AFFECT OF MESH SIZE ON CATALYST PERFORMANCE AND PERFORMANCE OF AN EXPERIMENTAL OXALATE-DERIVED CATALYST

RUN NO.	58	59	60
MODE OF K ADDITION	SOLID K LAURATE TO RX AT STARTUP		
TOTAL K, g/100 g Fe	2.1		2.2
HOURS ON STREAM	150		
CO CONVERSION, %	20	39	39
SELECTIVITIES			
C_1	1.8	2.5[1]	2.0
C_2	0.0	0.5	0.4
$C_2^=$	0.7	1.1	0.8
C_3	0.0	0.8	0.7
$C_3^=$	2.7	3.9	3.2
C_4	0.0	0.9	0.5
$C_4^=$	1.7	3.0	2.2
OLEFIN/PARAFFIN RATIO			
$C_2^=/C_2$	∞	2.2	2.0
$C_3^=/C_3$	∞	4.9	4.6
$C_4^=/C_4$	∞	3.3	4.4

1. THE SELECTIVITIES FROM RUN 59 DID NOT LINE OUT WHEN THE CONVERSIONS DID. THE

FIGURE 126

FIGURE 127

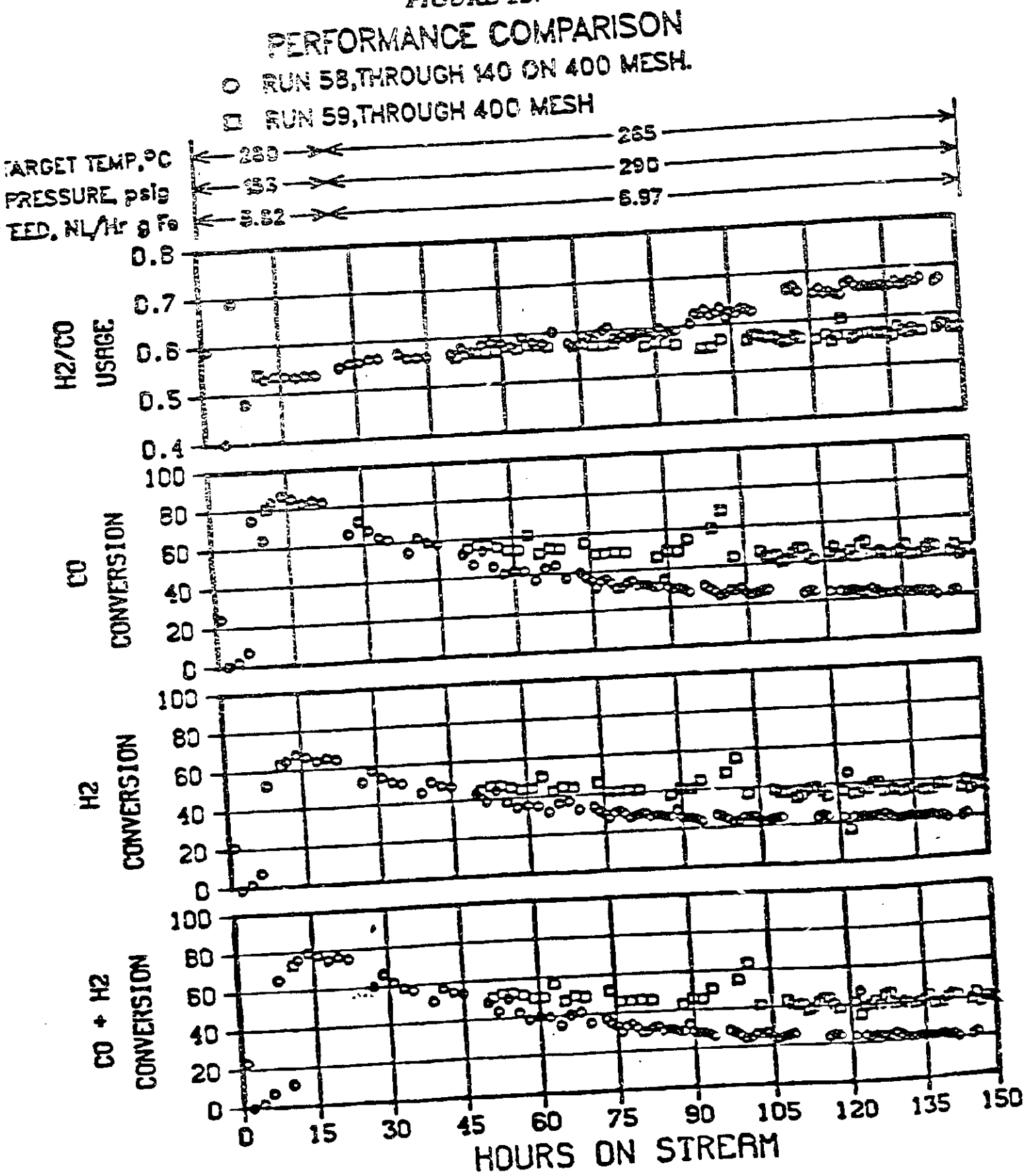
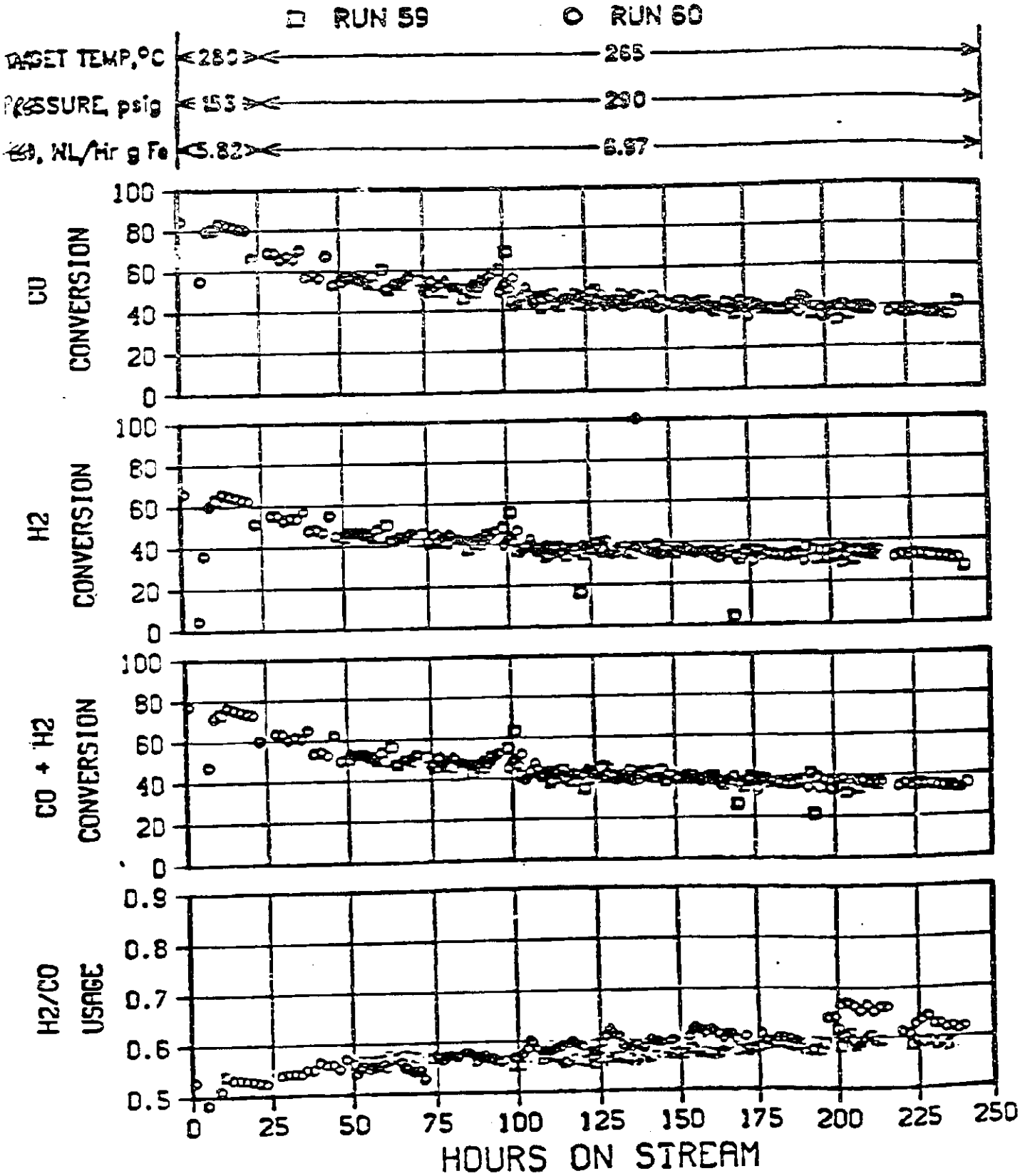

PERFORMANCE COMPARISON
RUN 58,THROUGH 140 ON 400 MESH.
RUN 59,THROUGH 400 MESH
TARGET TEMP.°C
PRESSURE, psig
FEED, NL/Hr @ Fe
280
265
290
6.97
6.82
H2/CO USAGE
CO CONVERSION
H2 CONVERSION
CO + H2 CONVERSION
0.8
0.7
0.6
0.5
0.4
100
80
60
40
20
0
0
15
30
45
60
75
90
105
120
135
150
HOURS ON STREAM

