

SUMMARY OF RESULTS FOR F-T II / IIA DEMONSTRATION RUN AT LAPORTE											
RUN NO.	<---PRODUCT DISTRIBUTION, WT%-->					HC PRODUCTION		REACTOR PRODUCTIVITY		ALPHA SINGLE C1-C16	ORGANICS IN AQ PHASE WT%
	METHANE C1	GAS C2-C4	GASOLINE C5-C11	DIESEL C12-C18	WAX C19+	RATE GRAMS/KG-FE HR	GRAMS HC / HR- LIT OF SLURRY VOL				
AF-R11.1A						163.9	36.6				
AF-R11.1B						153.6	29.3				
AF-R12.1A						424.1	41.4				
AF-R12.2A						1405.9	136.4				
AF-R12.3F	10.3	49.9	33.3	3.0	3.5	1230.8	69.5		0.63	31.0	
AF-R12.4	7.9	37.2	35.5	6.2	13.2	874.7	50.9		0.68	27.9	
AF-R12.5A						106.3	6.1				
AF-R12.5B	14.6	62.9	19.6	0.7	2.2	322.2	18.6		0.49	19.3	

TABLE 16

HEAT TRANSFER COEFFICIENTS ESTIMATE

RUN NO.	OVERALL HEAT TRANSFER COEFFICIENTS Btu/hr-ft ² -°F			SLURRY SIDE HEAT TRANSFER COEFFICIENTS Btu/hr-ft ² -°F		
	U _{measured}	U _{predicted}	U _{design}	h _{measured}	h _{predicted}	h _{design}
AF-R12.1A	87.7	82.2	68.3	214	184	138
		-6.3%	-22.1%		-14.0	-35.5
AF-R12.2A	81.3	86.4	72.1	180	207	155
		+6.3%	-11.3%		+15.0	-13.9

PROCESS SPECIFICATION

PROJECT NO.
ATT-1022CUSTOMER
AIR PRODUCTS / DOE

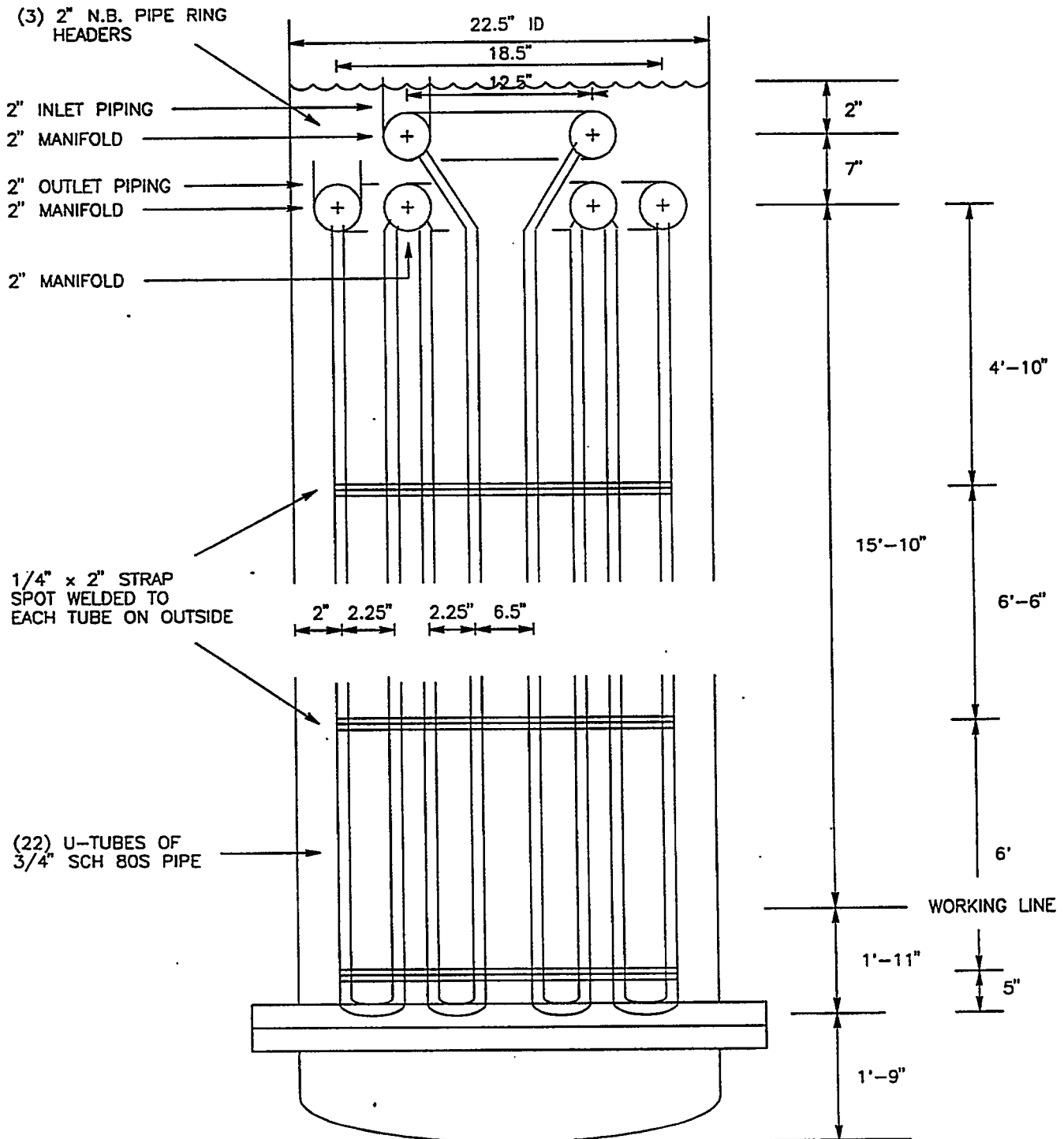
ITEM NO. 27.10 Heat Exch.

