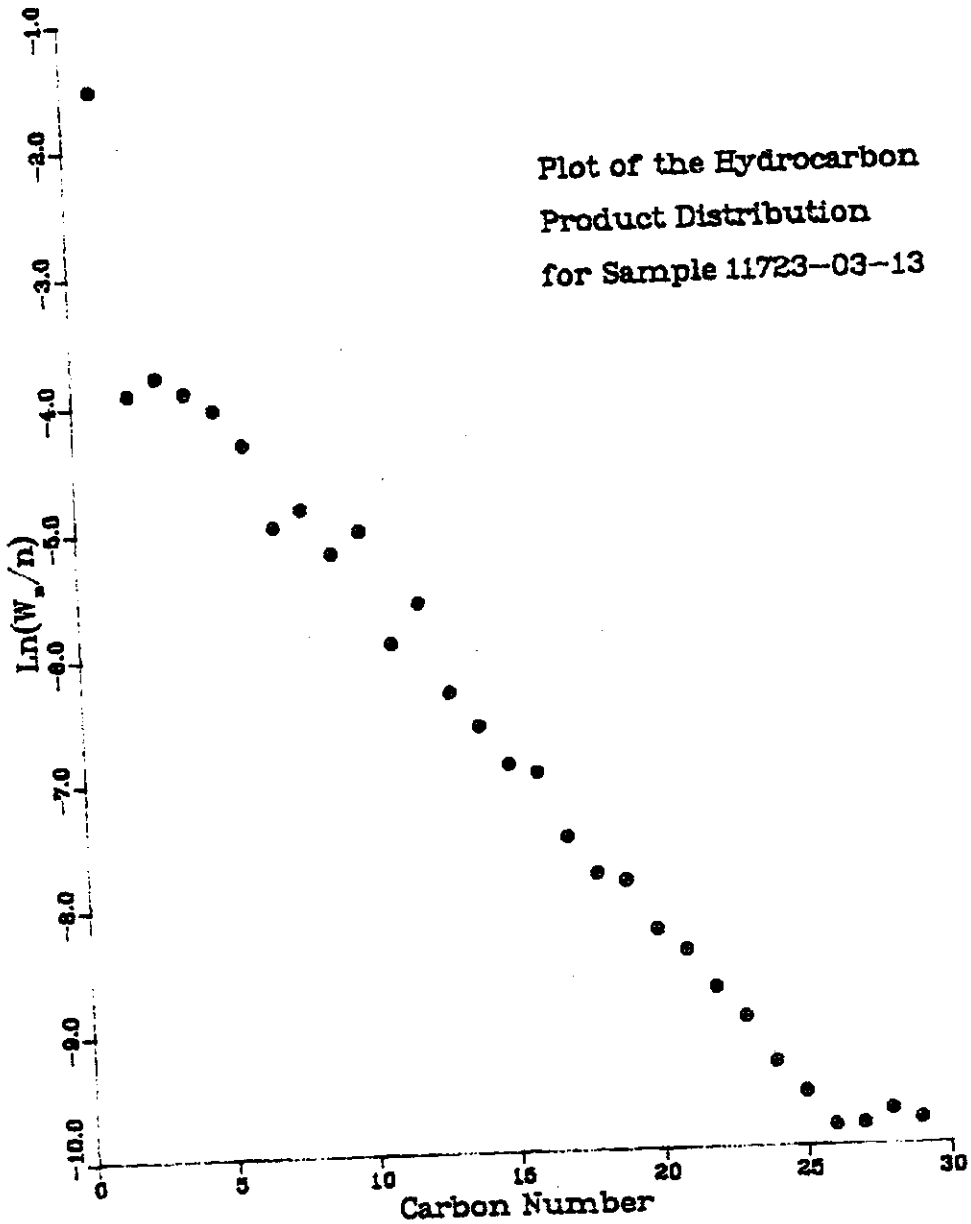
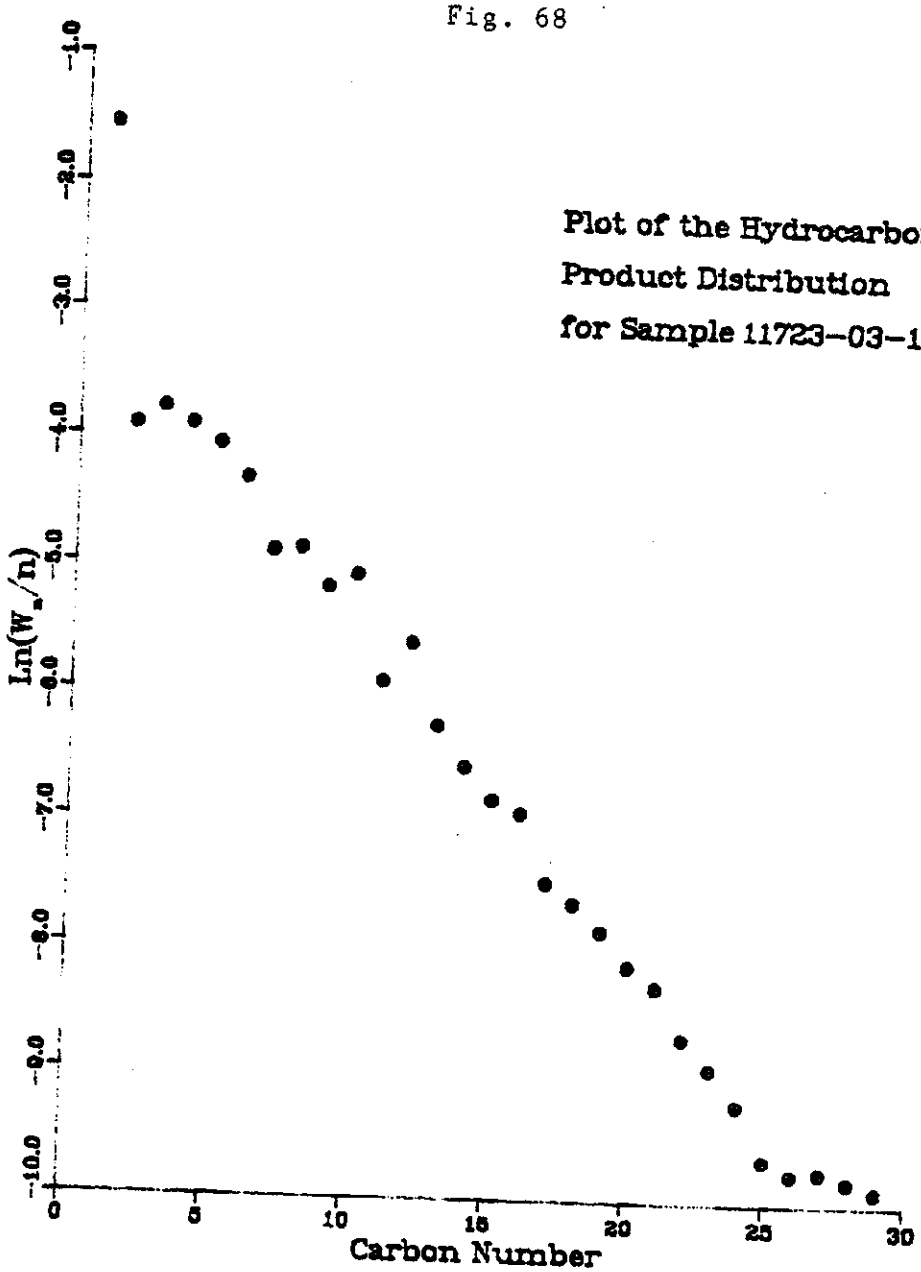

Plot of the Hydrocarbon
Product Distribution
for Sample 11723-03-13
Ln(W_n/n)
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
0
5
10
15
20
25
30
Carbon Number