FIGURE 128

COMPARISON OF RUNS 59 & 60 ; PLANT 701 AUTOCLAVE

H_2:CO in feed = 0.7, stirrer rpm = 1100



FIGUR 129

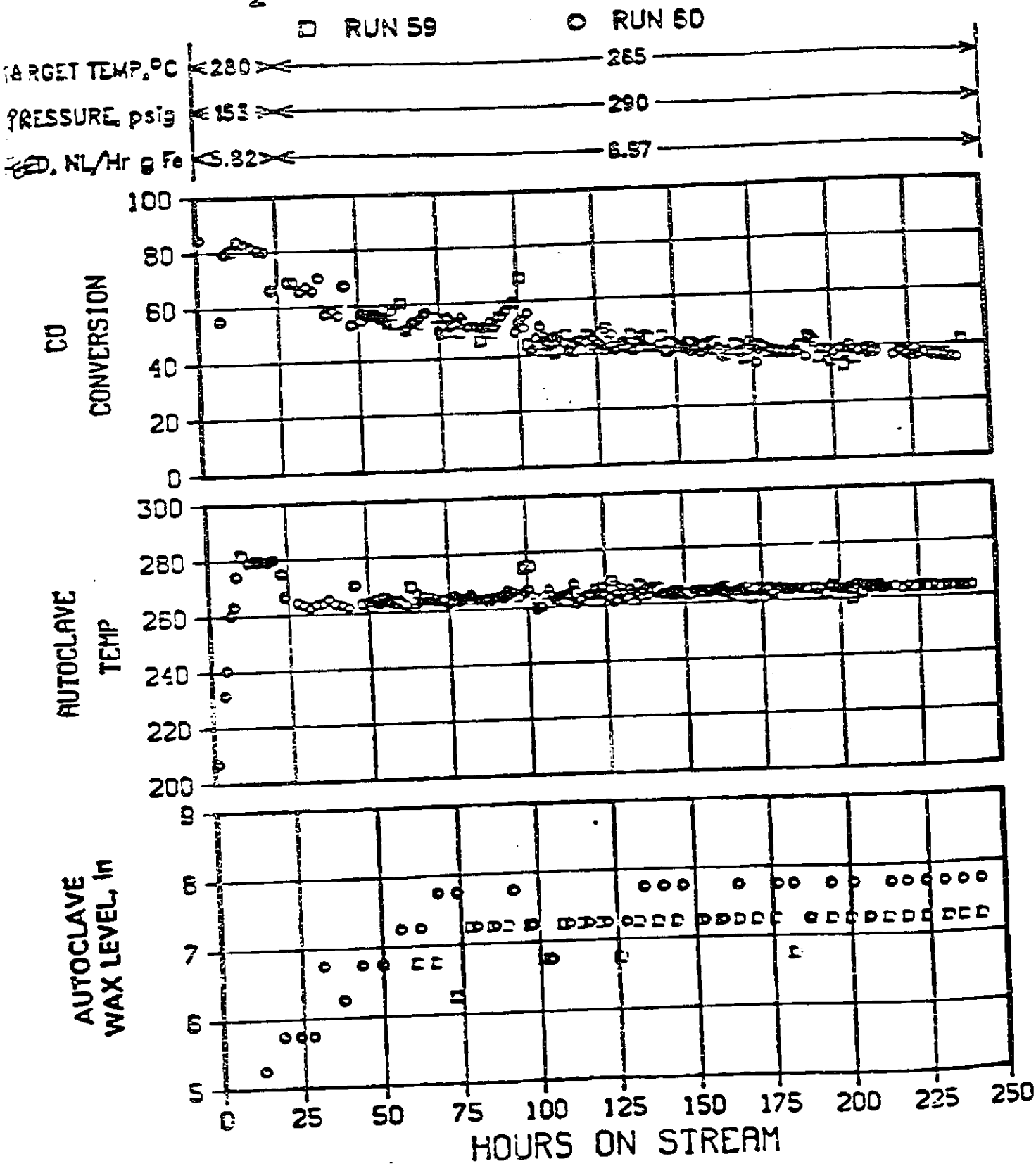

COMPARISON OF RUNS 59 & 60 ; PLANT 701 AUTOCLAVE
H2:CO in feed = 0.7, stirrer rpm = 1100
RUN 59
RUN 60
TARGET TEMP, °C
280
265
PRESSURE, psig
153
290
FEED, NL/Hr @ Fe
5.82
6.57
CO CONVERSION
100
80
60
40
20
0
AUTOCLAVE TEMP
300
280
260
240
220
200
AUTOCLAVE WAX LEVEL, in
8
7
6
5
0
25
50
75
100
125
150
175
200
225
250
HOURS ON STREAM

FIGURE 130

COMPARISON OF RUNS 59 & 60 ; PLANT 701 AUTOCLAVE

H_2:CO in feed = 0.7, stirrer rpm = 1100

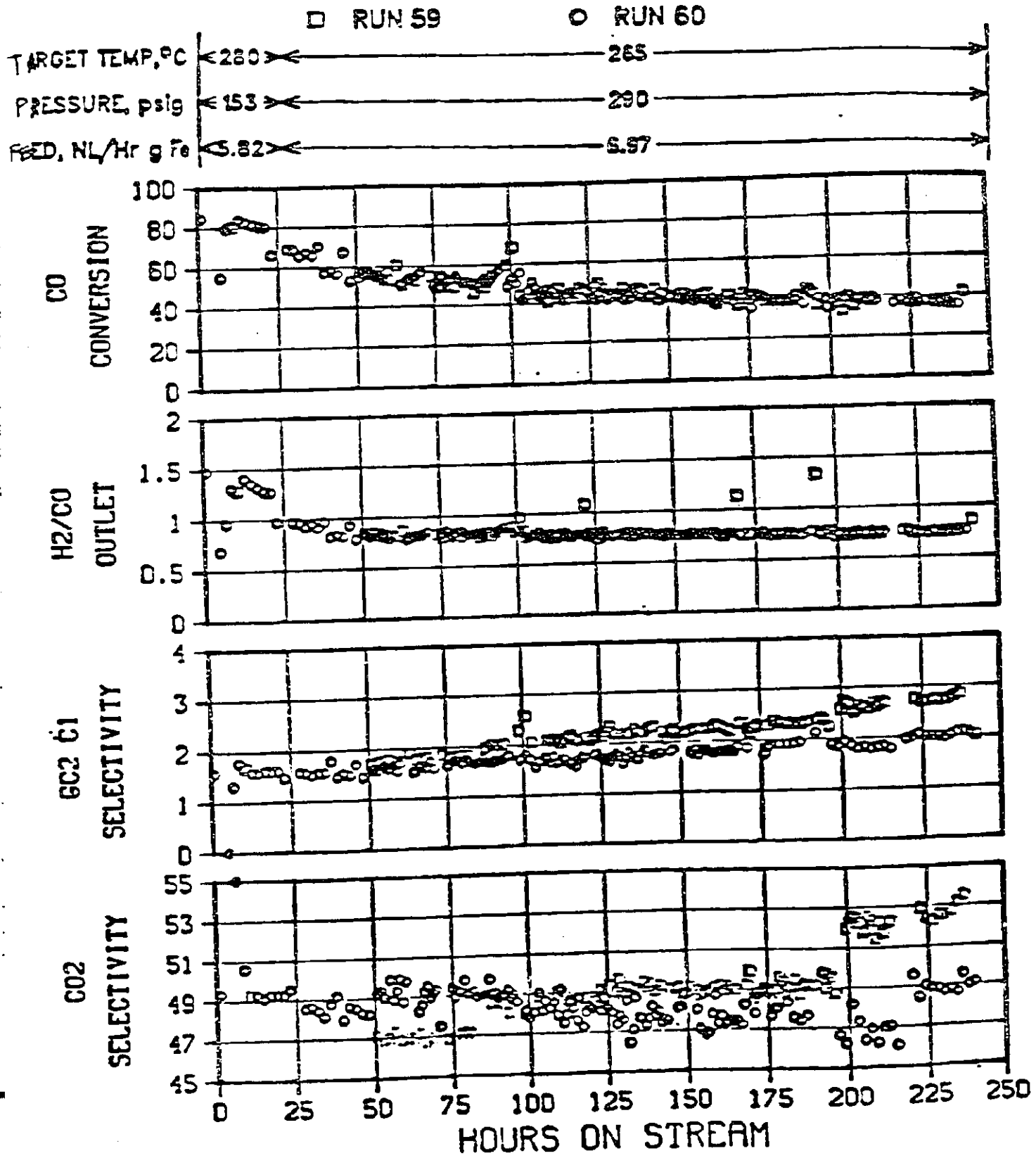


FIGURE 131

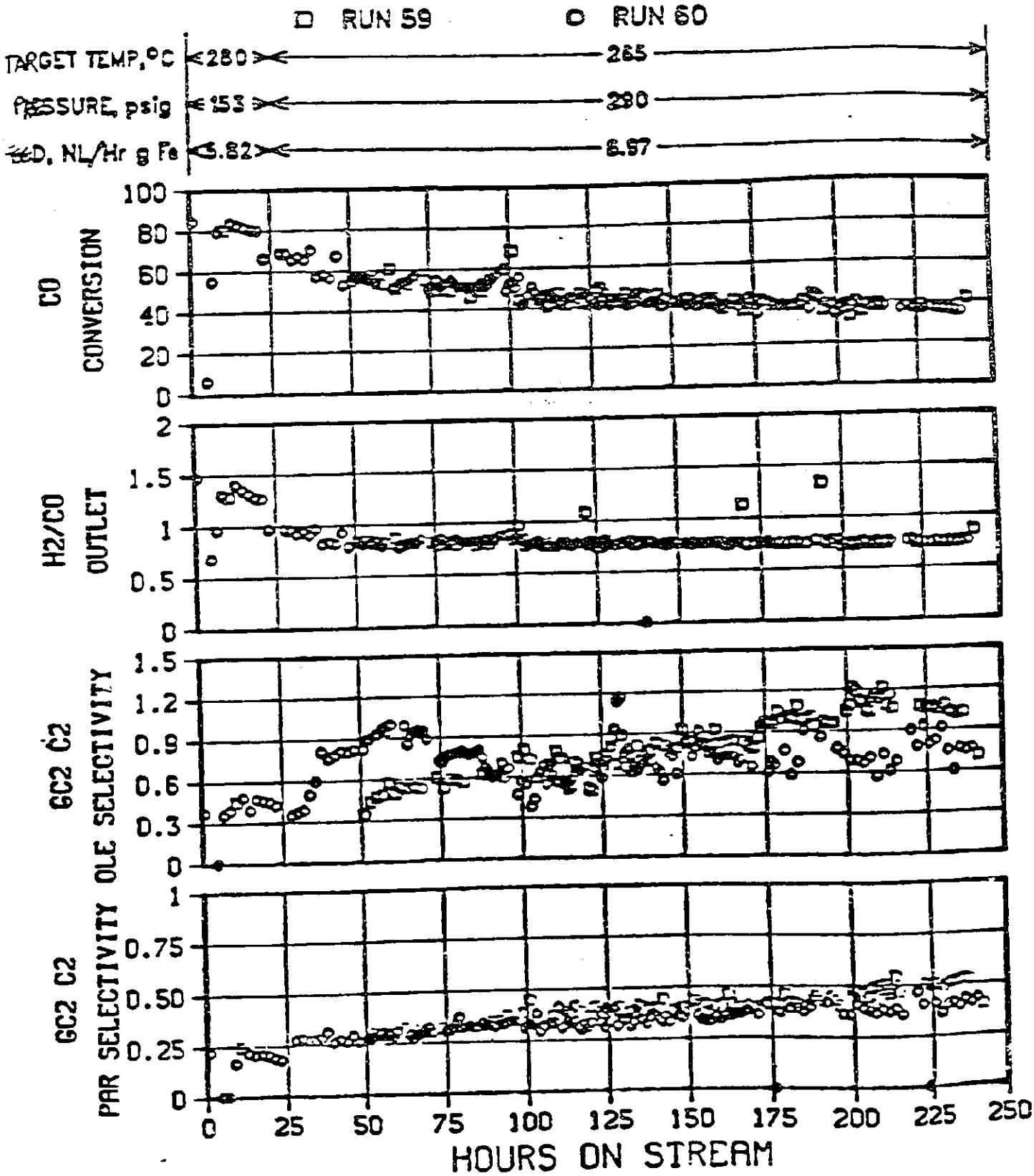

COMPARISON OF RUNS 59 & 60 ; PLANT 701 AUTOCLAVE
H2:CO in feed = 0.7, stirrer rpm = 1100
RUN 59
RUN 60
TARGET TEMP, °C
280
265
PRESSURE, psig
153
280
FEED, NL/Hr g Fe
3.82
6.97
CO CONVERSION
H2/CO OUTLET
GC2 C2 PAR SELECTIVITY OLE SELECTIVITY
GC2 C2
HOURS ON STREAM