NO. OF UNITS
1PROJECT NAME
AFDU FISCHER-TROPSCH II

VENDOR

ITEM NAME
INTERNAL HEAT EXCHANGER (27.10 REACTOR)LOCATION
LAPORTE, TEXAS

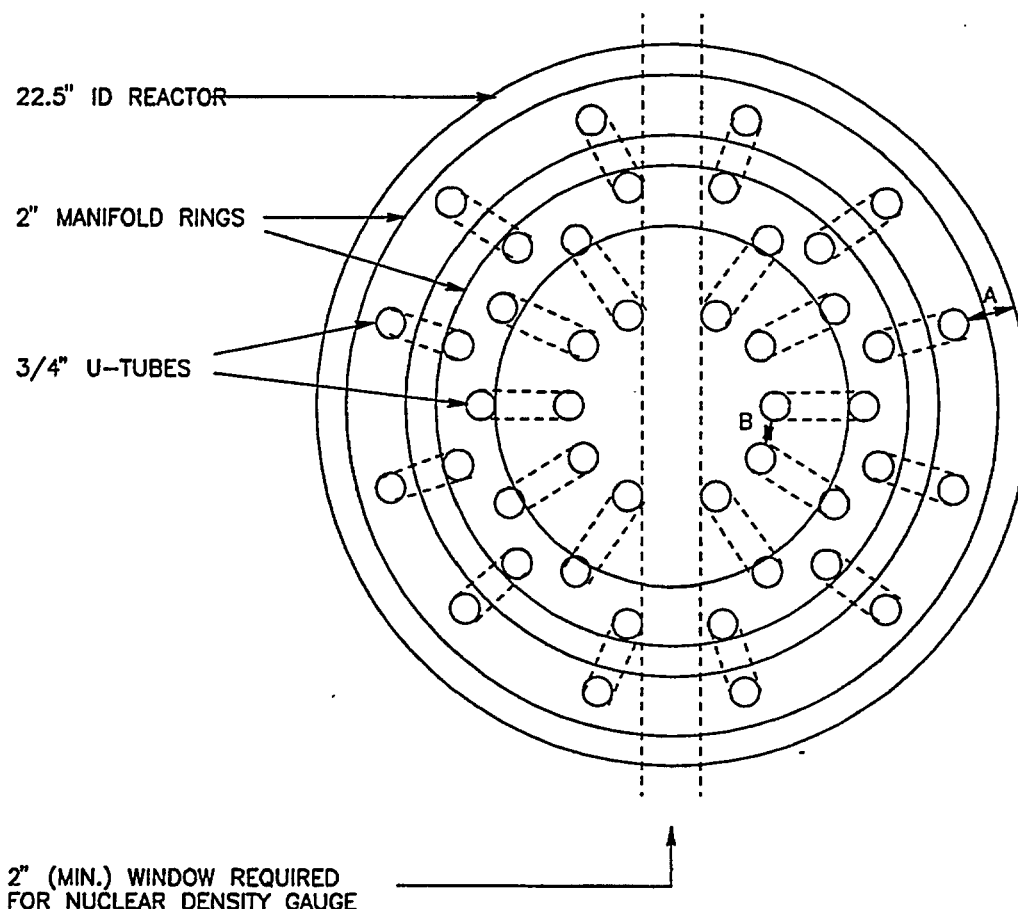
FIGURE 1: SIDE VIEW (NOT TO SCALE)



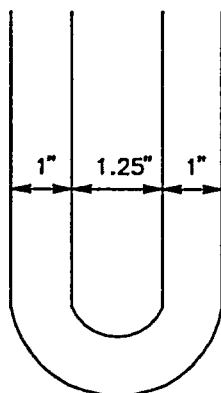
						 AIR PRODUCTS
1	BLB					
0	BLB					
REV	BY	CHECKED	PROCESS APPR - DATE	DESIGN APPR - DATE	PROJ. APPR - DATE	
						DWG. NO. NEWHTEX1 SHEET 3 OF 4

ITEM NO. 27.10 Heat Exch.	NO. OF UNITS 1	ATT-1022 PROJECT NAME AFDU FISCHER-TROPSCH II	AIR PRODUCTS / DOE VENDOR
ITEM NAME INTERNAL HEAT EXCHANGER (27.10 REACTOR)		LOCATION LAPORTE, TEXAS	

FIGURE 2: TOP VIEW (NOT TO SCALE)



VIEW OF U-TUBE

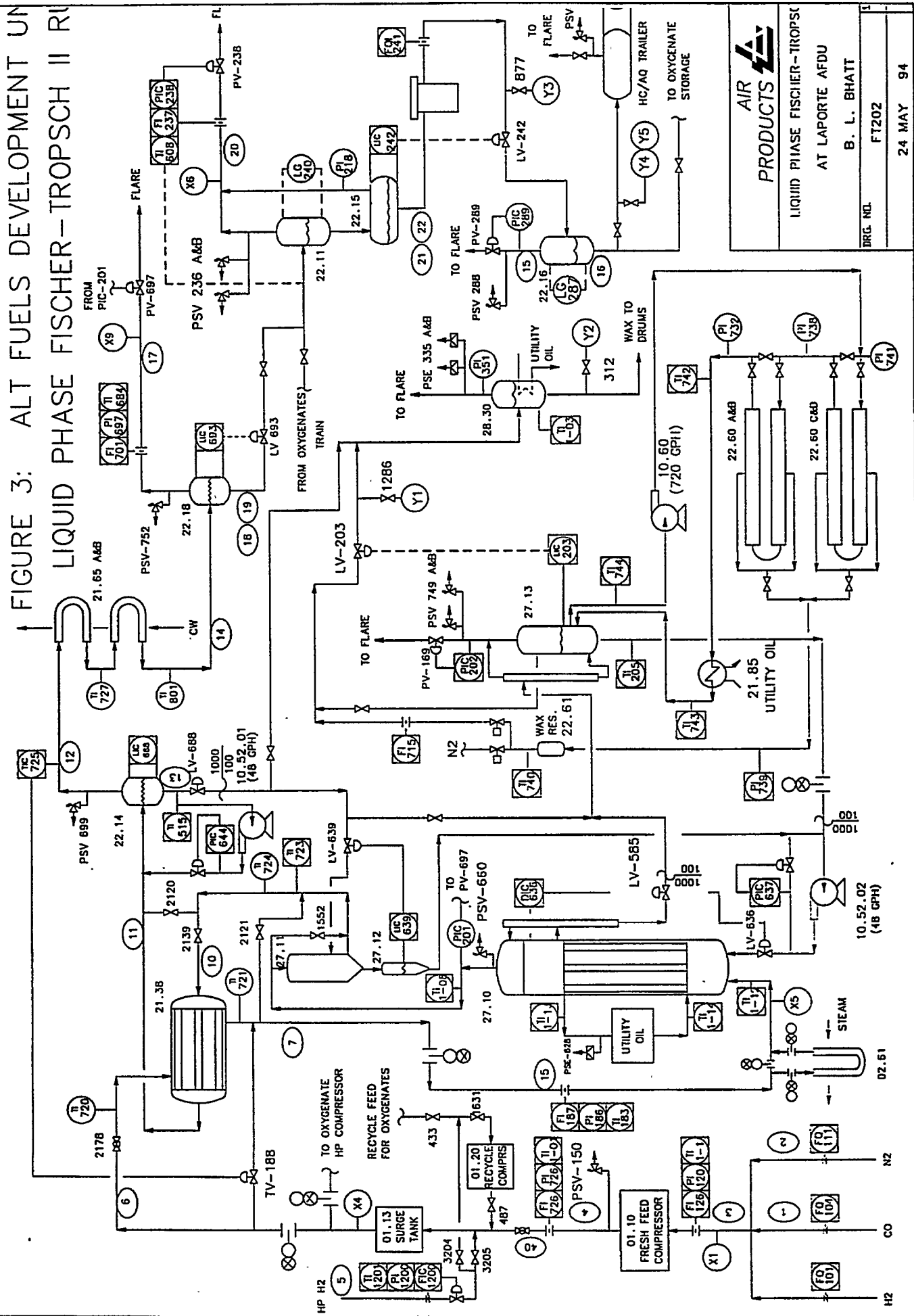


NOTES:

1. OUTER TUBES MUST BE AT LEAST 1.5" FROM THE REACTOR WALL (SEE A).
2. TUBE SPACING MUST BE AT LEAST 0.7" (SEE B).
3. DESIGN ENG TO DETERMINE U-TUBE BEND RADIUS.