Fig. 68



Plot of the Hydrocarbon Product Distribution for Sample 11723-03-15

Fig. 69

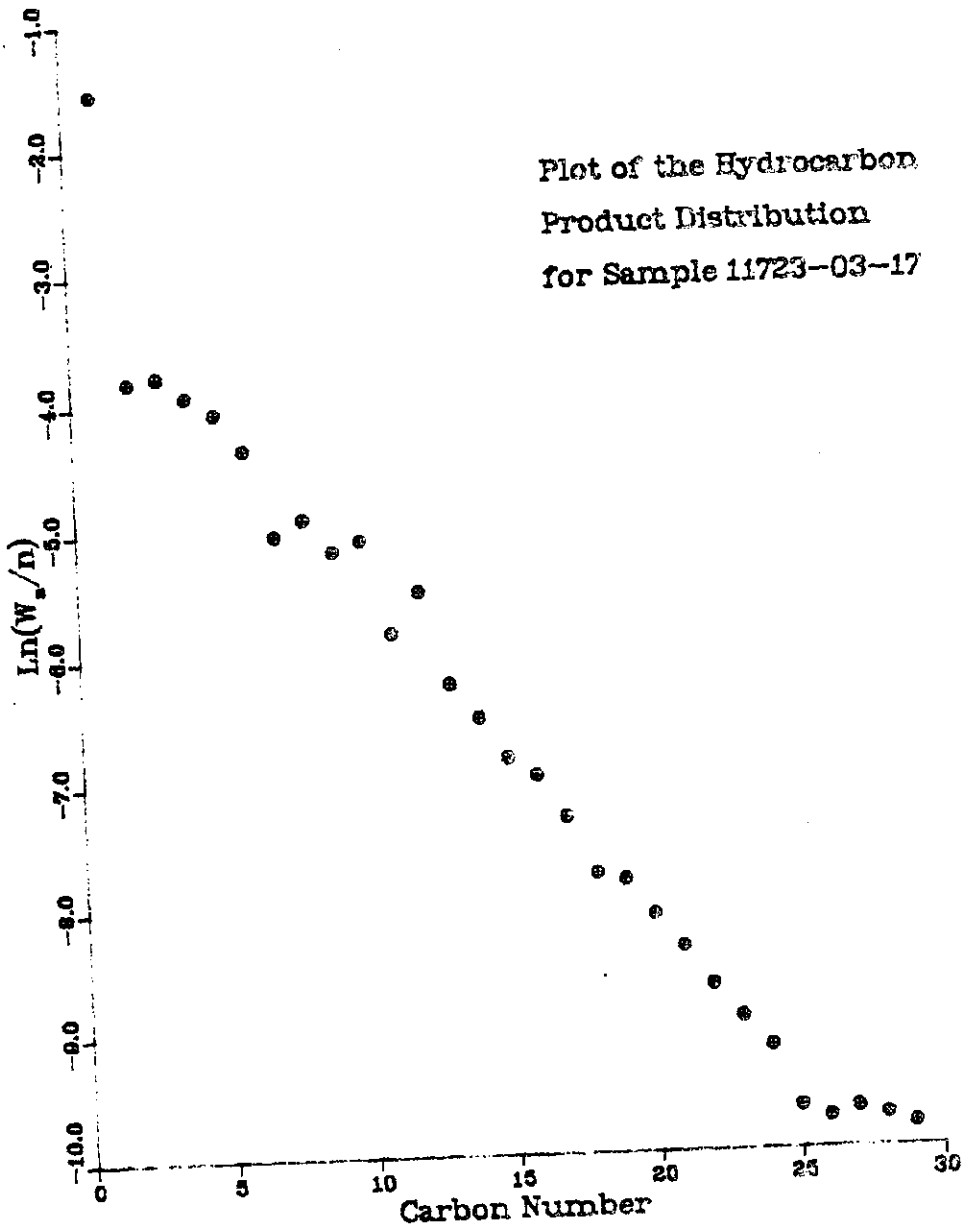

Plot of the Hydrocarbon
Product Distribution
for Sample 11723-03-17
Ln(W_n/n)
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
0
5
10
15
20
25
30
Carbon Number

Fig. 70

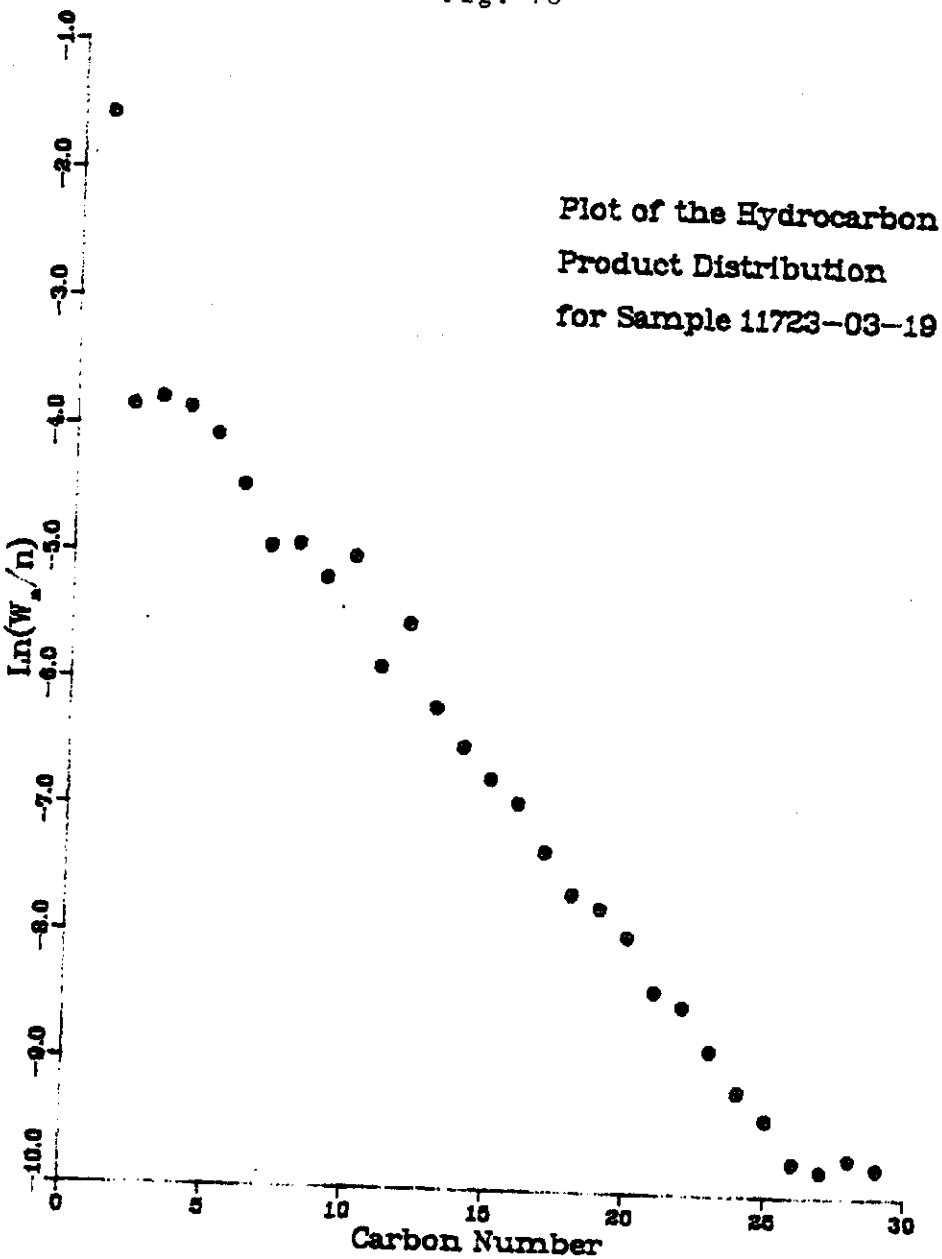

Plot of the Hydrocarbon
Product Distribution
for Sample 11723-03-19
Ln(W_n/n)
-1.0
-2.0
-3.0
-4.0
-5.0
-6.0
-7.0
-8.0
-9.0
-10.0
0
5
10
15
20
25
30
Carbon Number