FIGURE 132

COMPARISON OF RUNS 59 & 60 ; PLANT 701 AUTOCLAVE

H_2:CO in feed = 0.7, stirrer rpm = 1100

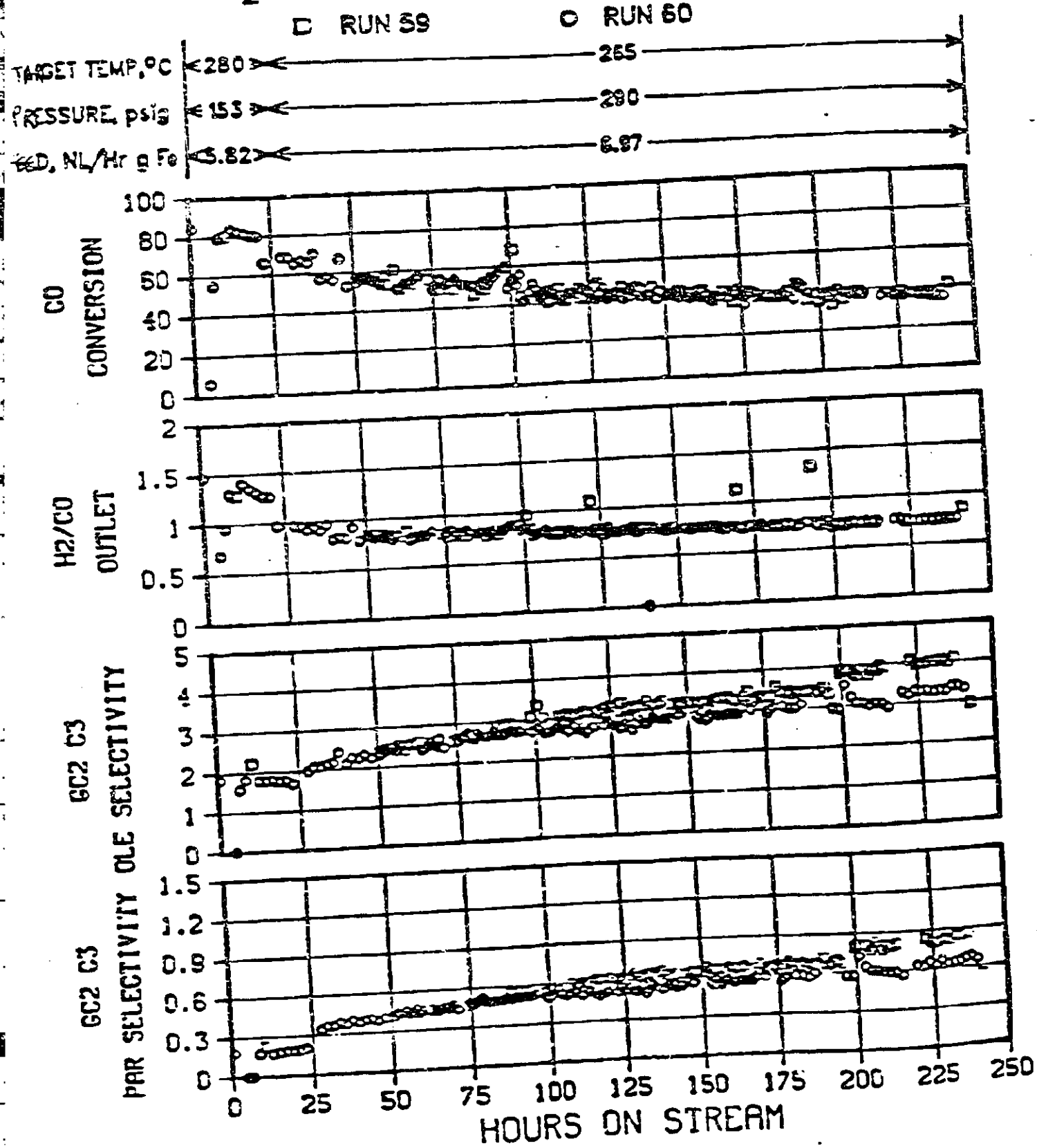


FIGURE 133

COMPARISON OF RUNS 59 & 60 ; PLANT 701 AUTOCLAVE

H_2:CO in feed = 0.7, stirrer rpm = 1100

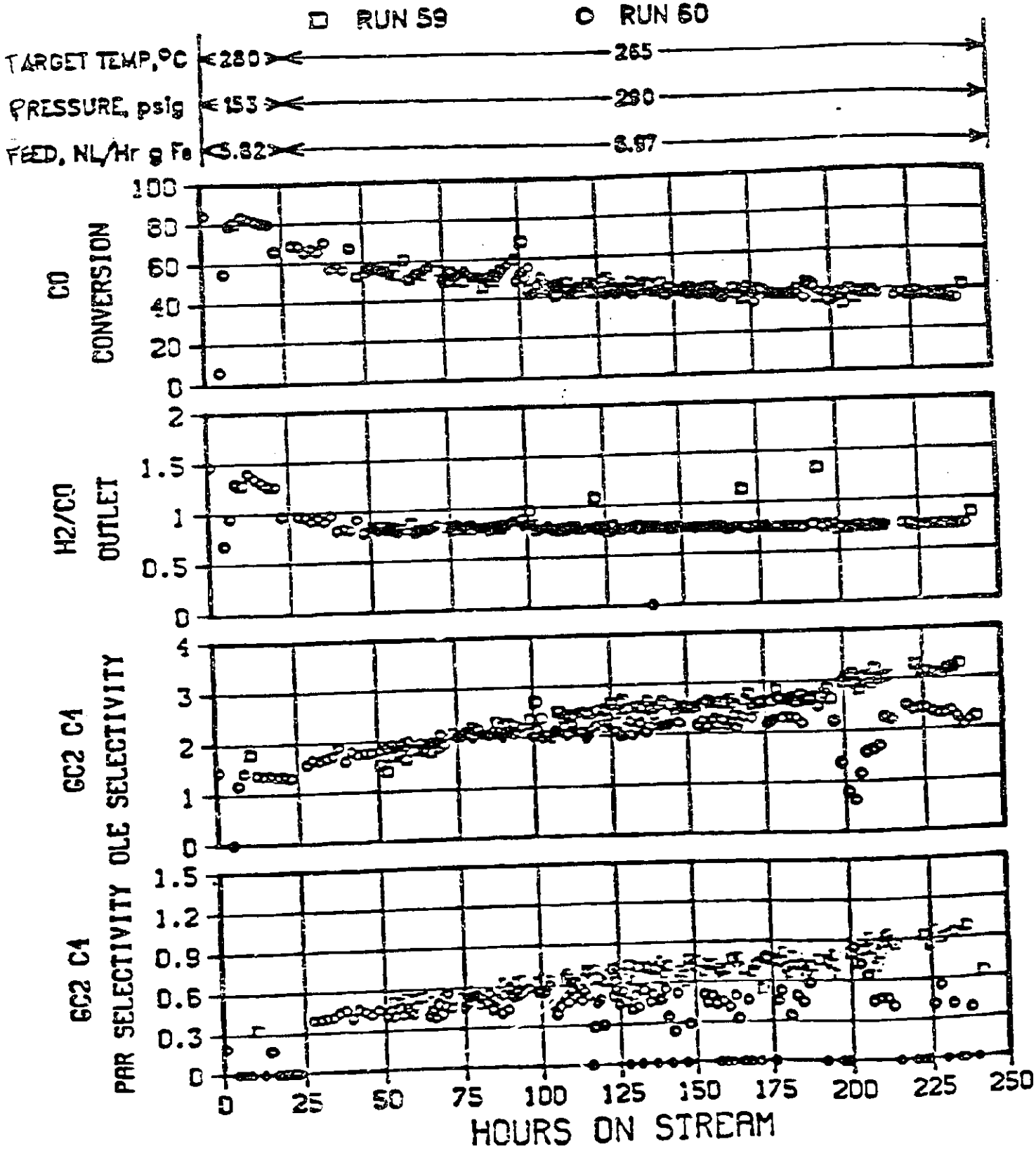


FIGURE 134

COMPARISON OF RUNS 59 & 60 ; PLANT 701 AUTOCLAVE

H_2:CO in feed = 0.7, stirrer rpm = 1100

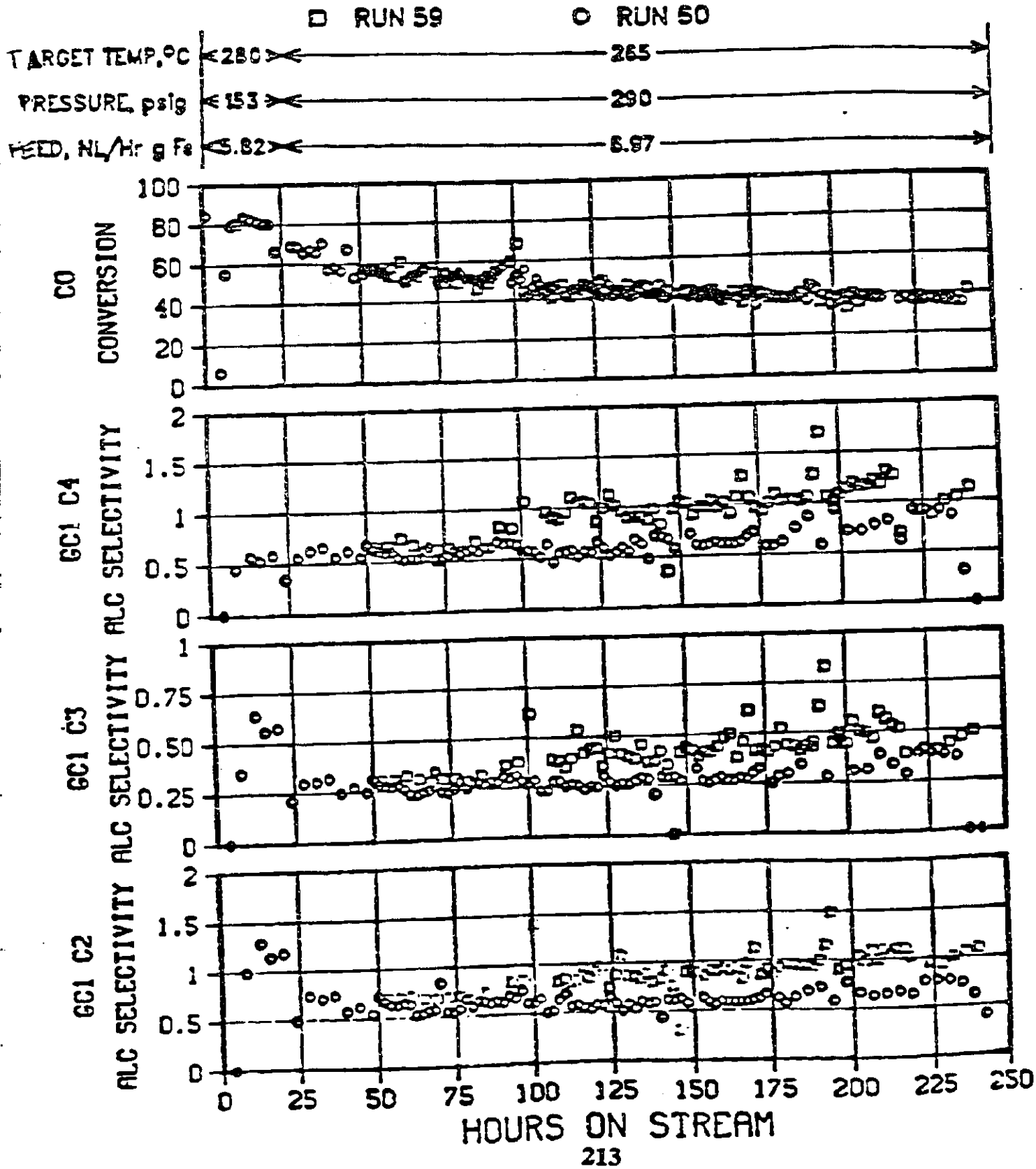


FIGURE 135

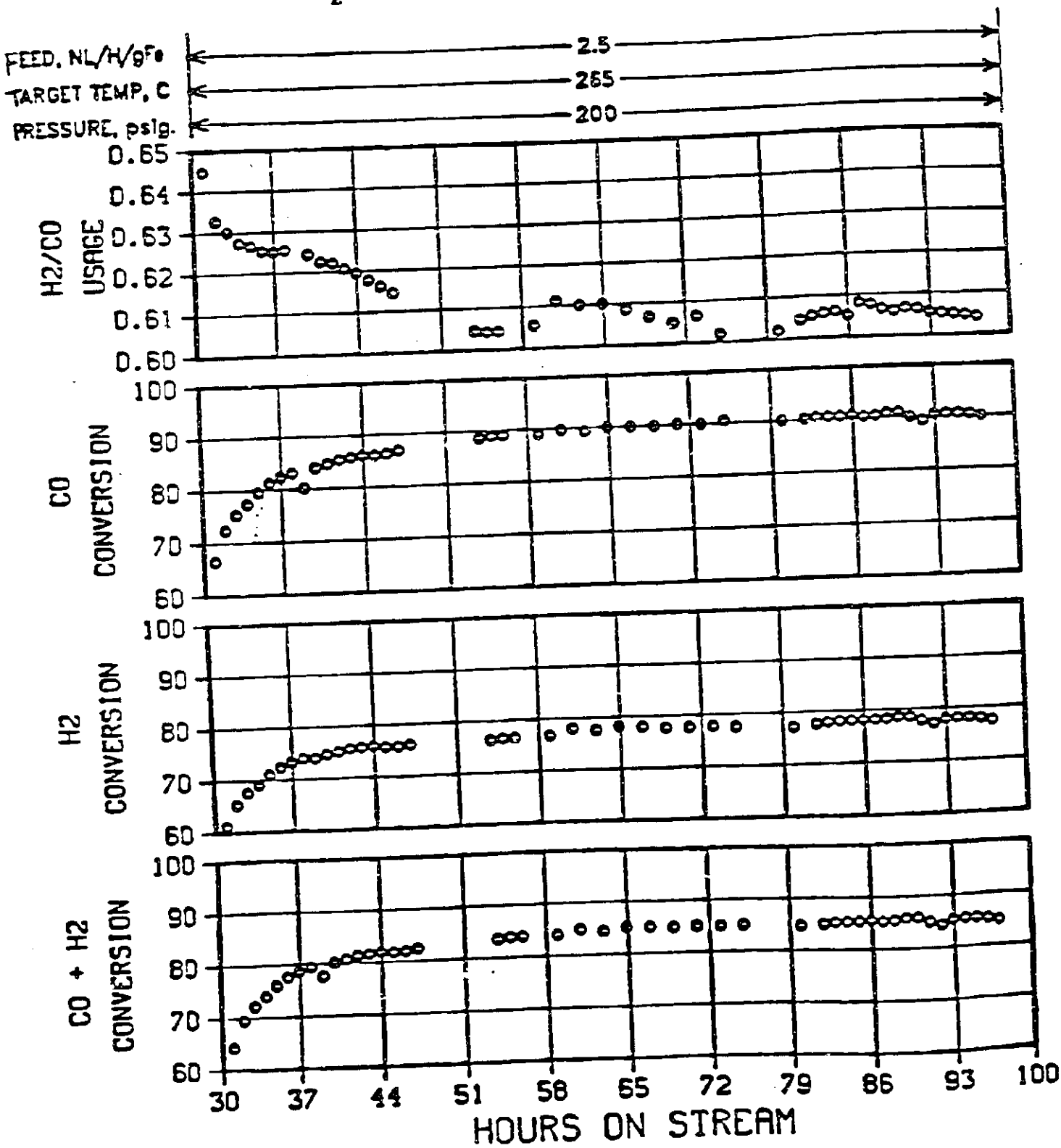

CO ACTIVATION OF Fe/Cu OXIDE
PLANT 701 R-71 72.3g 6827-165B in 290g C30 oil
H2:CO feed = 0.7, 1100 rpm, 7/14--->7/18/93
FEED, NL/H/gFe
TARGET TEMP, C
PRESSURE, psig.
2.5
265
200
H2/CO USAGE
0.65
0.64
0.63
0.62
0.61
0.60
CO CONVERSION
100
90
80
70
60
H2 CONVERSION
CO + H2 CONVERSION
30
37
44
51
58
65
72
79
86
93
100
HOURS ON STREAM