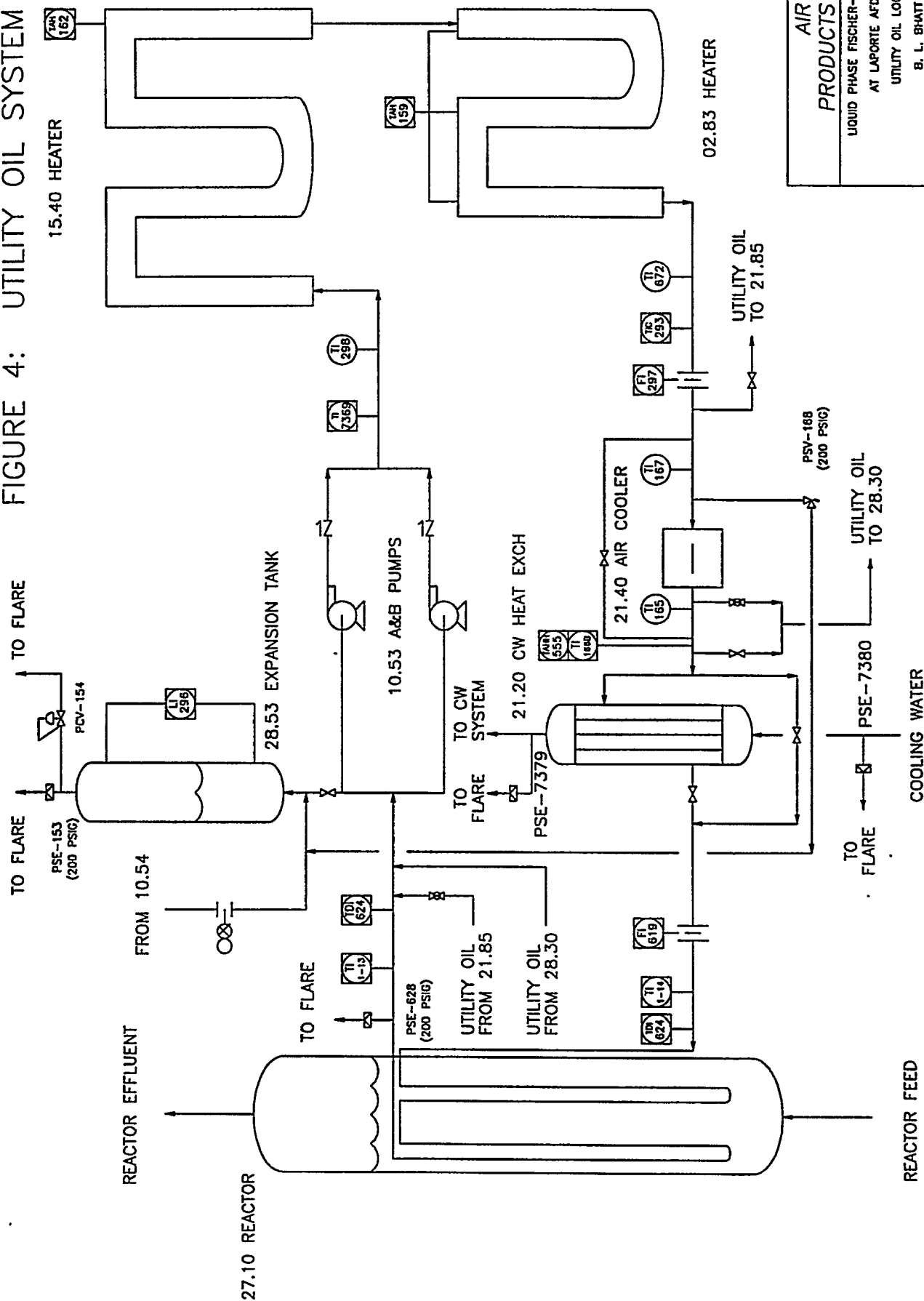
						 AIR PRODUCTS DWG. NO. NEWHTEX2 SHEET 4 OF 4
1	BLB					
0	BLB					
REV.	BY	CHECKED	PROCESS APPR. - DATE	DESIGN APPR. - DATE 43	PROJ. APPR. - DATE	

FIGURE 3: ALT FUELS DEVELOPMENT UN
LIQUID PHASE FISCHER-TROPSCH II RU



	
LIQUID PHASE FISCHER-TIOPS (AT LAPORTE AFDU B. L. BHATT	
DRG. NO.	1
	FT202
	24 MAY 94

FIGURE 4: UTILITY OIL SYSTEM



AIR PRODUCTS LIQUID PHASE FISCHER-TROPSCH I AT LAPORTE AFDU UTILITY OIL LOOP B. L. BHATT UO02 18 APRIL 1994	
DRG. NO.	UO02
NO.	1