Fig. 71

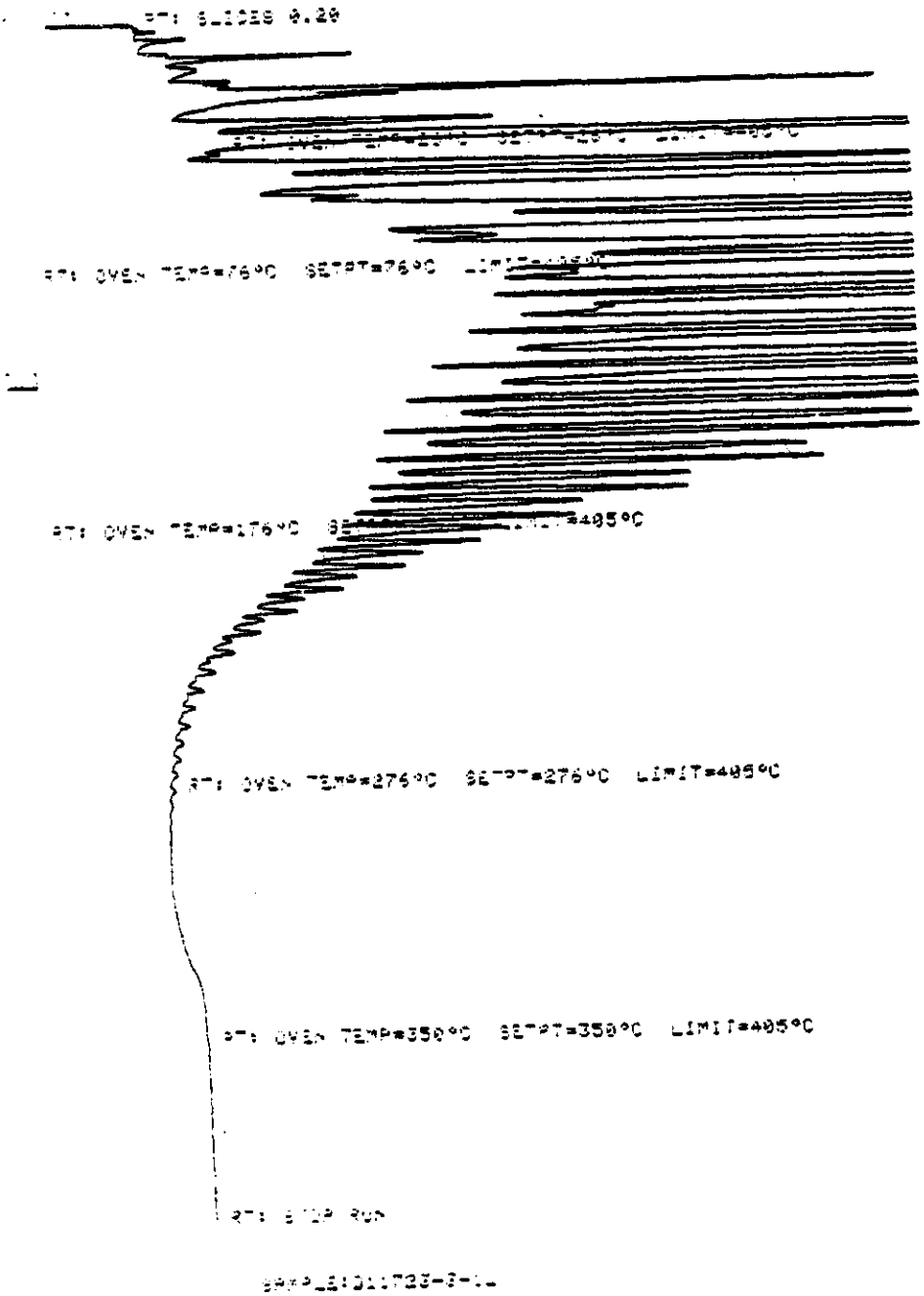

OVEN TEMP=76°C SETPT=76°C
OVEN TEMP=176°C
=405°C
OVEN TEMP=276°C SETPT=276°C LIMIT=405°C
OVEN TEMP=350°C SETPT=350°C LIMIT=405°C

Fig. 72

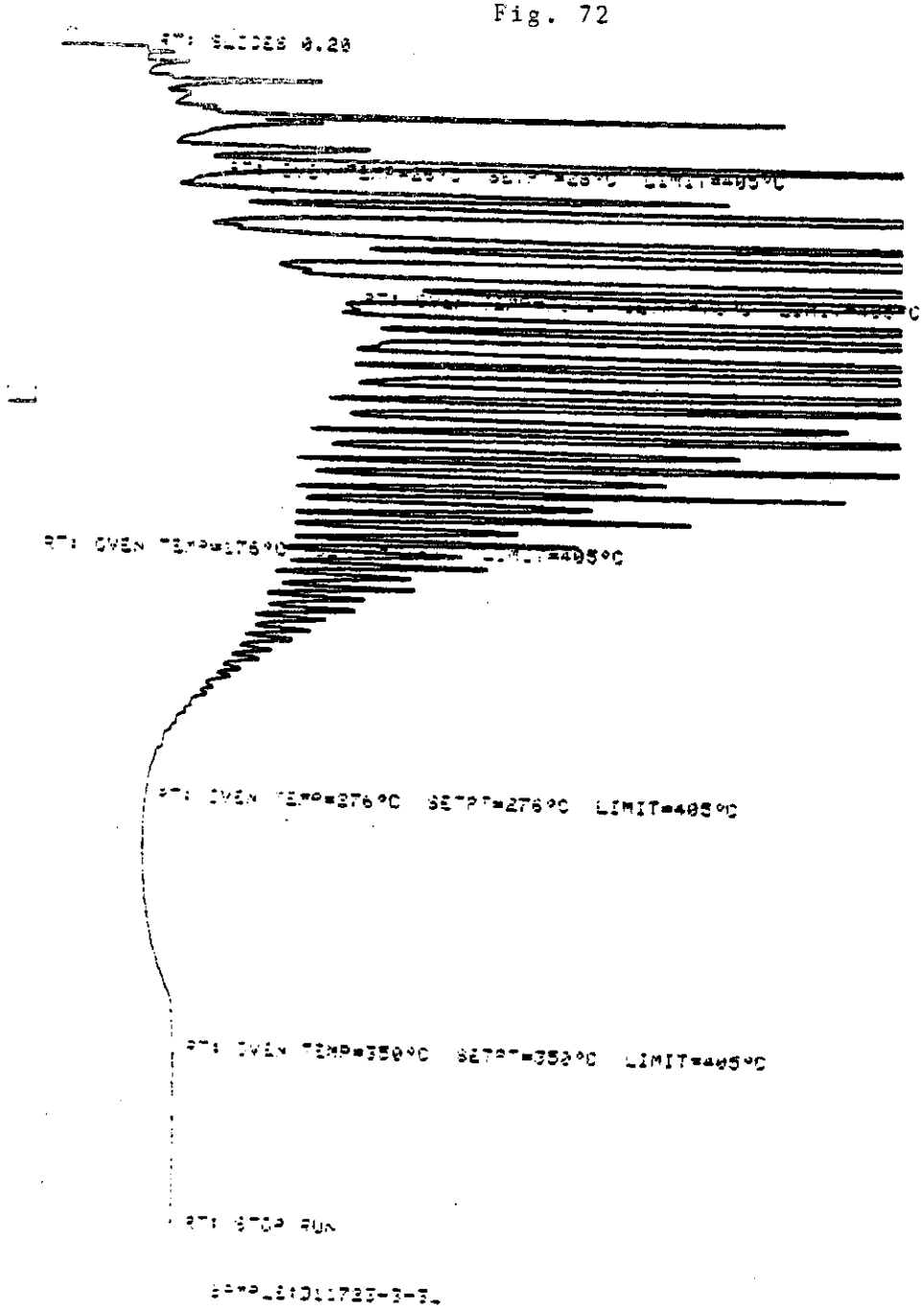

LIMIT=405°C
OVEN TEMP=176°C
LIMIT=405°C
OVEN TEMP=276°C SETPT=276°C LIMIT=405°C
OVEN TEMP=350°C SETPT=350°C LIMIT=405°C
STOP RUN