FIGURE 136

CO ACTIVATION OF Fe/Cu OXIDE

PLANT 701 R-71 72.3g 6827-165B in 290g C_{30} oil

H_2:CO feed = 0.7, 1100 rpm, 7/14--->7/18/93

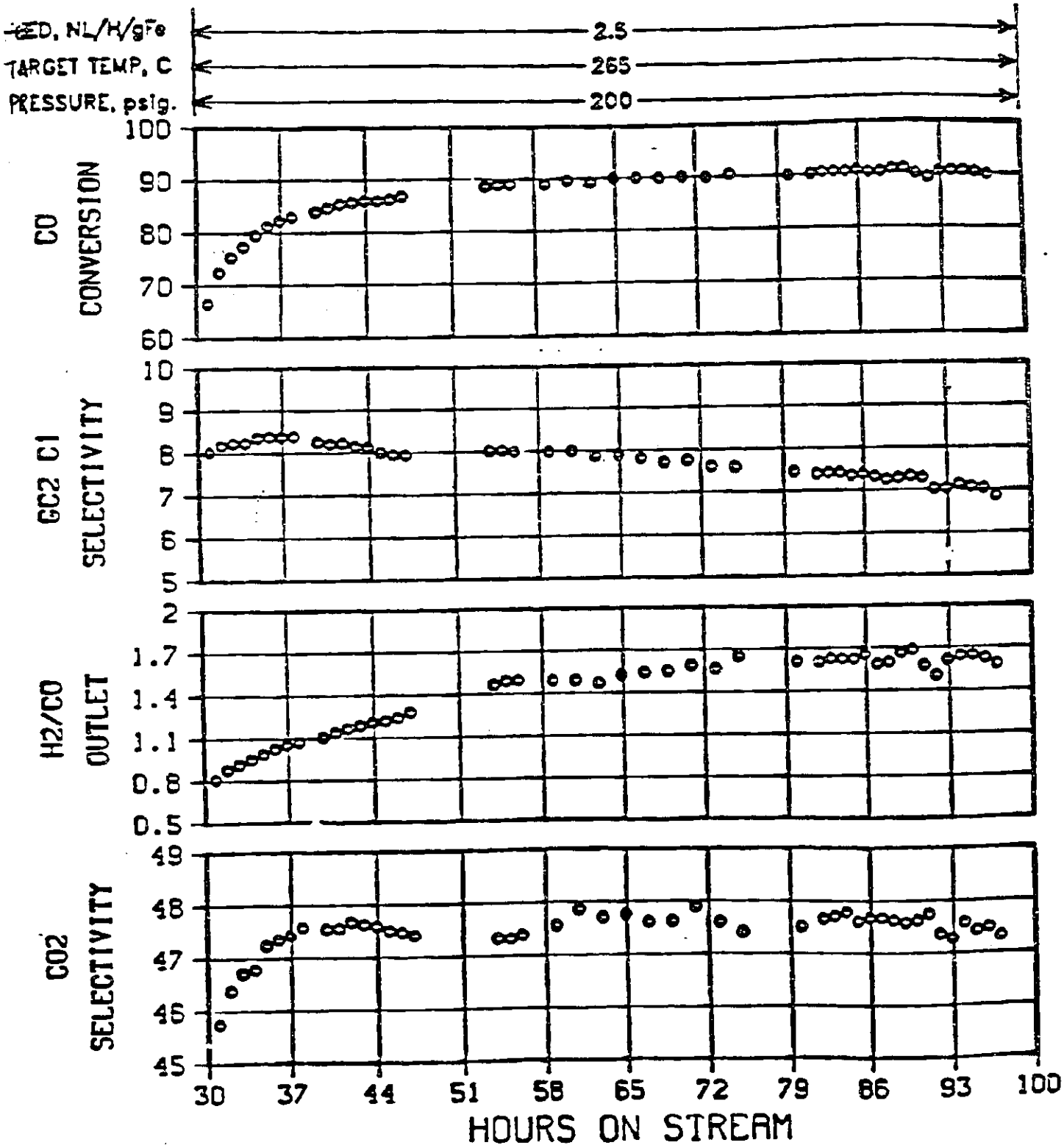


FIGURE 137

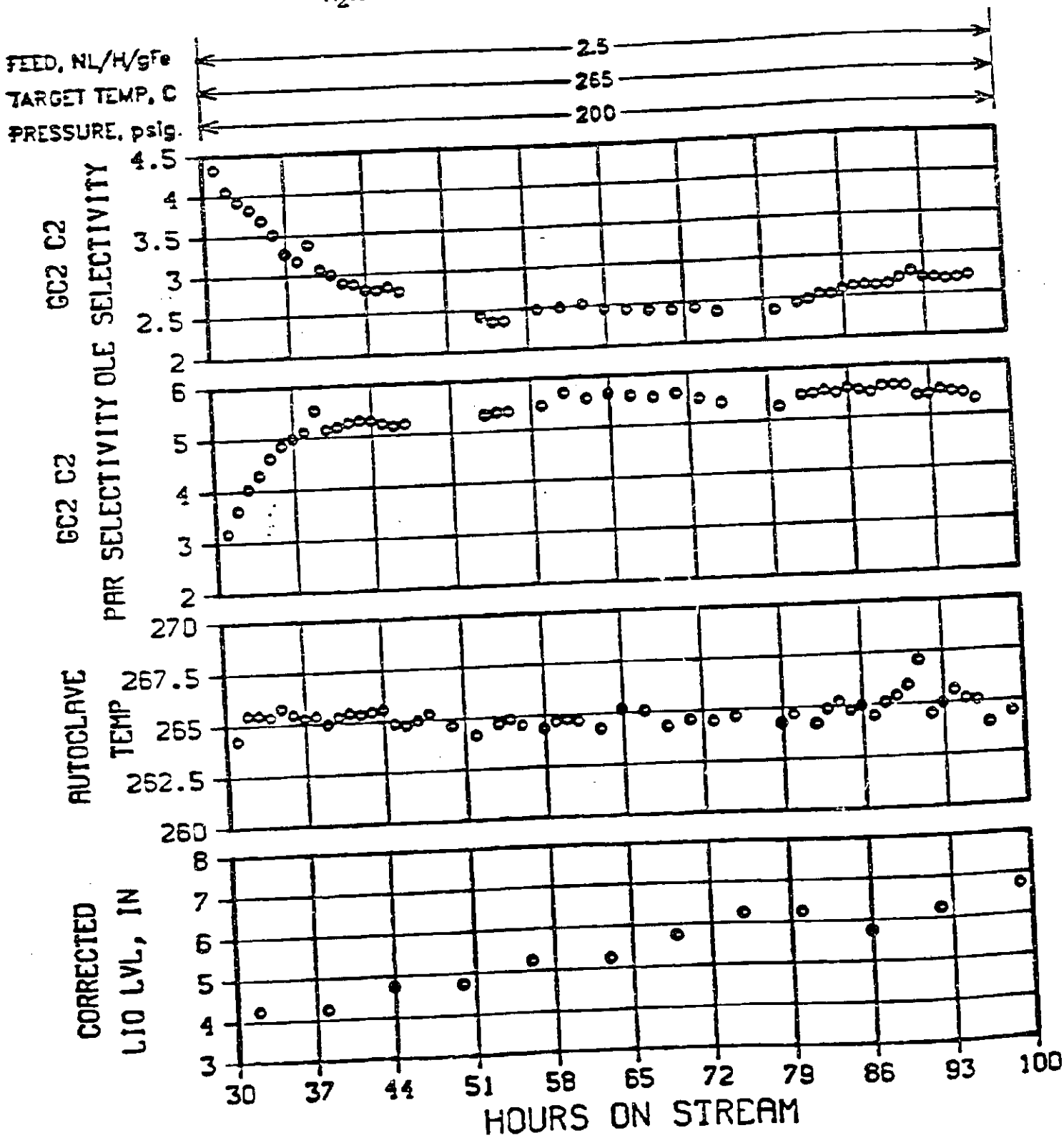

CO ACTIVATION OF Fe/Cu OXIDE
PLANT 701 R-71 72.3g 6827-165B in 290g C30 oil
H2:CO feed = 0.7, 1100 rpm, 7/14--->7/18/93
FEED, NL/H/gFe
TARGET TEMP, C
PRESSURE, psig.
2.5
265
200
GC2 C2 PAR SELECTIVITY OLE SELECTIVITY
GC2 C2