FIGURE 5
 UCI #1185-43, 57, 55/370 oC
 CO+N2 FOR PRETREATMENT

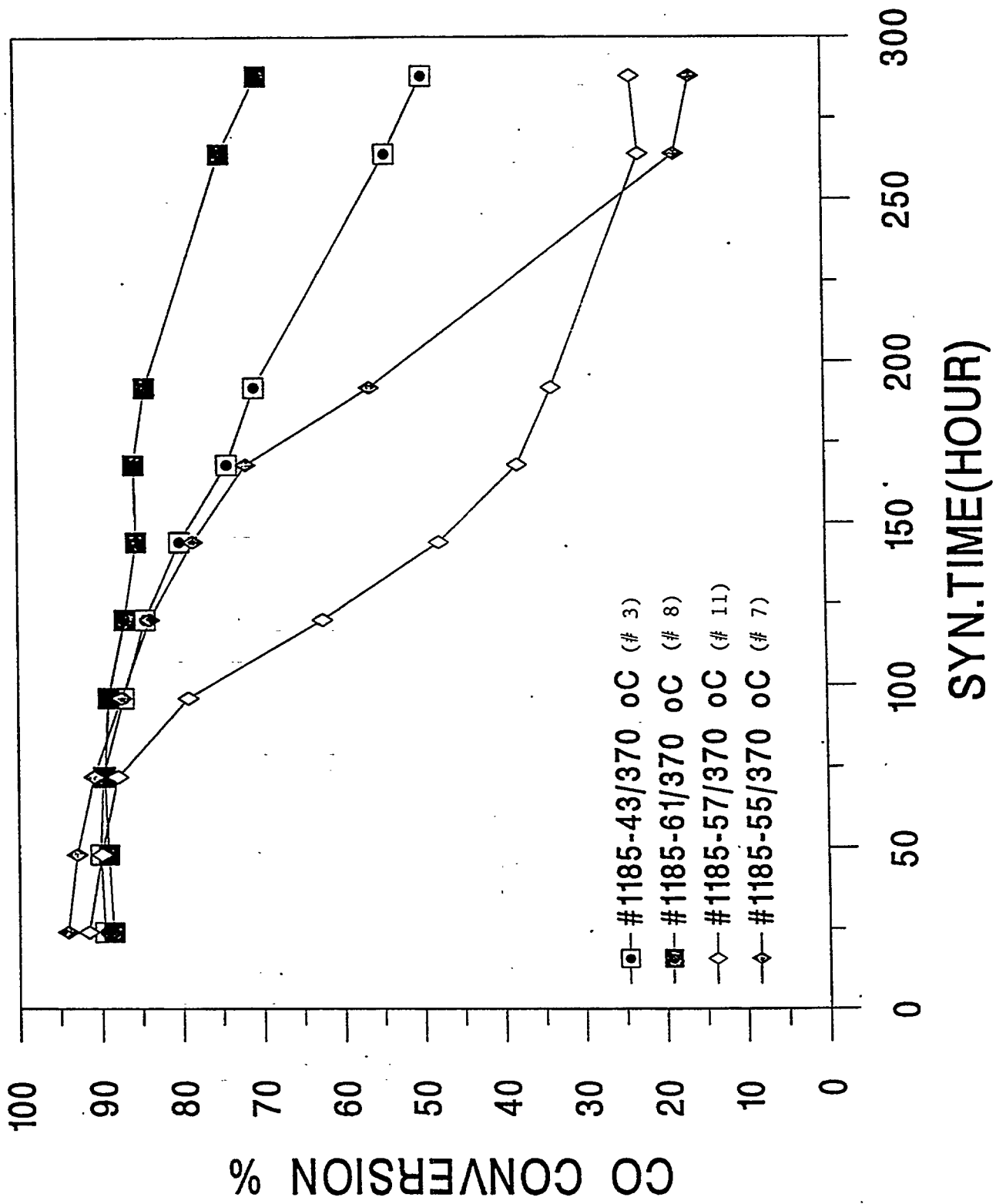
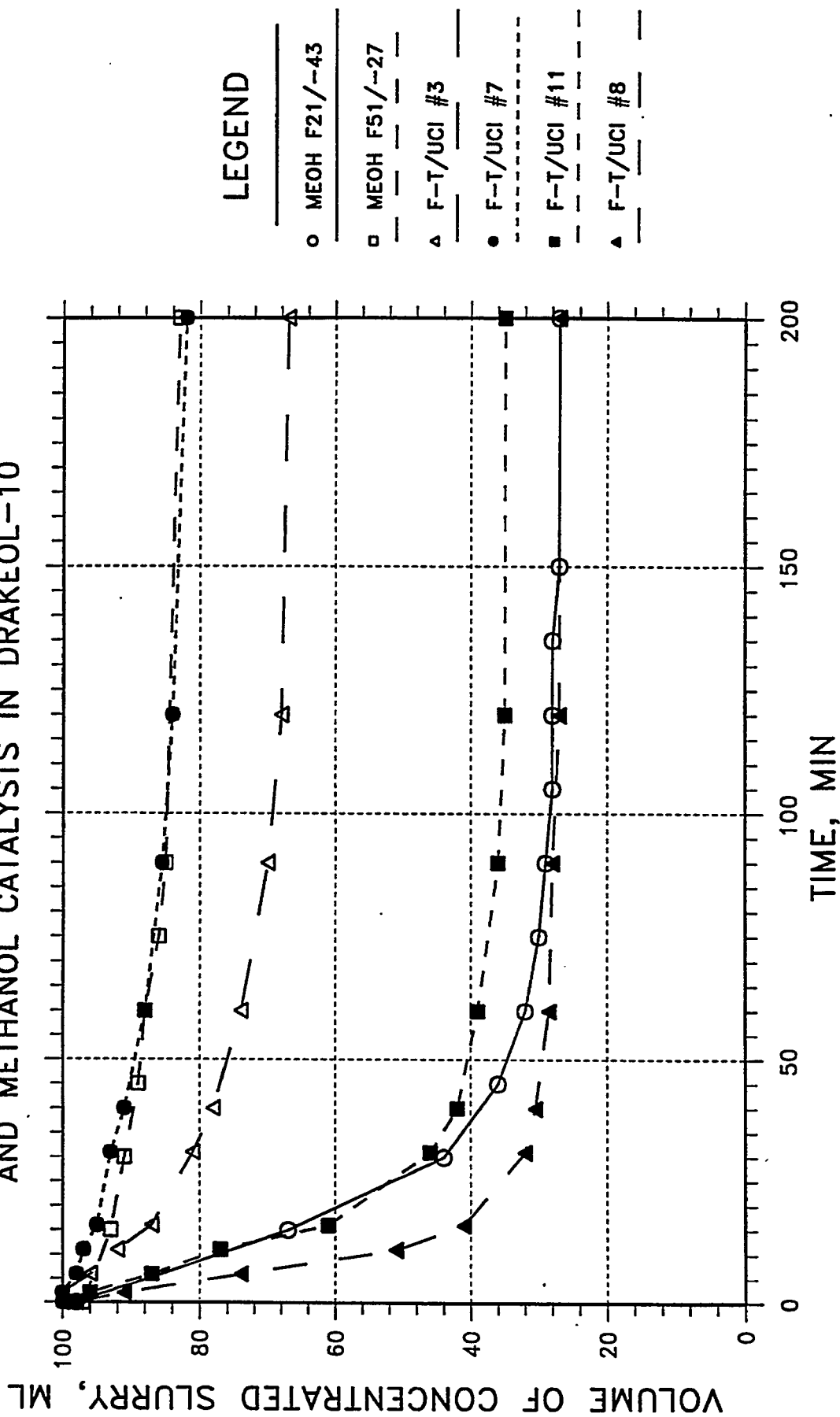