Fig. 73

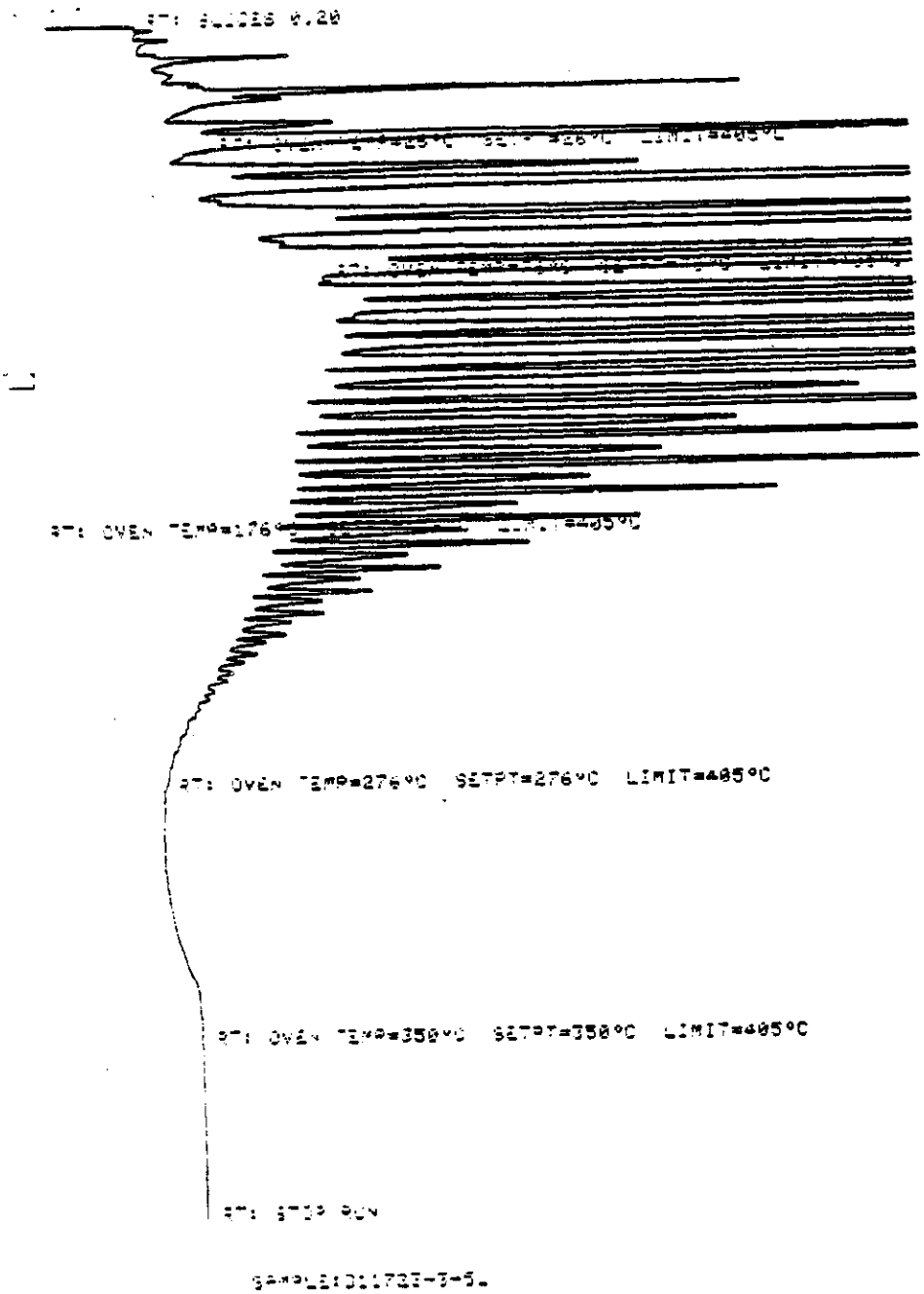

OVEN TEMP=276°C SETPT=276°C LIMIT=405°C
OVEN TEMP=350°C SETPT=350°C LIMIT=405°C

Fig. 74

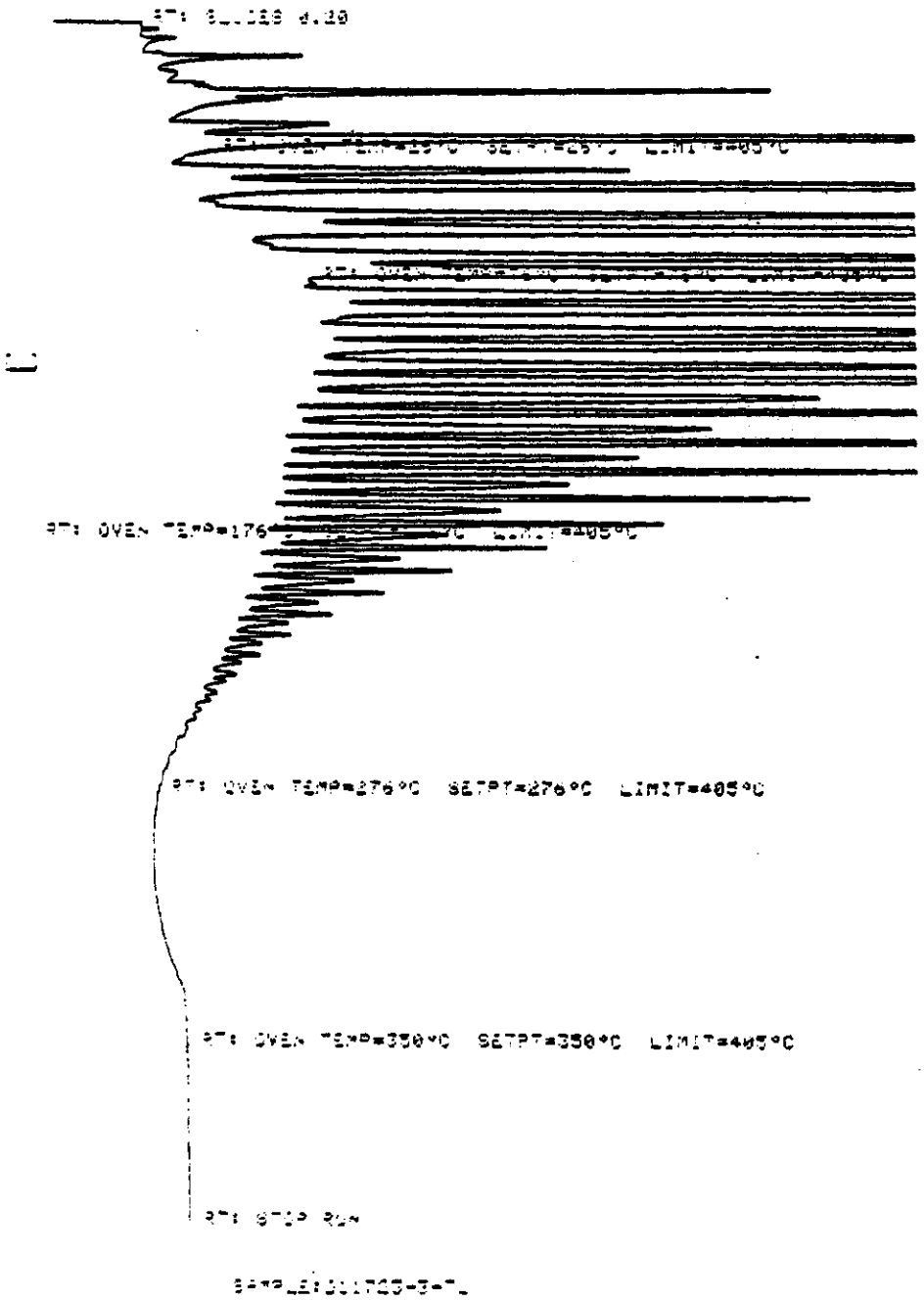

OVEN TEMP=276°C SETPT=276°C LIMIT=405°C
OVEN TEMP=350°C SETPT=350°C LIMIT=405°C

Fig. 75

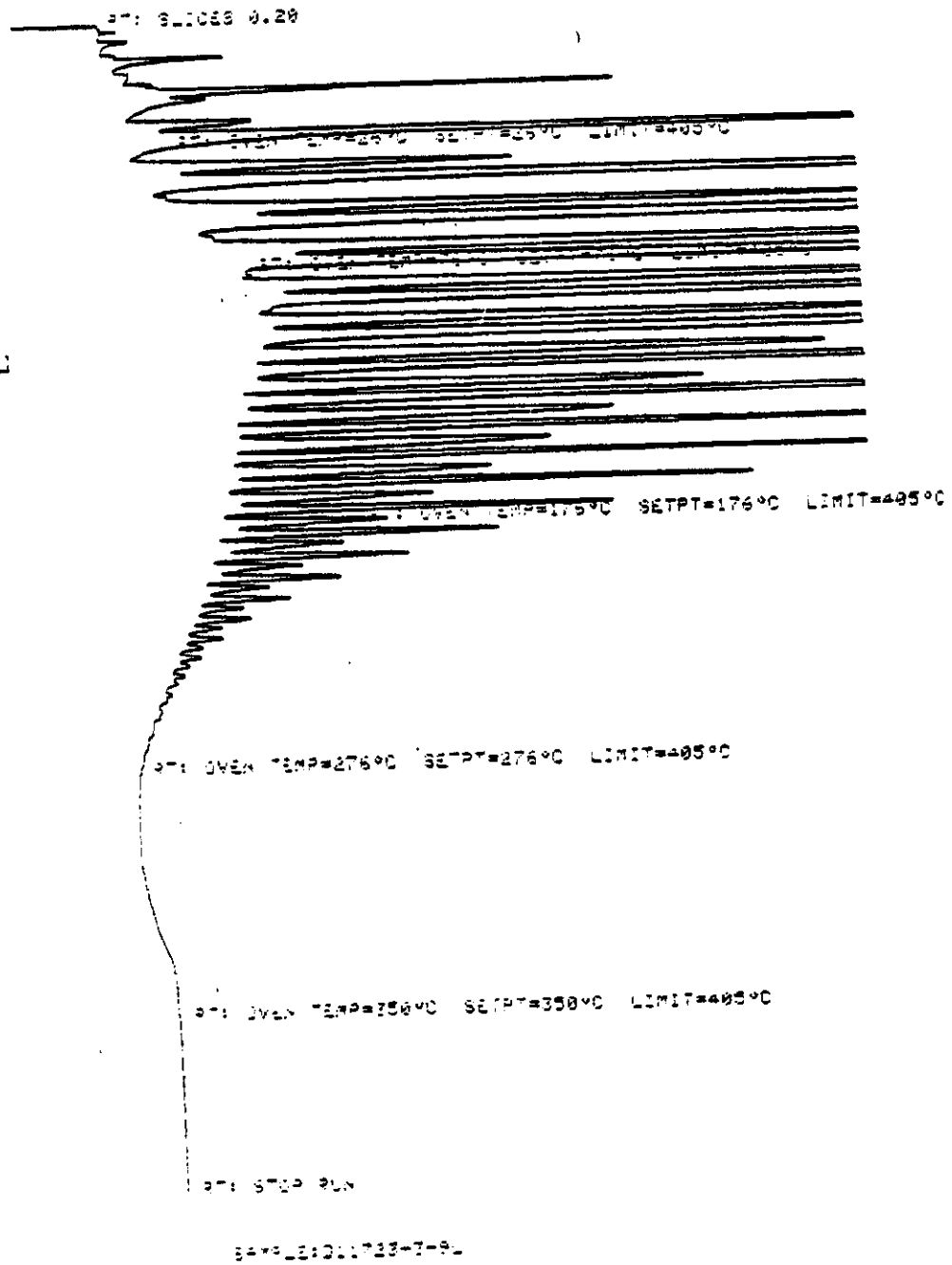

SETPT=176°C LIMIT=405°C
SETPT=276°C LIMIT=405°C
SETPT=350°C LIMIT=405°C

Fig. 76

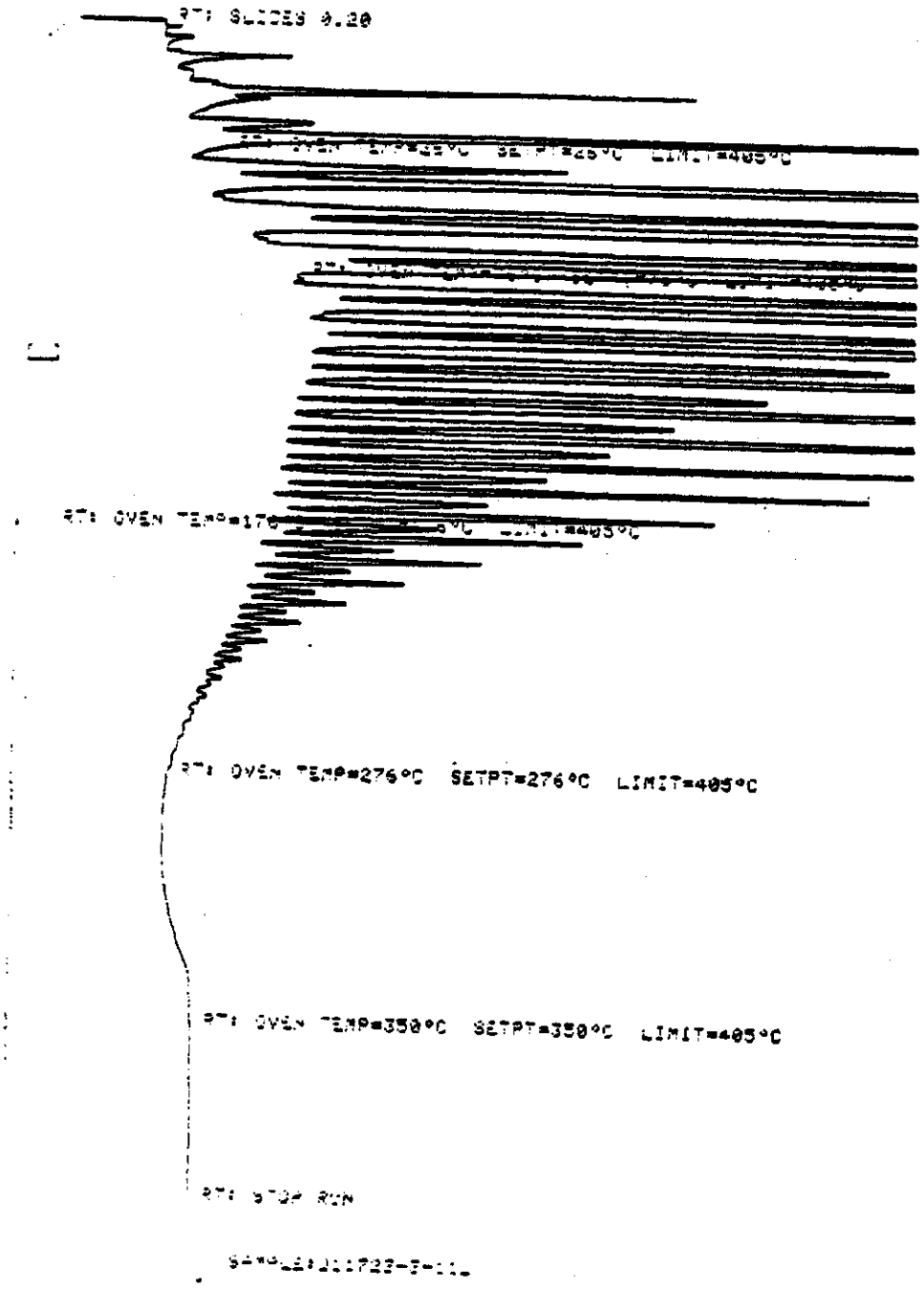

SLIDES 0.20
OVEN TEMP=276°C SETPT=276°C LIMIT=405°C
OVEN TEMP=350°C SETPT=350°C LIMIT=405°C
STOP RUN

Fig. 77

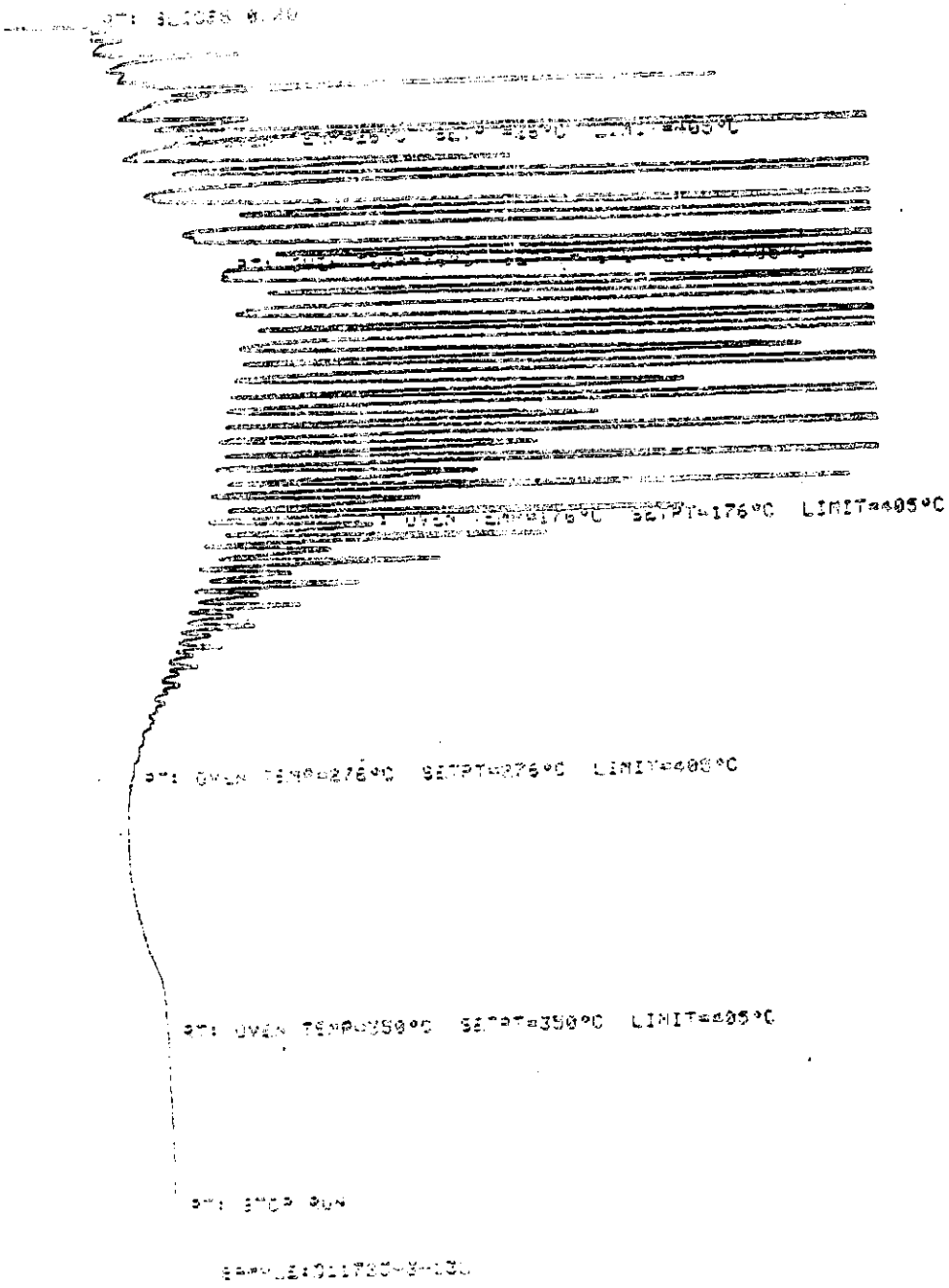


Fig. 78

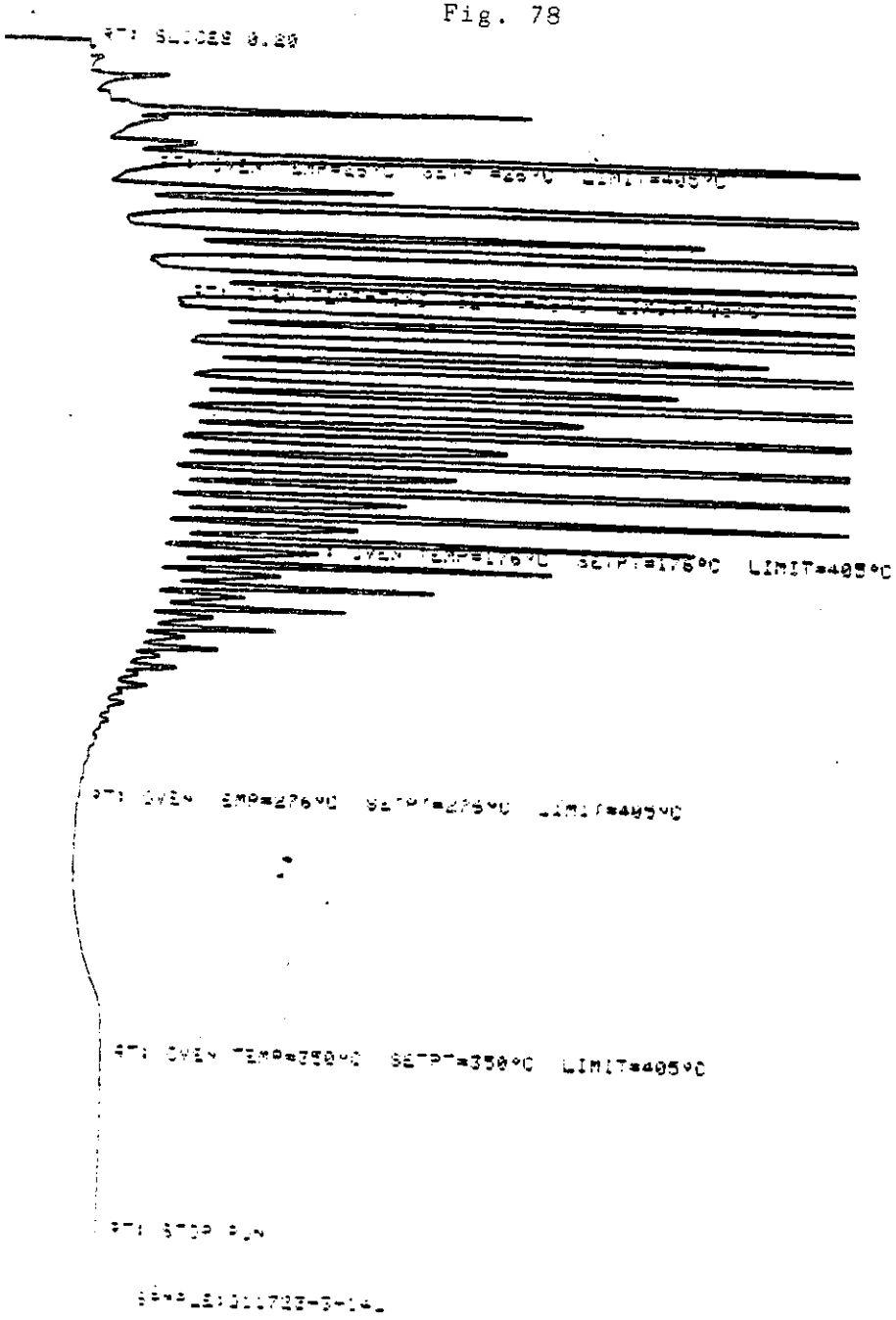