AUTOCLAVE TEMP
CORRECTED LIQ LVL, IN
HOURS ON STREAM

FIGURE 138

CO ACTIVATION OF Fe/Cu OXIDE

PLANT 701 R-71 72.5g 6827-165B in 290g C_{30} oil

H_2:CO feed = 0.7, 1100 rpm, 7/14--->7/18/93

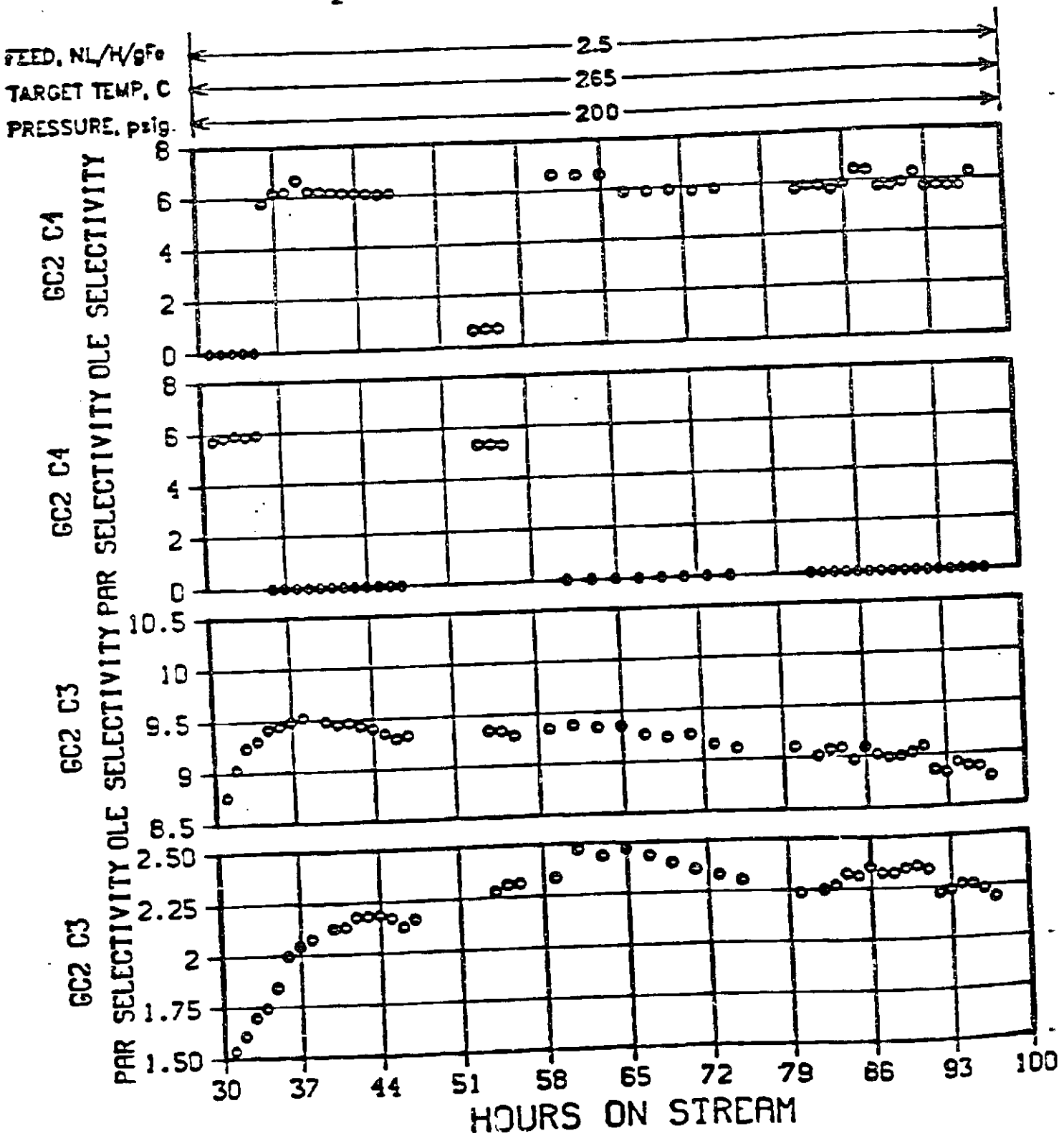


FIGURE 139

CO ACTIVATION OF Fe/Cu OXIDE

PLANT 701 R-71 72.3g 6827-1658 in 290g C_{30} oil

H_2:CO feed = 0.7, 1100 rpm, 7/14--->7/18/93

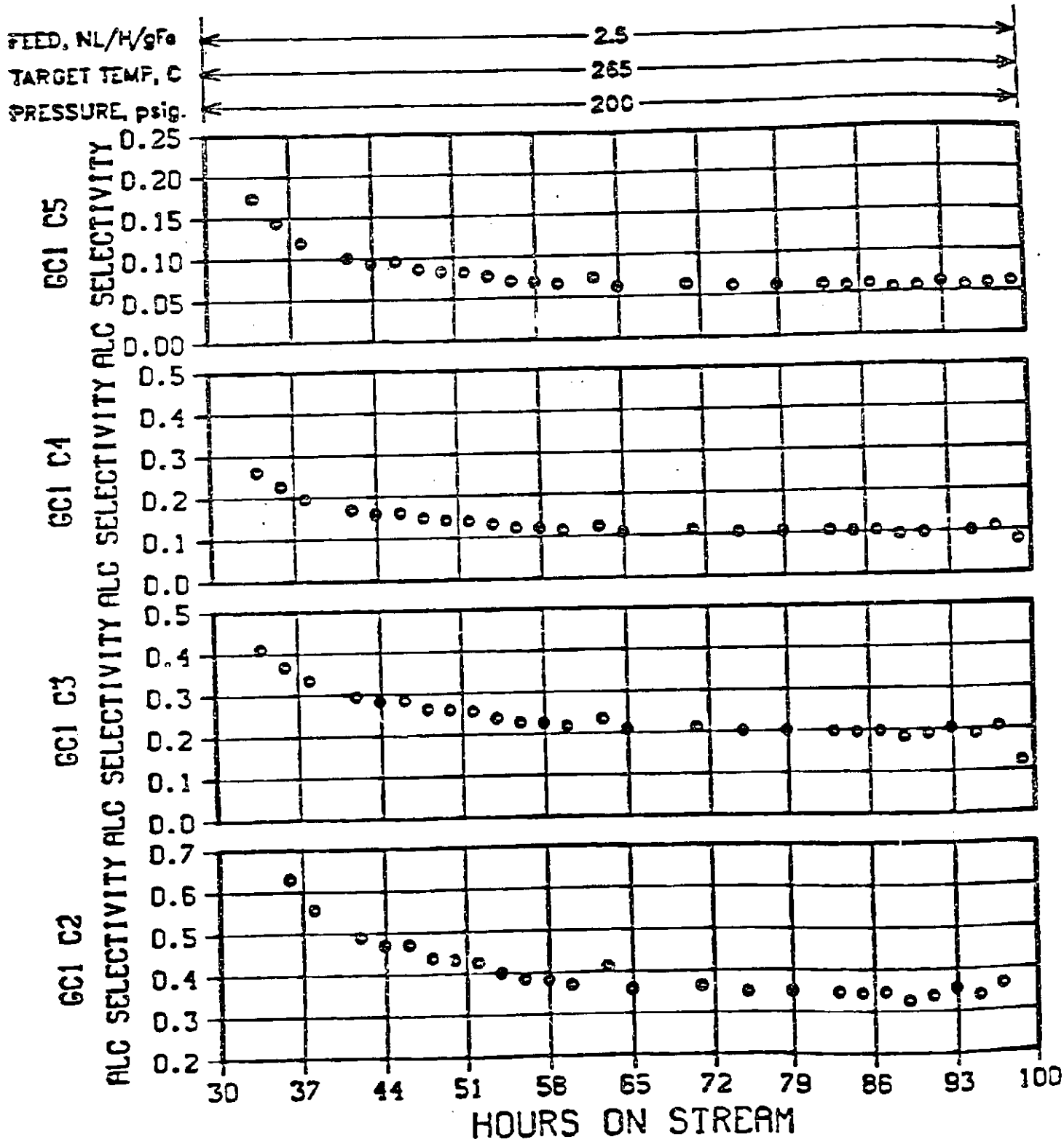
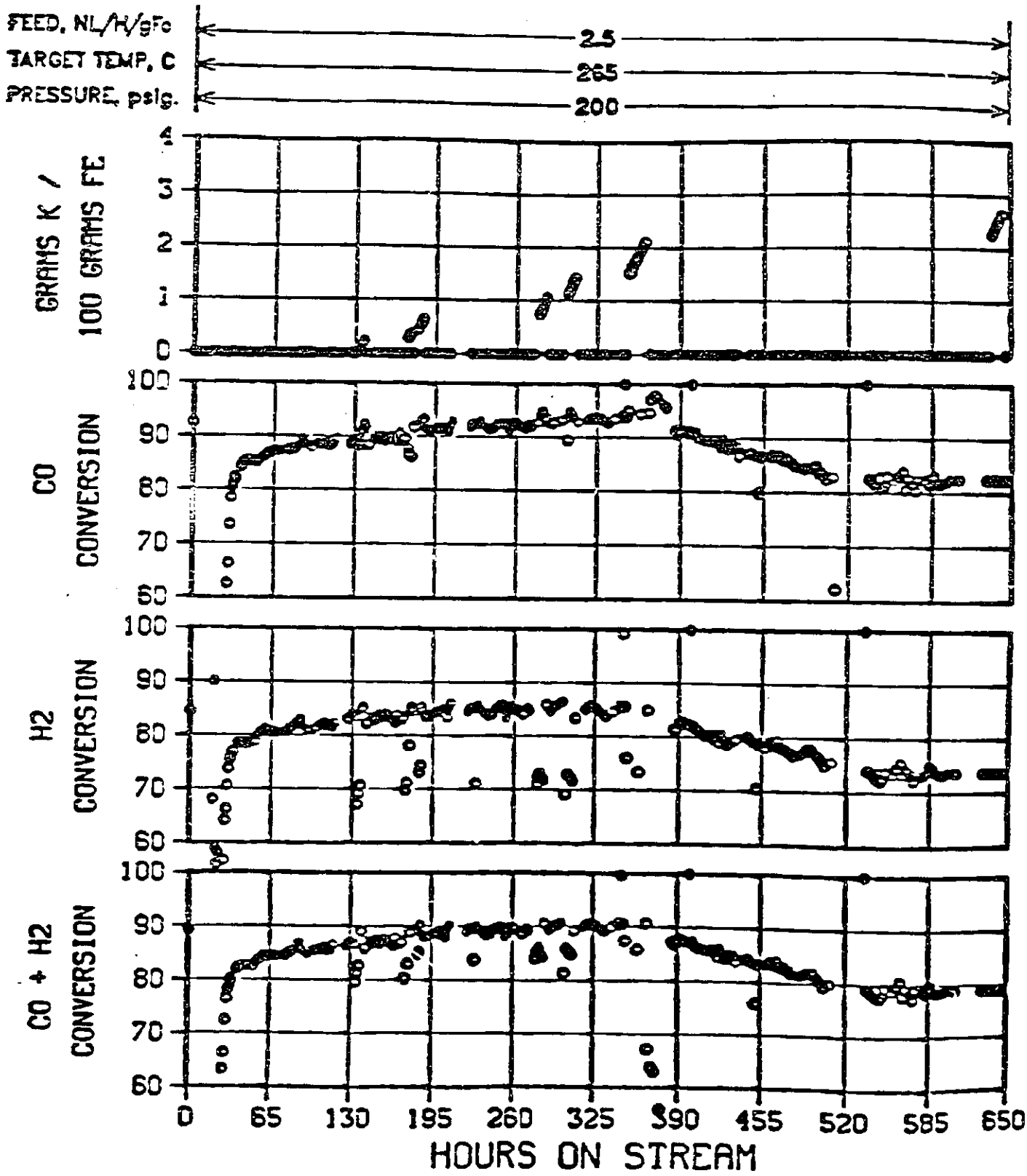