FIGURE 6

SEDIMENTATION TEST RESULTS FOR FISCHER-TROPSCH
AND METHANOL CATALYSTS IN DRAKEOL-10



UCI#1185-78

(LGX100 R3)

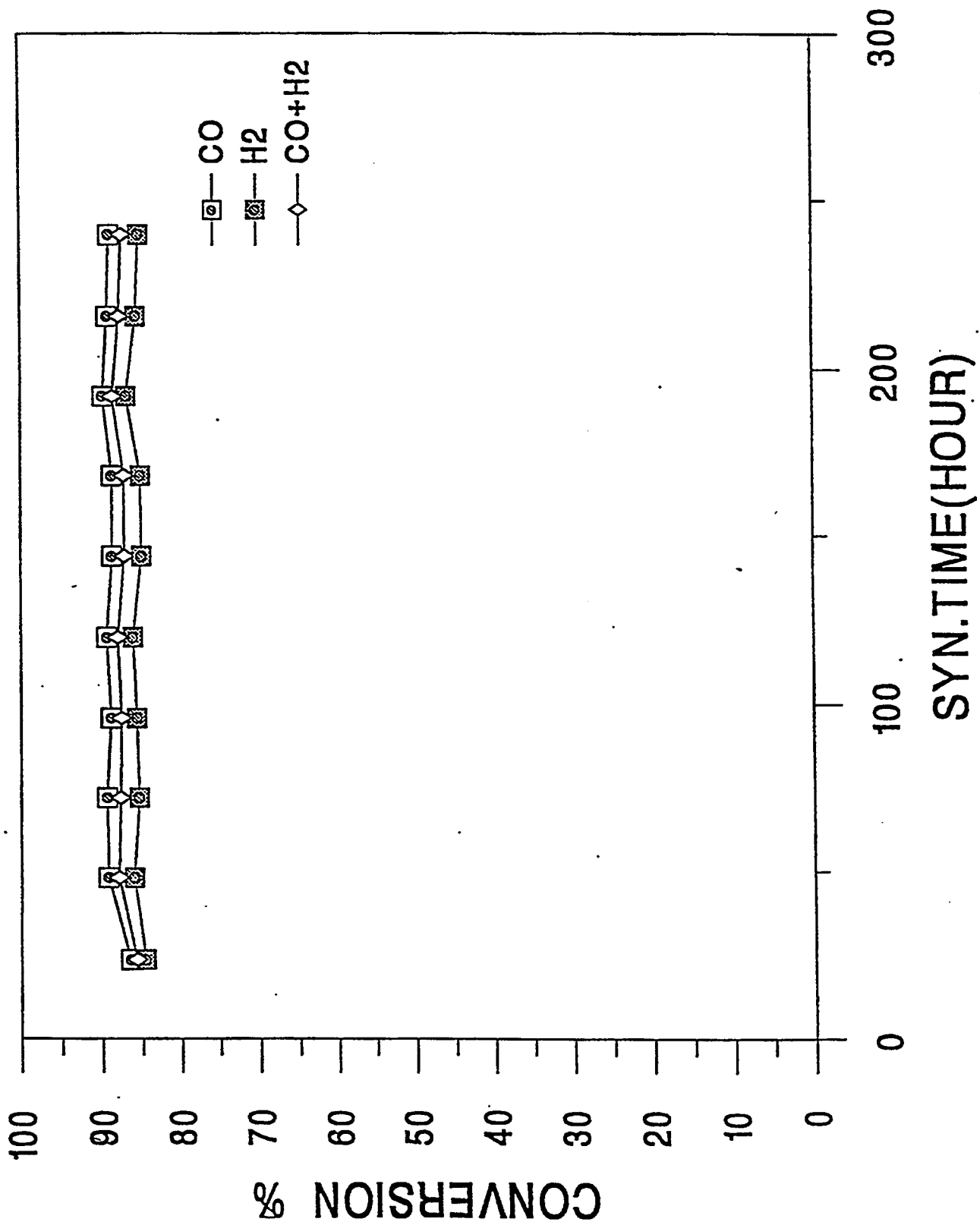


FIGURE 8

LGX100.005

UCI #1185-78

120 Hrs

H₂/CO=0.7
Pretreat=CO/24 Hrs
S. V. = 2.4 NU/h/g(Fe)