Fig. 79

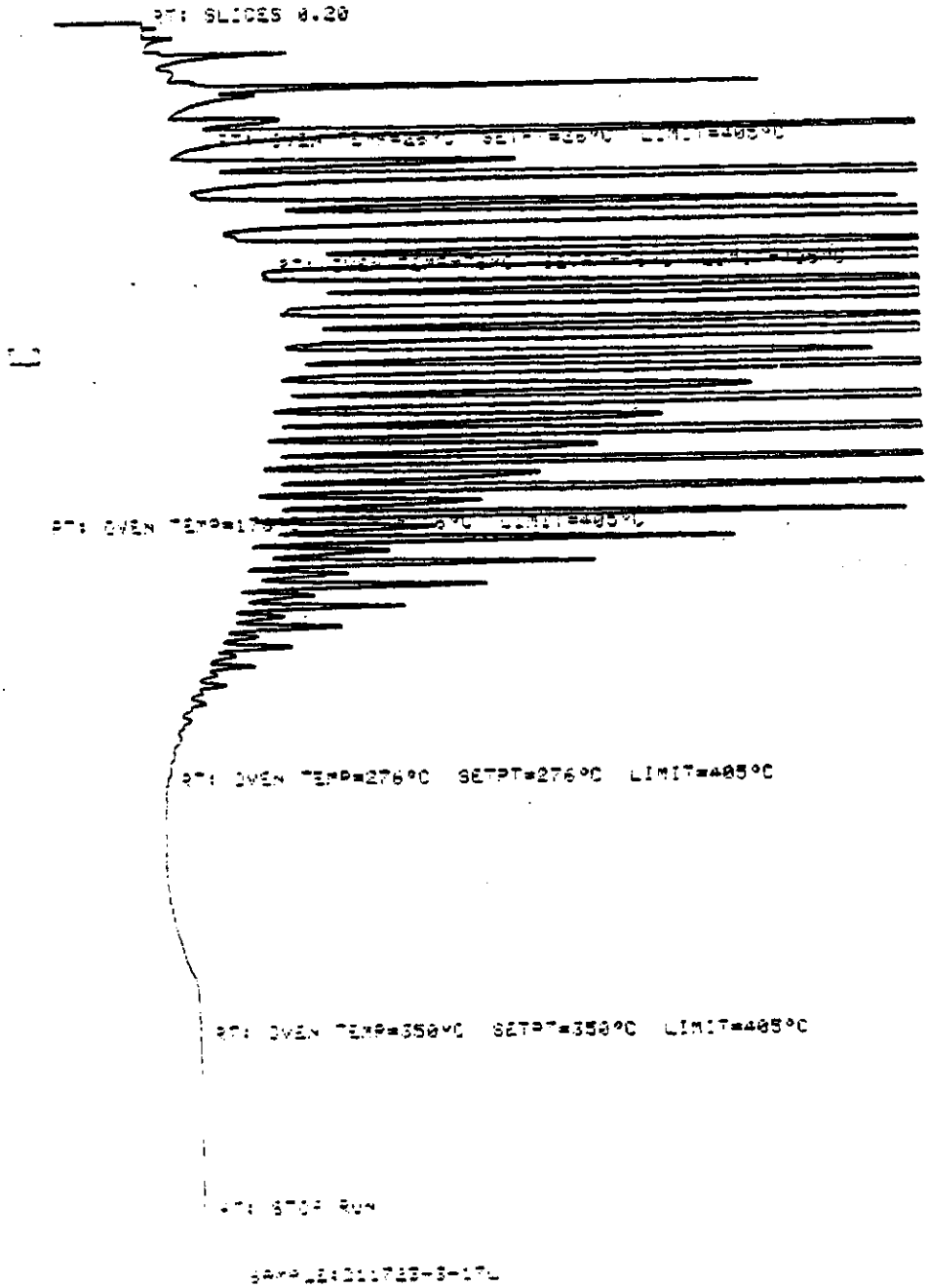

SLICES 0.20
OVEN TEMP=276°C SETPT=276°C LIMIT=405°C
OVEN TEMP=350°C SETPT=350°C LIMIT=405°C
STOP RUN

Fig. 80

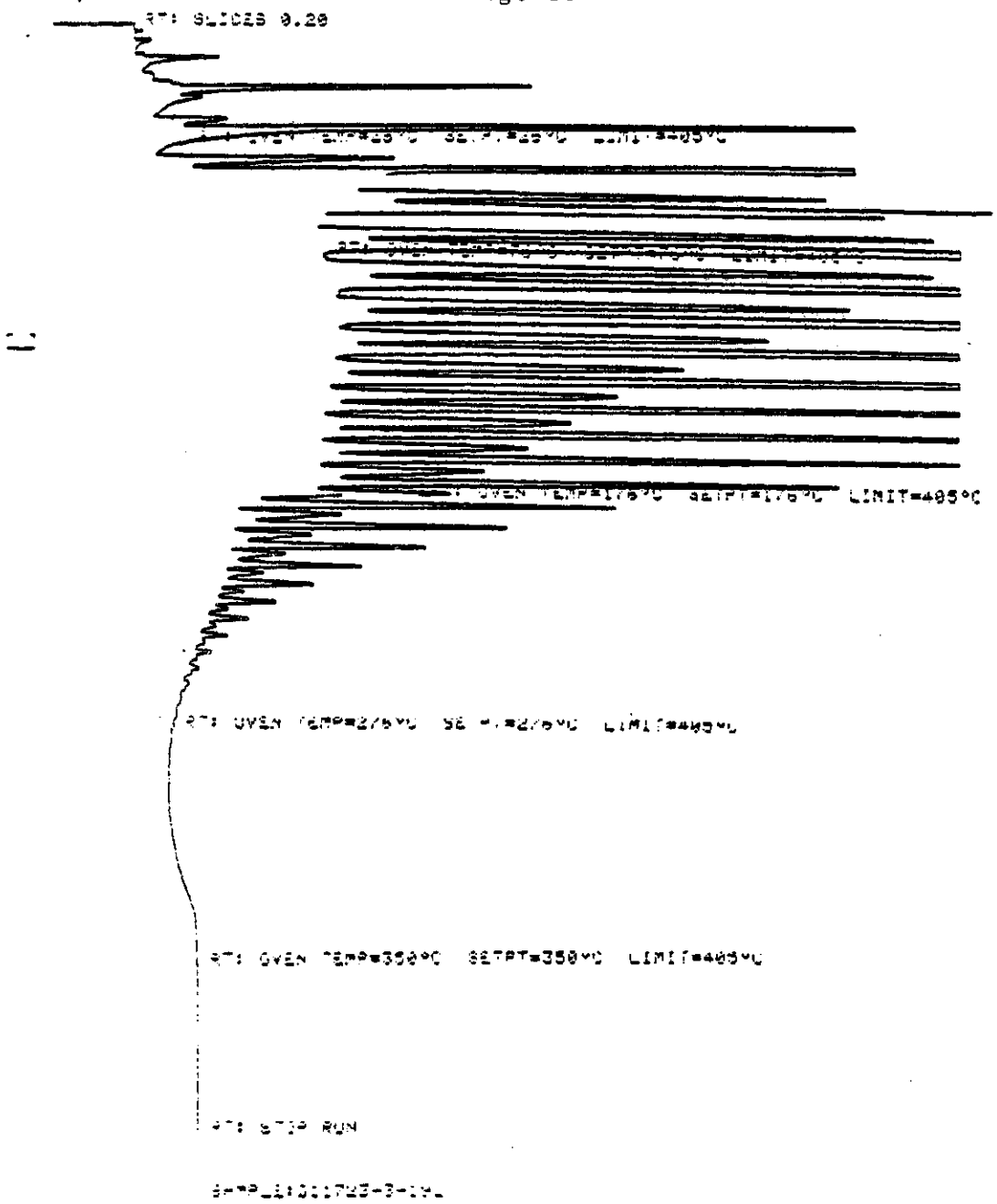

SLICES 0.20
LIMIT=405°C
OVEN TEMP=350°C SETPT=350°C LIMIT=405°C
STOP RUN

TABLE 12 RESULT OF SYNGAS OPERATION

RUN NO. 11723-03
CATALYST CO/TH+UCC-103+UCC-108 #11684-33C 80 CC 37.6 GM
FEED H2:CO:ARGON OF 50:50: 0 @ 400 CC/MN OR 300 GHSV

	11723-03-01	723-03-02	723-03-03	723-03-04	723-03-05
FEED H2:CO:AR	50:50: 0	50:50: 0	50:50: 0	50:50: 0	50:50: 0
HRS ON STREAM	22.0	29.0	48.0	54.0	71.5
PRESSURE,PSIG	302	304	297	302	298