FIGURE 140

CO ACTIVATION OF K–FREE Fe/Cu OXIDE

PLANT 701 R–72 72.3g 6827–165B in 290g C_{30} oil

H_2:CO feed = 0.7, 1100 rpm, 7/28--->3/25/93



THE TWO CARBON MONOXIDE ACTIVATED CATALYSTS:

PERFORMANCE COMPARISON

RUN NO.	71	72	
MODE OF K ADDITION	SOLID K LAURATE	K LAURATE IN SOLUTION	
TOTAL K, g/100 g Fe	2.4	0.0	2.1
HOURS ON STREAM	95	95	650
CO CONVERSION, %	90	90	82
SELECTIVITIES			
C_1	7.0	10.0	6.5
C_2	5.5	9.0	4.5
$C_2^=$	2.6	1.5	3.0
C_3	2.3	5.0	2.0
$C_3^=$	8.7	9.0	10.0
C_4	N/A	0.0	0.0
$C_4^=$	N/A	7.5	6.5
OLEFIN/PARAFFIN RATIO			
$C_2^=/C_2$	0.47	0.17	0.67
$C_3^=/C_3$	3.8	1.8	5.0
$C_4^=/C_4$	N/A	∞	∞

FIGURE 141

FIGURE 142

CO ACTIVATION OF K–FREE Fe/Cu OXIDE

PLANT 701 R–72 72.3g 6827–165B In 290g C_{30} oil

H_2:CO feed = 0.7, 1100 rpm, 7/28--->8/25/93

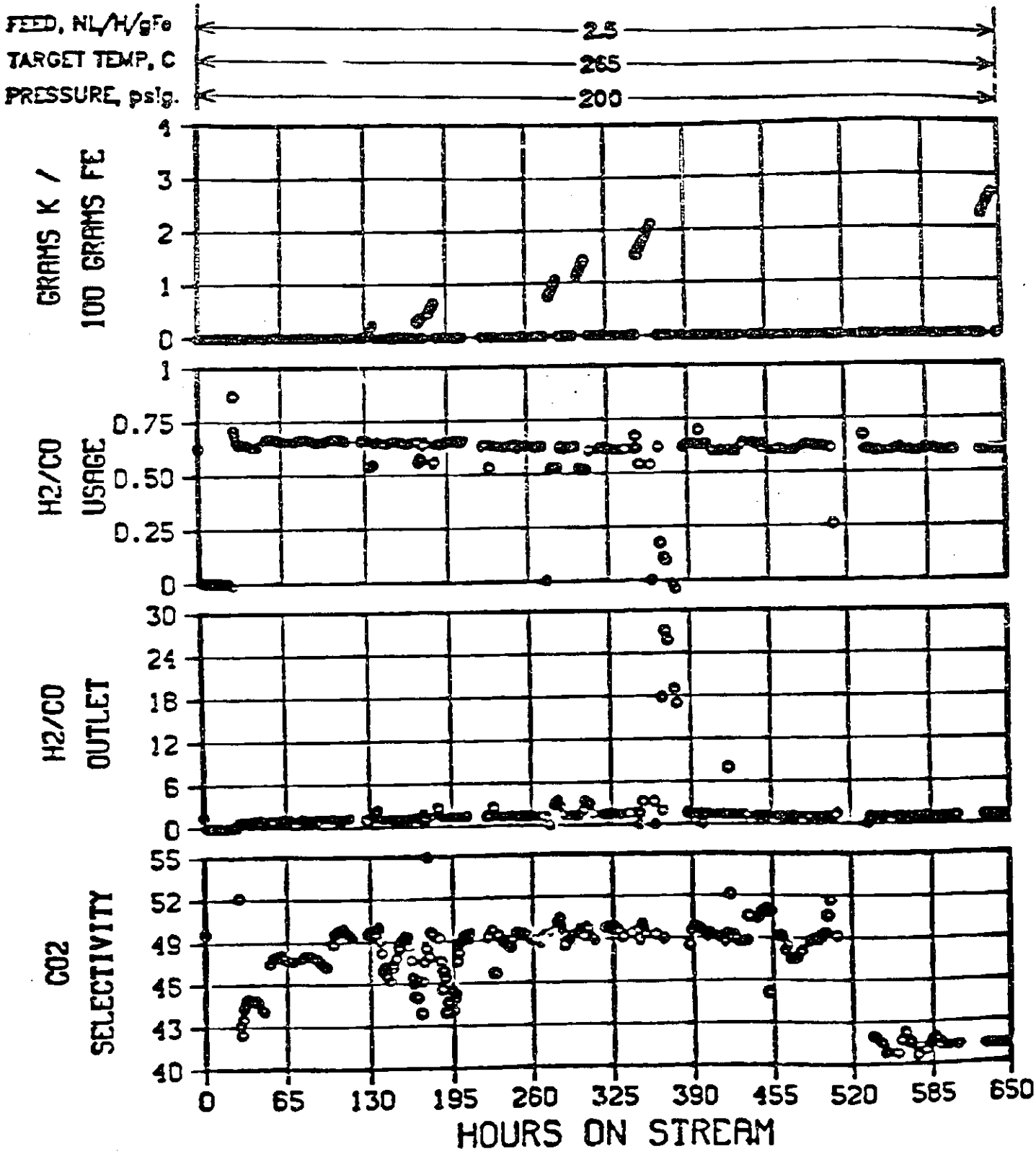


FIGURE 143

CO ACTIVATION OF K–FREE Fe/Cu OXIDE

PLANT 701 R–72 72.3g 6827–165B in 290g C_{30} oil