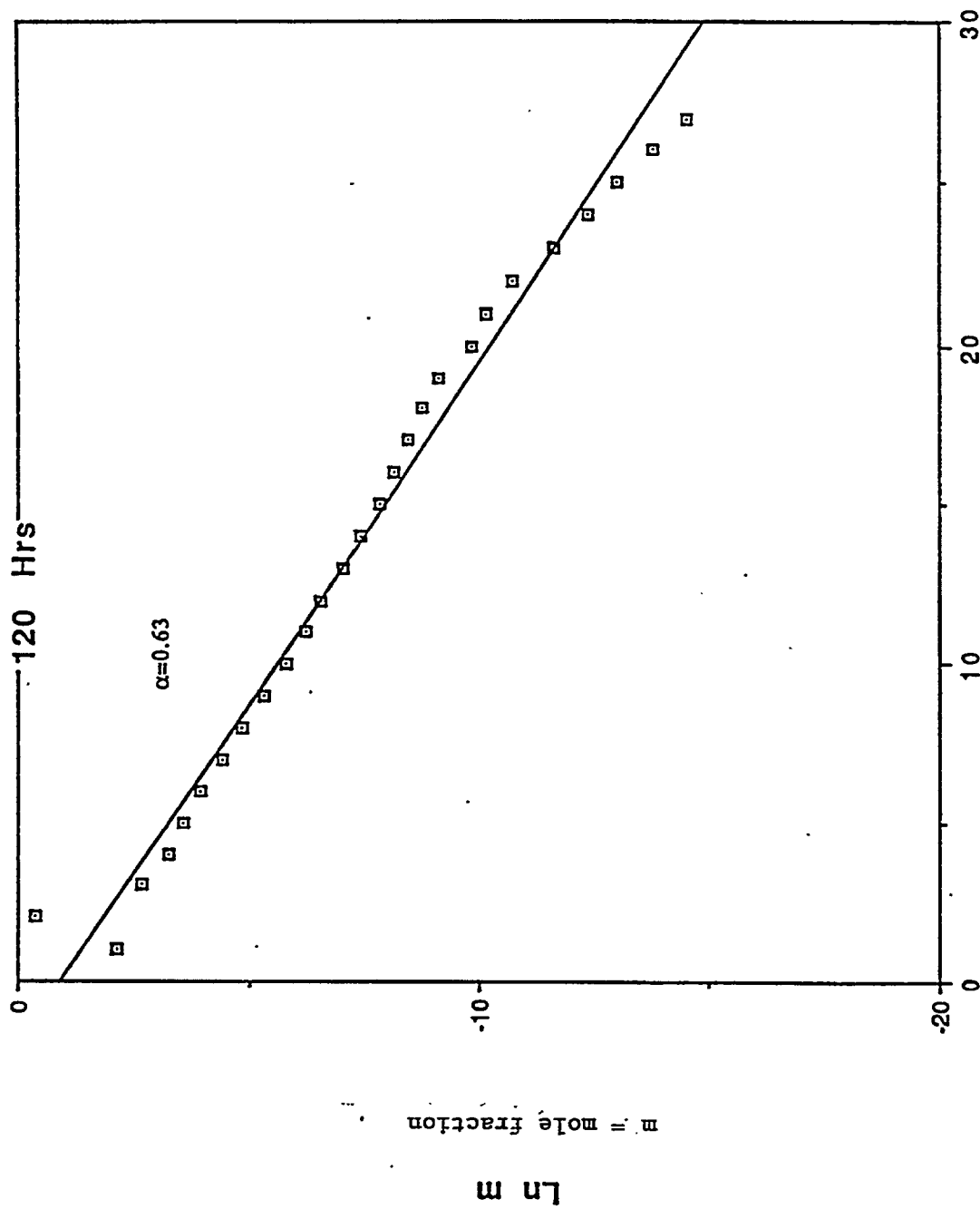


FIGURE 9

UCI#1185-75

(LGX101 R4)

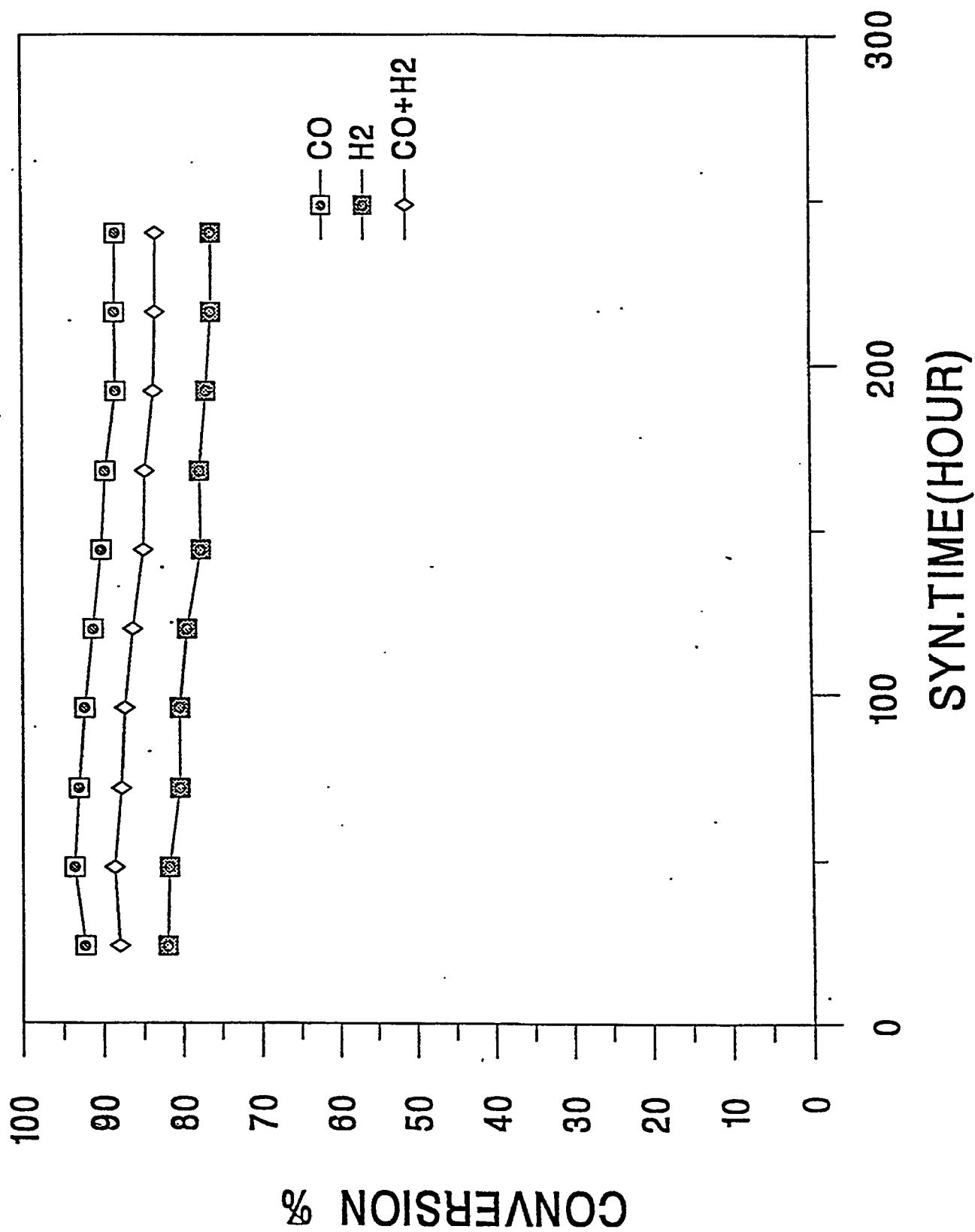


FIGURE 10

LGX101.005

UCI #1185-75

120 Hrs

H₂/CO=0.7
 Pretreat=CO/24 Hrs
 S. V. = 2.4 NL/h/g(Fe)