TEMP. C	272	273	272	273	272
FEED CC/MIN	400	400	400	400	400
HOURS FEEDING	22.00	7.00	26.00	6.00	23.50
EFFLNT GAS LITER	209.00	65.45	250.60	49.45	236.05
GM AQUEOUS LAYER	65.03	20.29	75.38	16.26	63.68
GM OIL	24.18	7.53	27.98	5.57	21.82
MATERIAL BALANCE					
GM ATOM CARBON %	91.23	89.11	90.42	76.85	89.82
GM ATOM HYDROGEN %	99.42	97.32	98.72	87.45	96.45
GM ATOM OXYGEN %	93.85	92.08	92.44	81.06	91.36
RATIO CHX/(H2O+CO2)	0.9389	0.9291	0.9509	0.8880	0.9601
RATIO X IN CHX	2.4441	2.4555	2.4622	2.4606	2.4973
USAGE H2/CO PRODT	1.6922	1.6964	1.7478	1.7640	1.7701
RATIO CO2/(H2O+CO2)	0.1883	0.1871	0.1695	0.1546	0.1675
K SHIFT IN EFFLNT	0.08	0.08	0.08	0.07	0.08
CONVERSION					
ON CO %	52.86	52.49	50.90	50.98	48.33
ON H2 %	84.32	84.12	83.28	83.27	81.08
ON CO+H2 %	69.27	69.00	67.80	68.16	65.29
PRDT SELECTIVITY,WT %					
CH4	18.11	18.81	19.03	18.91	20.41
C2 HC'S	3.44	3.61	3.55	3.52	3.79
C3H8	4.93	4.80	4.93	4.77	5.02
C3H6=	1.98	1.49	1.51	1.45	1.58
C4H10	4.25	3.94	4.06	4.03	4.26
C4H8=	3.87	3.40	3.38	3.25	3.35
C5H12	4.04	3.84	4.00	4.01	4.34
C5H10=	4.01	3.86	3.74	2.84	2.90
C6H14	4.10	4.21	4.39	5.04	5.49
C6H12= & CYCLO'S	2.77	2.69	1.38	2.41	2.67
C7+ IN GAS	10.22	10.71	11.54	10.90	11.18
LIQ HC'S	38.28	38.64	38.50	38.89	35.01
TOTAL	100.00	100.00	100.00	100.00	100.00