H_2:CO feed = 0.7, 1100 rpm, 7/28——>8/25/93

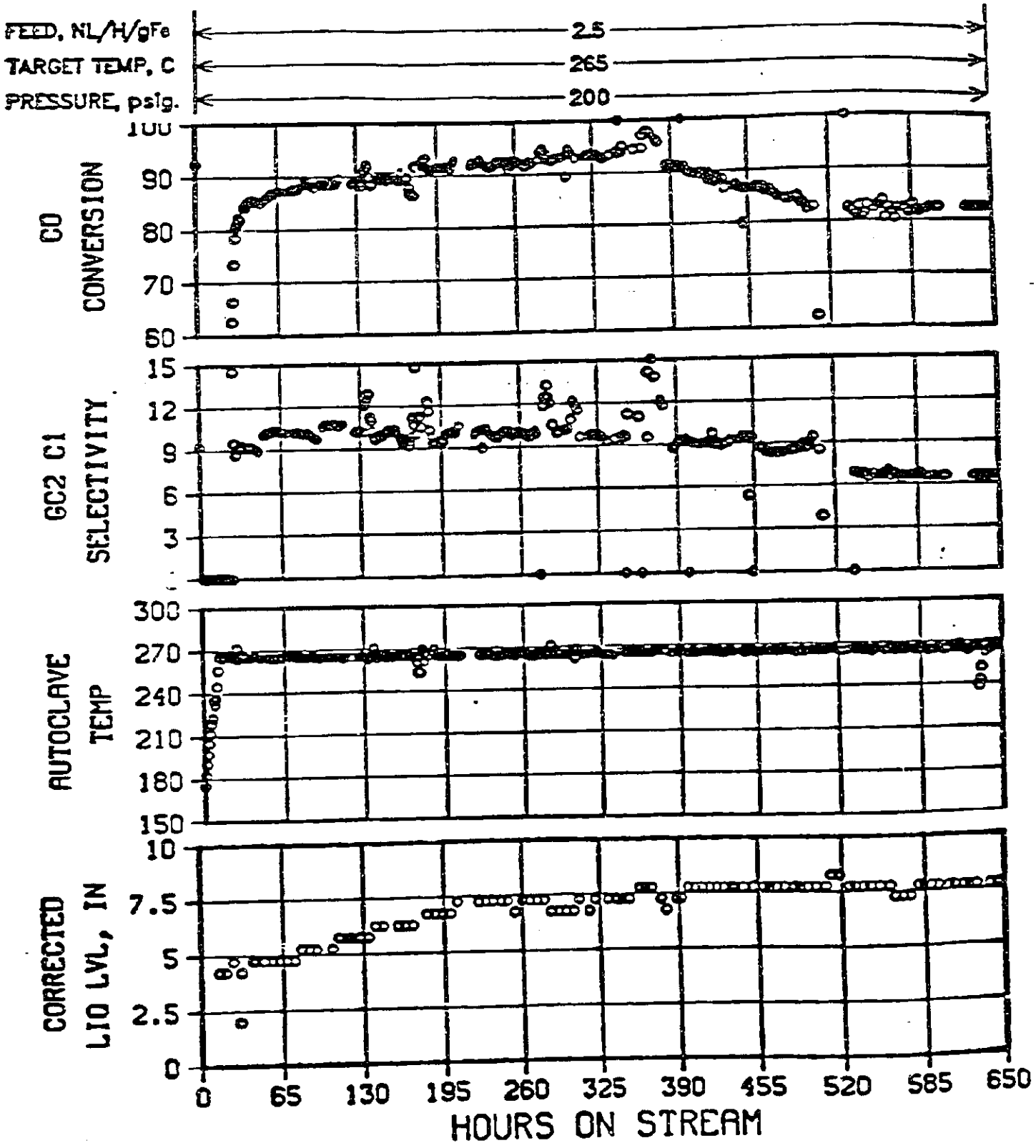


FIGURE 144

CO ACTIVATION OF K-FREE Fe/Cu OXIDE

PLANT 701 R-72 72.3g 6827-165B in 290g C_{30} oil

H_2:CO feed = 0.7, 1100 rpm, 7/28--->8/25/93

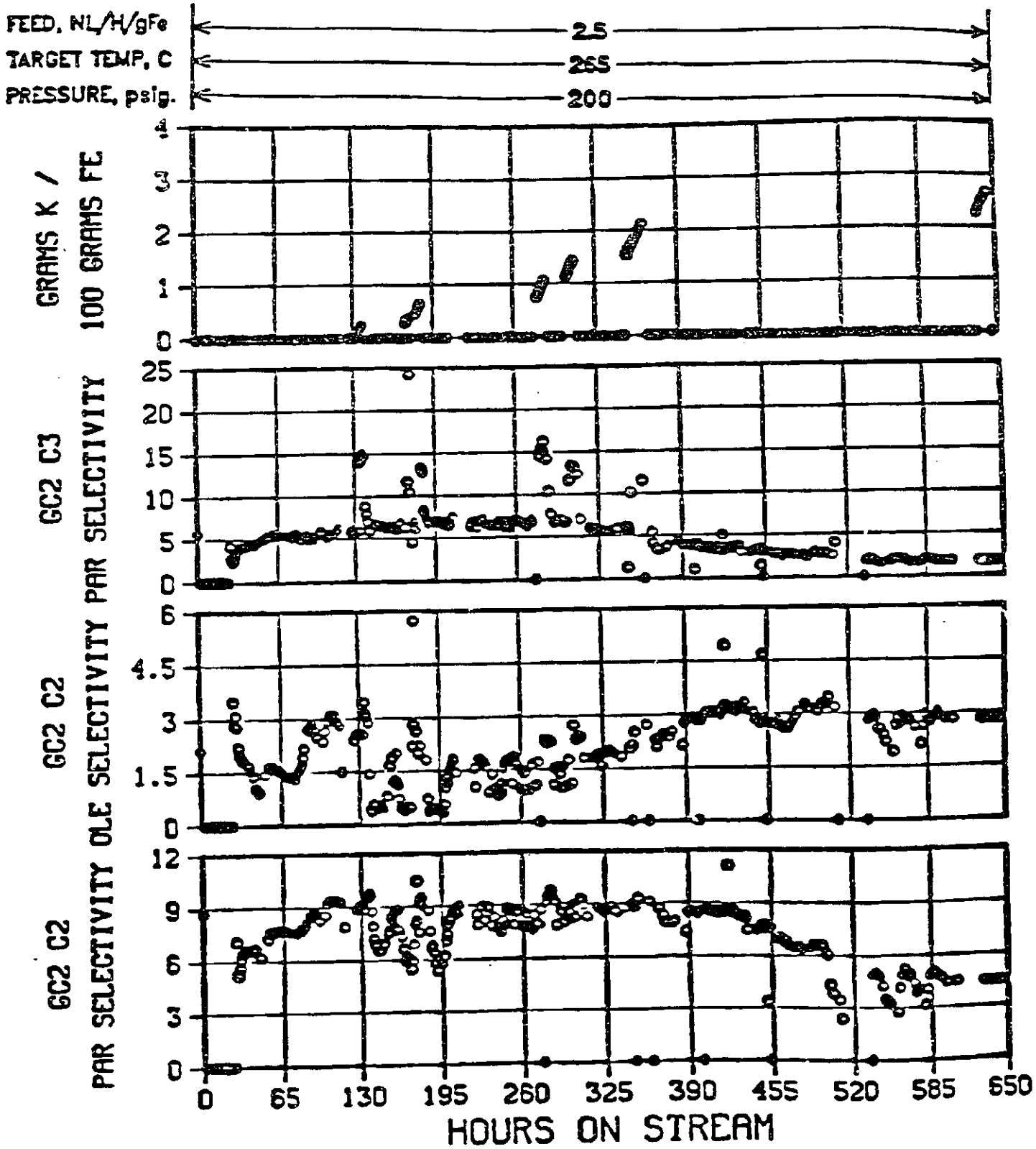


FIGURE 145

CO ACTIVATION OF K–FREE Fe/Cu OXIDE

PLANT 701 R–72 72.3g 6827–165B in 290g C_{30} oil

H_2:CO feed = 0.7, 1100 rpm, 7/28--->8/25/93

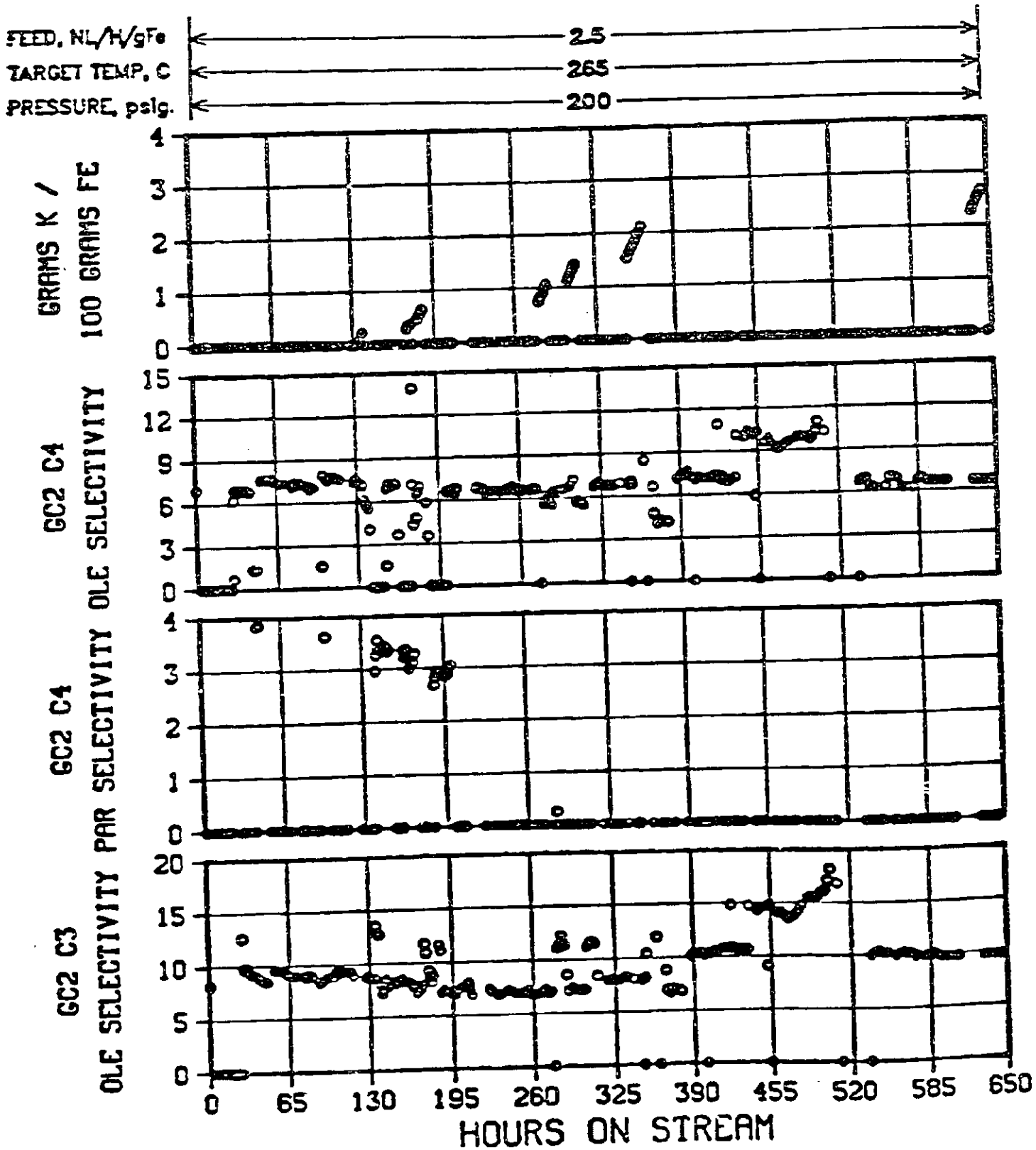


FIGURE 146

CO ACTIVATION OF K–FREE Fe/Cu OXIDE

PLANT 701 R–72 72.3g 6827–165B In 290g C_{30} oil

H_2:CO feed = 0.7, 1100 rpm, 7/28--->8/25/93

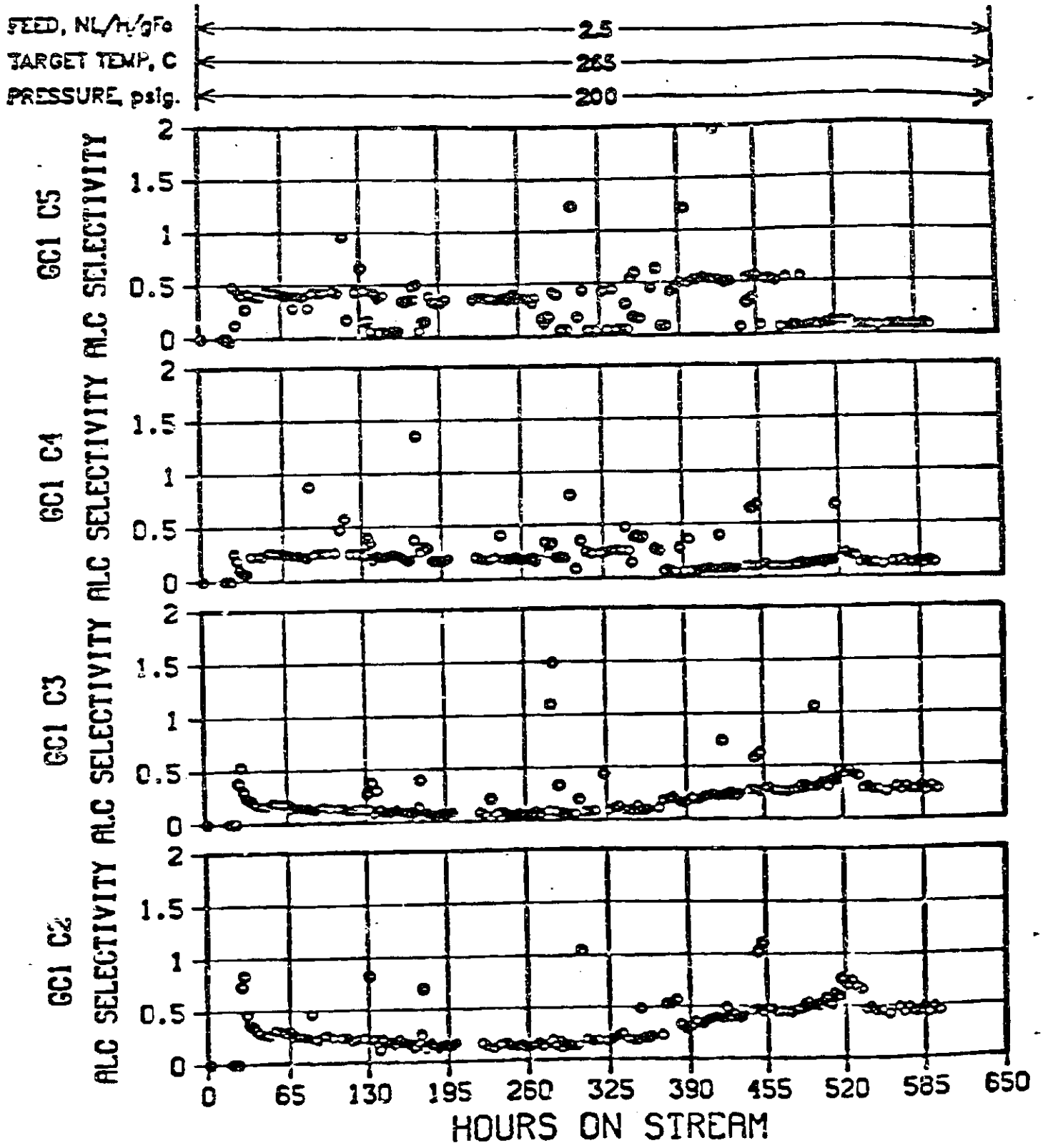


FIGURE 147

UCI CATALYST

PHYSICAL PROPERTIES

SOURCE OF CATALYST	METALS, WT %, V.F.				Fe:K (WT)	BET	
	Fe	Cu	Si	K		SA, m^2/g	PV, cc/g
UNITED CATALYSTS (UCI)	54.9	4.01	5.3	3.7	100 : 6.7	95	0.28

FIGURE 148