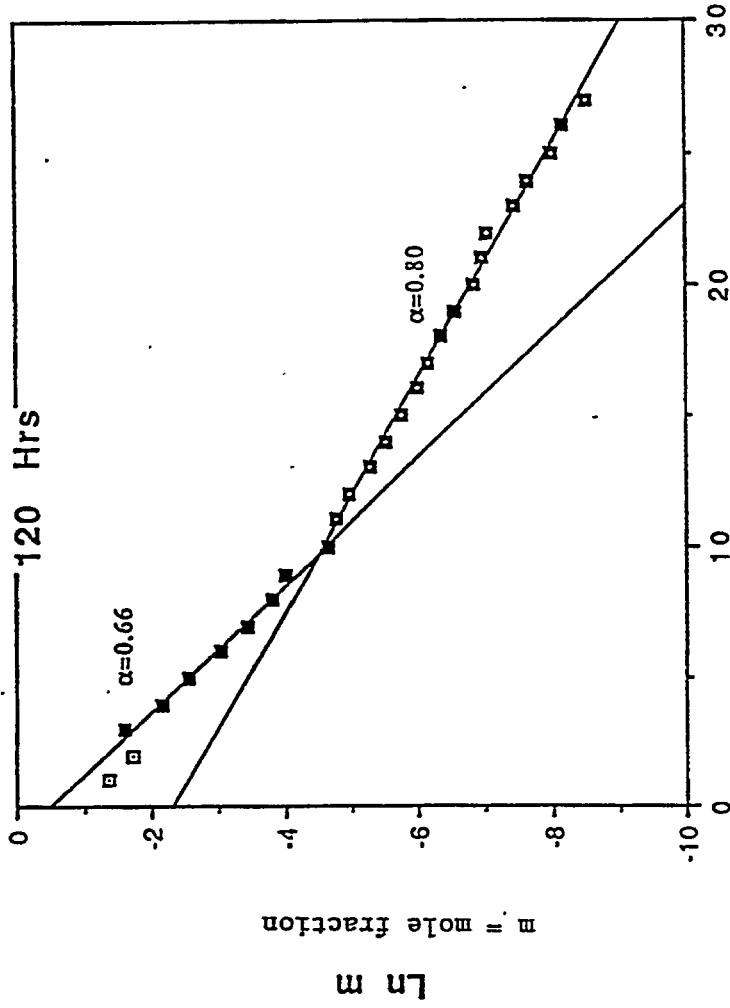


FIGURE 11

LGX111
UCI #1185-78

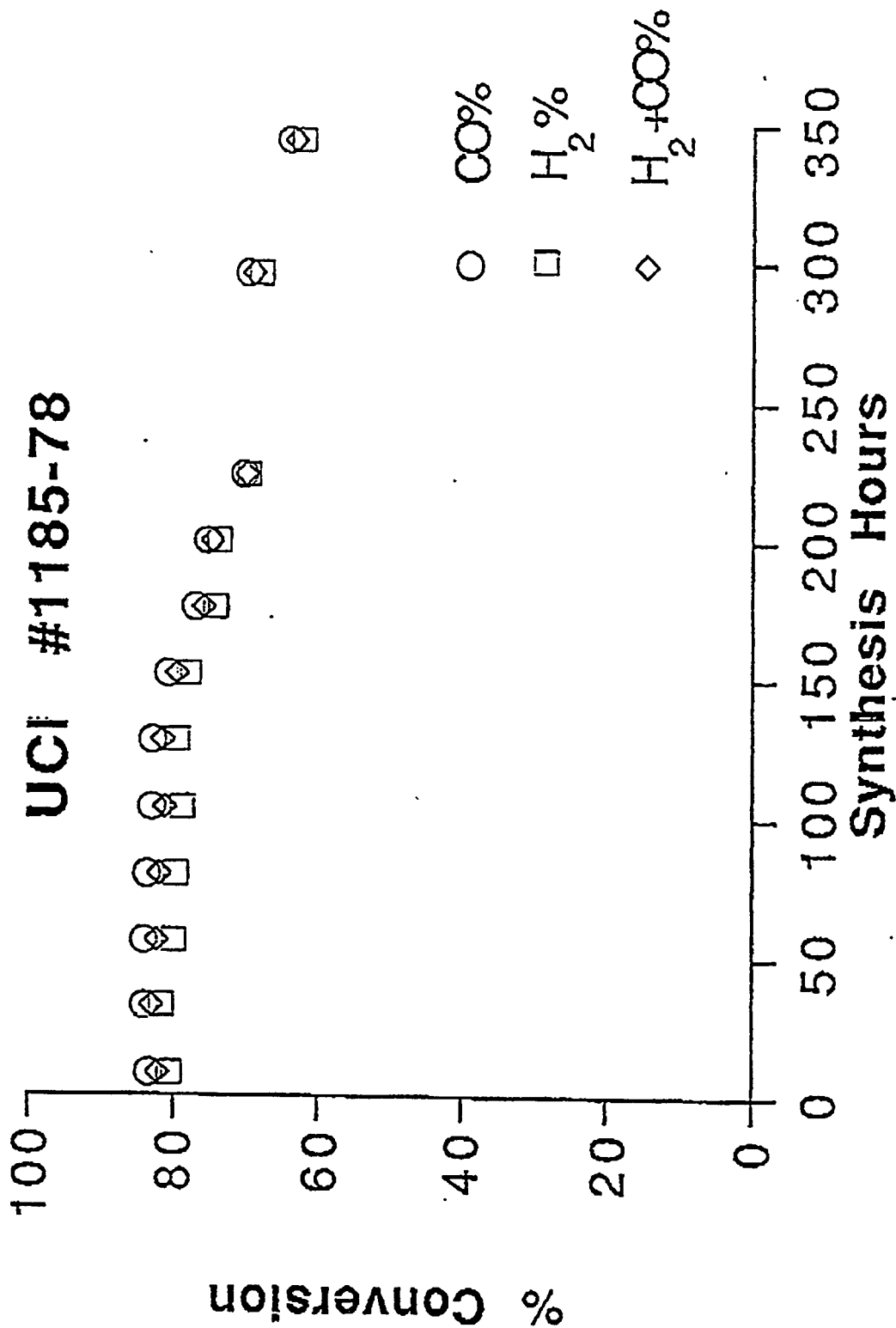
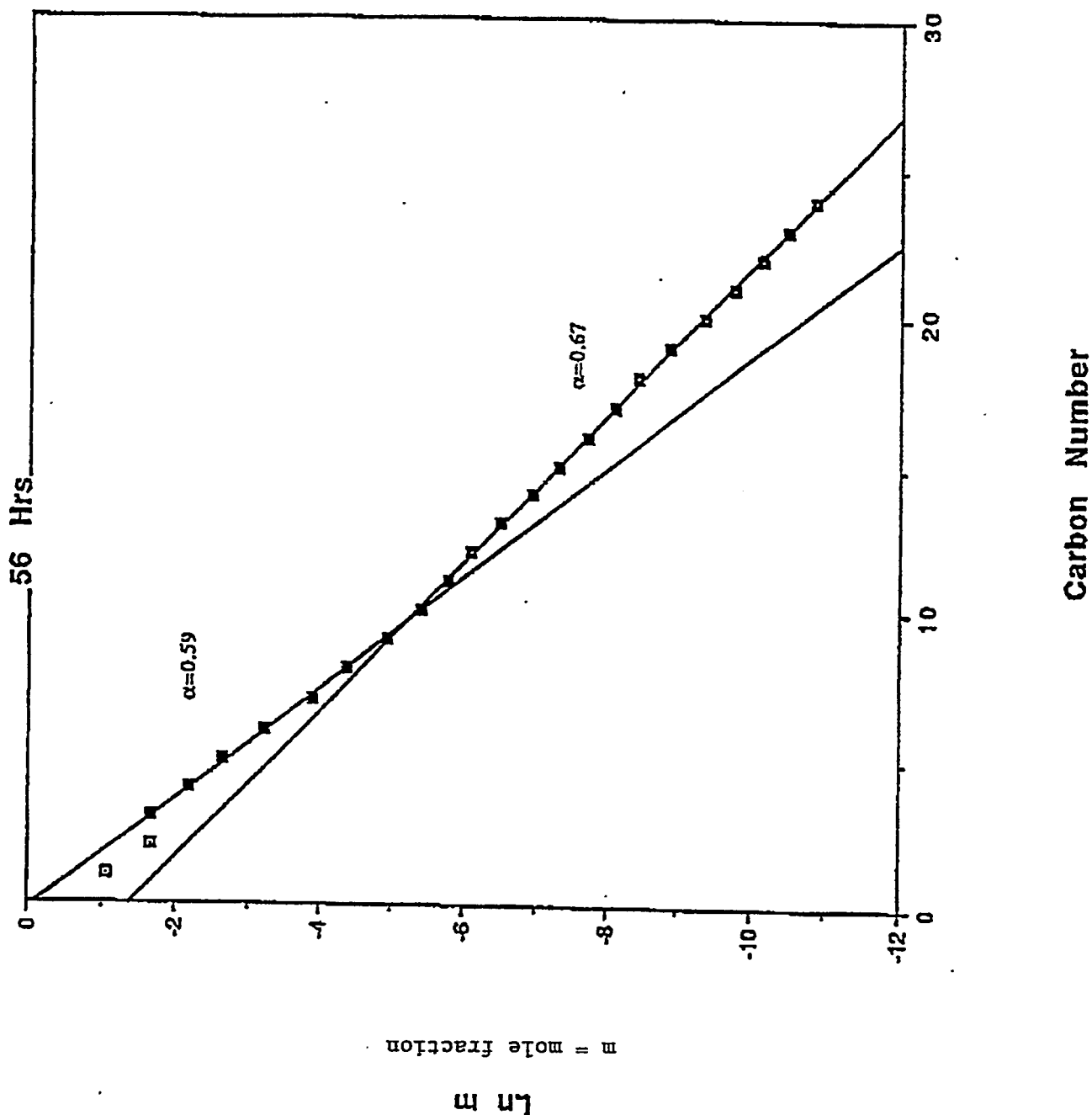