SUB-GROUPING					
C1 -C4	36.58	36.06	36.45	35.92	38.41
C5 -420 F	48.56	48.29	47.96	48.29	47.37
420-700 F	13.90	14.23	14.18	14.31	12.88
700-END PT	0.96	1.42	1.41	1.48	1.33
C5+-END PT	63.42	63.94	63.55	64.08	61.59
ISO/NORMAL MOLE RATIO					
C4	0.0702	0.0508	0.0427	0.0430	0.0410
C5	0.1164	0.1019	0.0946	0.0903	0.0859
C6	0.2783	0.2592	0.2185	0.4442	0.4148
C4=	0.1468	0.1406	0.1424	0.1442	0.1428
PARAFFIN/OLEFIN RATIO					
C3	2.3780	3.0834	3.1208	3.1500	3.0379
C4	1.0600	1.1172	1.1603	1.1958	1.2277
C5	0.9786	0.9671	1.0394	1.3749	1.4521
SCHULZ-FLORY DISTRBTN					
ALPHA (EXP(SLOPE))	0.7724		0.7900		0.7844
RATIO CH4/(1-A)**2	3.4955		4.3157		4.3907
LIQ HC COLLECTION					
PHYS. APPEARANCE	CLDY OIL		CLDY OIL		CLR OIL
DENSITY	0.736		0.746		0.748
N, REFRACTIVE INDEX	1.4213		1.4204		1.4198
SIMULT'D DISTILATN					
10 WT % @ DEG F	250		255		256
16	264		266		285
50	386		388		388
84	540		558		555
90	590		615		612
RANGE(16-84 %)	276		292		270
WT % @ 420 F	61.20	59.50	59.50	59.40	59.40
WT % @ 700 F	97.50	96.33	96.33	96.19	96.19

TABLE 13 RESULT OF SYNGAS OPERATION

RUN NO. 11723-03
CATALYST CO/TH+UCC-103+UCC-108 #11684-33C 80 CC 37.6 GM
FEED H2:CO:ARGON OF 50:50: 0 @ 400 CC/MN OR 300 GHSV

	11723-03-06	723-03-07	723-03-08	723-03-09	723-03-10
FEED H2:CO:AR	50:50: 0	50:50: 0	50:50: 0	50:50: 0	50:50: 0
HRS ON STREAM	78.0	95.5	102.0	119.5	126.0
PRESSURE,PSIG	307	311	305	304	306
TEMP. C	272	272	272	272	272
FEED CC/MIN	400	400	400	400	400
HOURS FEEDING	6.50	24.00	6.50	24.00	6.50
EFFLNT GAS LITER	65.70	244.50	57.90	242.90	69.20
GM AQUEOUS LAYER	18.51	68.36	17.74	65.50	18.00
GM OIL	6.04	22.31	5.41	19.98	5.04
MATERIAL BALANCE					
GM ATOM CARBON %	90.78	92.03	80.75	88.91	92.02
GM ATOM HYDROGEN %	99.01	99.49	89.95	96.37	98.60
GM ATOM OXYGEN %	93.16	93.71	84.62	90.89	94.31
RATIO CHX/(H2O+CO2)	0.9408	0.9579	0.8971	0.9481	0.9406
RATIO X IN CHX	2.4937	2.4946	2.4905	2.5135	2.5278
USAGE H2/CO PRODT	1.7766	1.7896	1.7971	1.8118	1.8149
RATIO CO2/(H2O+CO2)	0.1617	0.1588	0.1474	0.1518	0.1520
K SHIFT IN EFFLNT	0.08	0.07	0.07	0.07	0.07
CONVERSION					
ON CO %	48.69	48.51	48.69	47.08	45.95
ON H2 %	81.45	81.82	82.42	80.55	79.94
ON CO+H2 %	65.78	65.81	66.46	64.49	63.53
PRDT SELECTIVITY,WT %					
CH4	20.10	20.06	19.89	20.97	21.47
C2 HC'S	3.77	4.12	4.09	3.84	4.02
C3H8	5.22	5.30	5.25	5.36	5.66
C3H6=	1.67	1.66	1.64	1.74	1.69
C4H10	4.29	4.33	4.29	4.59	4.65
C4H8=	3.41	3.40	3.38	3.58	3.69
C5H12	4.41	4.80	4.76	4.98	5.14
C5H10=	2.96	3.66	3.63	3.70	3.77
C6H14	5.69	4.88	4.84	5.07	5.28
C6H12= & CYCLO'S	2.50	2.34	2.32	2.37	2.47
C7+ IN GAS	11.65	11.62	11.52	11.65	12.53
LIQ HC'S	34.35	33.84	34.38	32.12	29.63
TOTAL	100.00	100.00	100.00	100.00	100.00
SUB-GROUPING					
C1 -C4	38.45	38.86	38.55	40.09	41.18
C5 -420 F	47.84	47.64	47.70	47.06	46.75
420-700 F	12.28	12.10	12.42	11.61	10.92
700-END PT	1.43	1.41	1.33	1.24	1.16
C5+-END PT	61.55	61.14	61.45	59.91	58.82

PARAFFIN/OLEFIN RATIO					
C3	2.9781	3.0534	3.0534	2.9388	3.1977
C4	1.2152	1.2279	1.2279	1.2356	1.2160
C5	1.4452	1.2737	1.2737	1.3080	1.3248
SCHULZ-FLORY DISTRBTN					
ALPHA (EXP(SLOPE))		0.7810		0.7777	
RATIO CH4/(1-)**2		4.1832		4.2438	
LIQ HC COLLECTION					
PHYS. APPEARANCE		CLR OIL		CLR OIL	
DENSITY		0.750		0.732	
N, REFRACTIVE INDEX		1.4196		1.4195	
SIMULT'D DISTILATN					
10 WT % @ DEG F		256		257	
16		285		288	
50		388		388	
84		557		555	
90		616		612	
RANGE(16-84 %)		272		267	
WT % @ 420 F	60.10	60.10	60.00	60.00	59.25
WT % @ 700 F	95.84	95.84	96.13	96.13	96.09

TABLE 14 RESULT OF SYNGAS OPERATION

RUN NO. 11723-03
CATALYST CO/TH+UCC-103+UCC-108 #11684-330 80 CC 37.6 GM
FEED H2:CO:ARGON OF 50:50: 0 @ 400 CC/MN OR 300 GHSV

	11723-03-11	723-03-12	723-03-13	723-03-14	723-03-15
FEED H2:CO:AR	50:50: 0	50:50: 0	50:50: 0	50:50: 0	50:50: 0
HRS ON STREAM	143.5	150.0	167.1	172.5	190.8
PRESSURE,PSIG	304	308	308	308	309
TEMP. C	272	271	271	269	269
FEED CC/MIN	400	400	400	400	400
HOURS FEEDING	24.00	6.50	23.60	5.40	23.65
EFFLNT GAS LITER	257.40	69.20	254.75	58.85	261.95
GM AQUEOUS LAYER	66.47	17.93	65.11	14.77	64.69
GM OIL	18.62	5.27	19.12	4.08	17.87
MATERIAL BALANCE					
GM ATOM CARBON %	91.73	91.08	92.19	90.16	90.86
GM ATOM HYDROGEN %	98.67	98.41	99.19	96.72	97.53
GM ATOM OXYGEN %	94.27	93.51	94.38	93.52	94.19
RATIO CHX/(H2O+CO2)	0.9339	0.9366	0.9428	0.9089	0.9097
RATIO X IN CHX	2.5328	2.5303	2.5327	2.5227	2.5208
USAGE H2/CO PRODT	1.8293	1.8324	1.8313	1.8840	1.8859
RATIO CO2/(H2O+CO2)	0.1463	0.1450	0.1466	0.1207	0.1198
K SHIFT IN EFFLNT	0.07	0.07	0.07	0.06	0.06
CONVERSION					
ON CO %	45.28	45.41	45.31	42.18	41.84
ON H2 %	79.37	79.27	79.14	77.34	76.73
ON CO+H2 %	62.95	62.99	62.84	60.38	59.91
PRDT SELECTIVITY,WT %					
CH4	21.76	21.77	21.86	21.44	21.32
C2 HC'S	3.99	4.02	4.04	3.97	3.98
C3H8	5.53	5.28	5.30	5.18	5.19
C3H6=	1.68	1.58	1.59	1.66	1.67
C4H10	4.62	4.56	4.58	4.61	4.48
C4H8=	3.71	3.50	3.51	3.56	3.58
C5H12	5.17	5.08	5.10	5.02	5.11
C5H10=	3.78	3.66	3.68	3.63	3.54
C6H14	5.37	5.17	5.19	5.14	5.23
C6H12= & CYCLO'S	2.45	2.47	2.48	2.55	2.63
C7+ IN GAS	11.92	11.45	11.50	11.93	11.96
LIQ HC'S	30.04	31.46	31.16	31.32	31.30
TOTAL	100.00	100.00	100.00	100.00	100.00