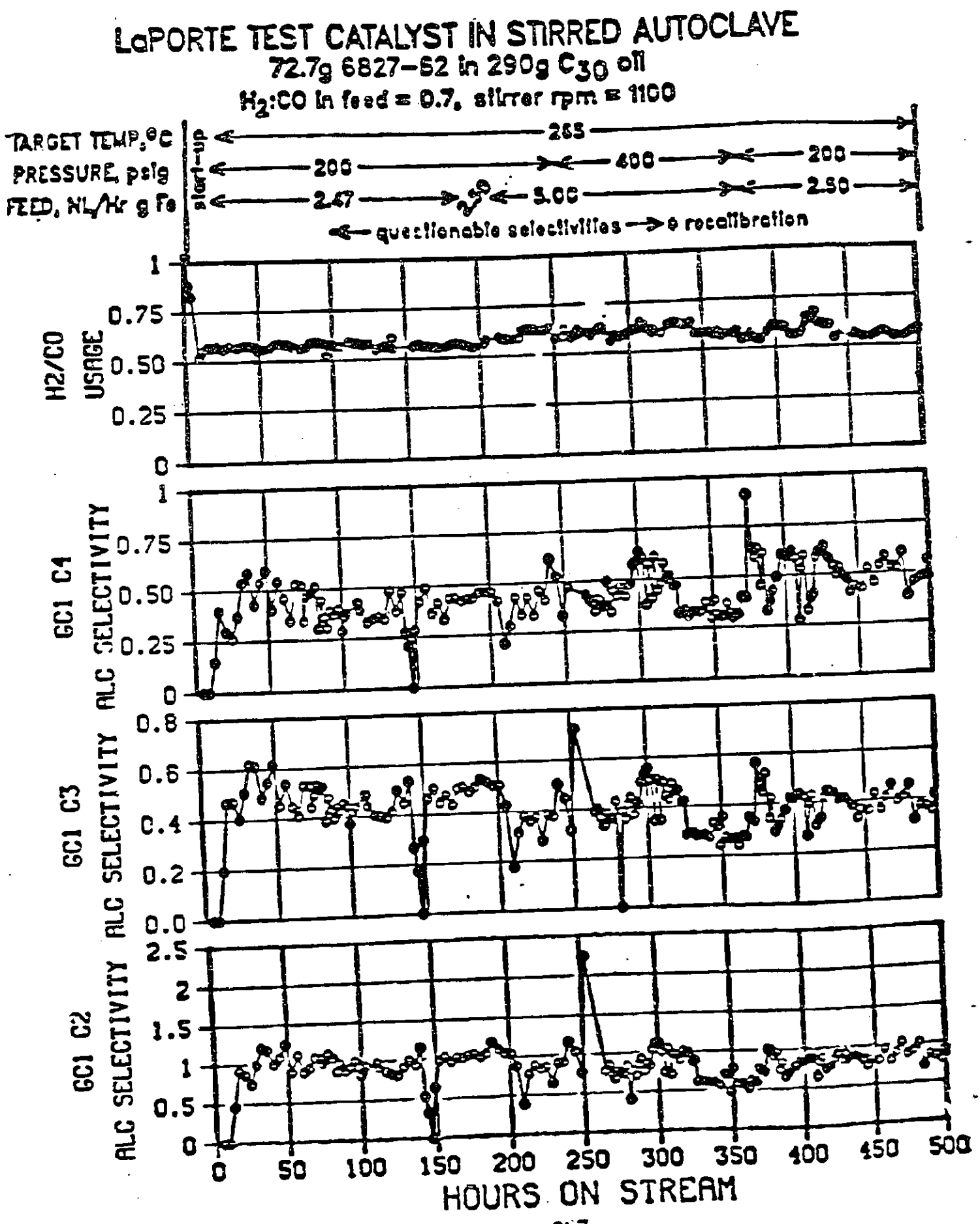

LaPORTE TEST CATALYST IN STIRRED AUTOCLAVE
72.7g 6827-62 in 290g C30 oil
H2:CO in feed = 0.7, stirrer rpm = 1100
TARGET TEMP,°C
PRESSURE, psig
FEED, NL/Hr g Fe
start-up
265
200
400
200
2.67
3.00
2.50
questionable selectivities
recalibration
H2/CO USAGE
GC1 C4 ALC SELECTIVITY
GC1 C3 ALC SELECTIVITY
GC1 C2 ALC SELECTIVITY
HOURS ON STREAM

FIGURE 149

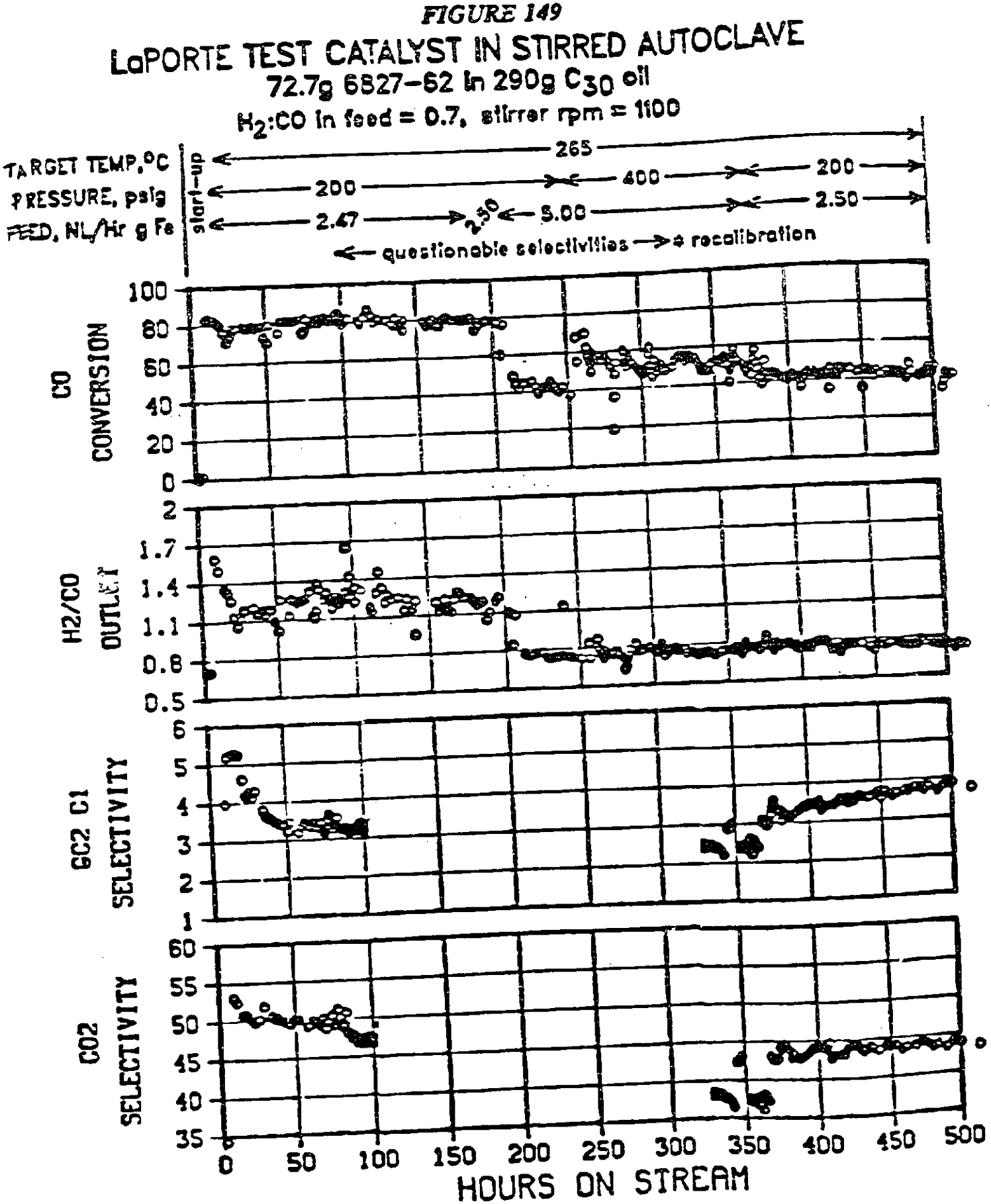

LaPORTE TEST CATALYST IN STIRRED AUTOCLAVE
72.7g 6827-62 in 290g C30 oil
H2:CO in feed = 0.7, stirrer rpm = 1100
TARGET TEMP, °C
PRESSURE, psig
FEED, NL/Hr g Fe
start-up
265
200
400
200
200
2.47
2.50
5.00
2.50
questionable selectivities
recalibration
CO CONVERSION
H2/CO OUTLET
GC2 C1 SELECTIVITY
CO2 SELECTIVITY
HOURS ON STREAM

FIGURE 150

LaPORTE TEST CATALYST IN STIRRED AUTOCLAVE

72.7g 6827-62 in 290g C_{30} oil

H_2:CO in feed = 0.7, stirrer rpm = 1100