FIGURE 12
LGX111.003
UCI #1185-78



H₂/CO=0.7
Protreat=CO/19 Hrs
S. V. = 2.4 NL/h/g(Fe)

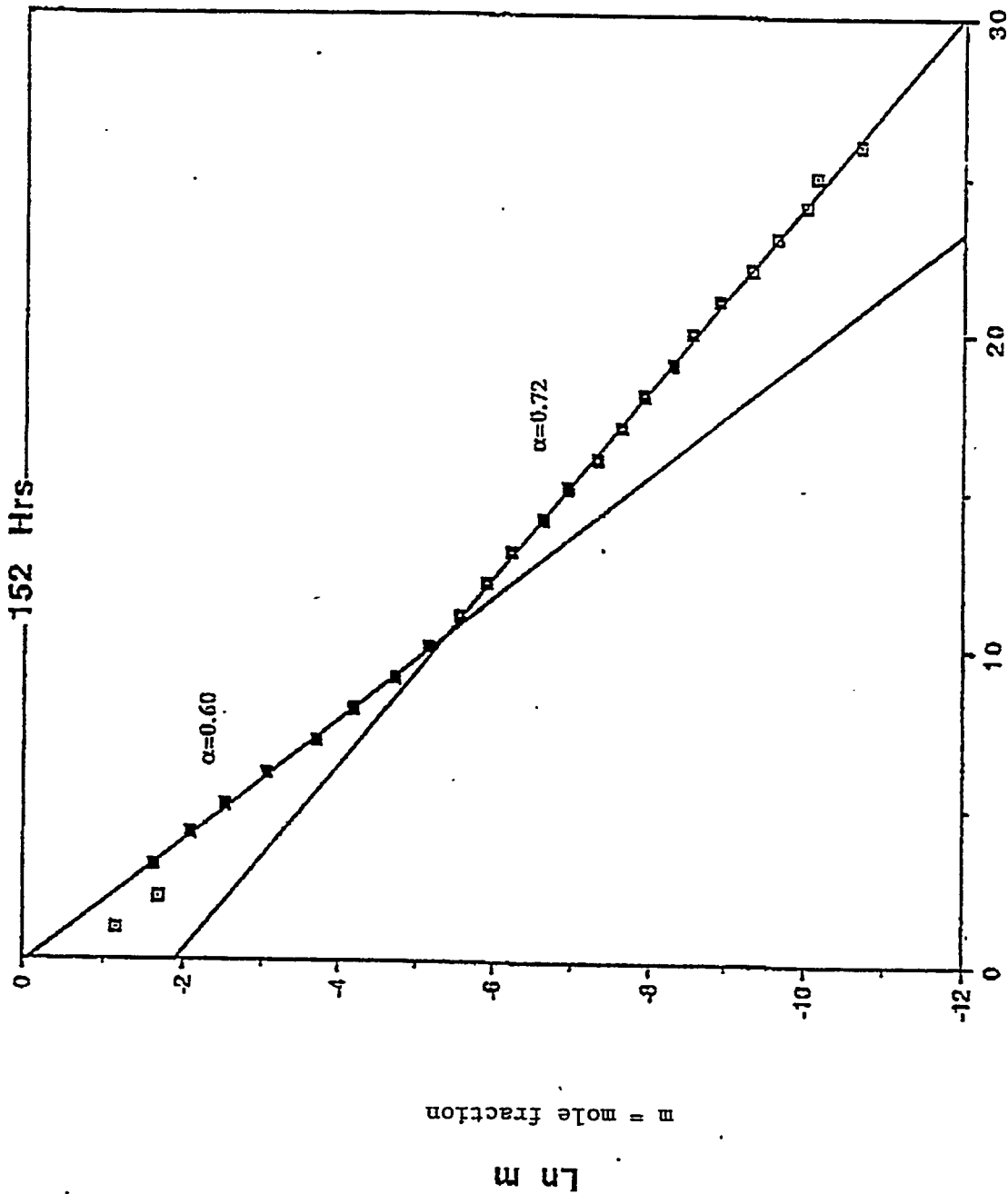
FLA 4 13

LGX111.007

UCI #1185-78

152 Hrs

$I_2/CO=0.7$
 Pretreat=CO/19 Hrs
 S. V. = 2.4 NL/hg(Fe)



Carbon Number

FIGURE 14

CATALYST (UCI-78) ACTIVATION IN CAER BUBBLE COLUMN
(85 PSIG, 6 SL/HR-G FE, 0.14 FT/SEC @ 270 DEG C)

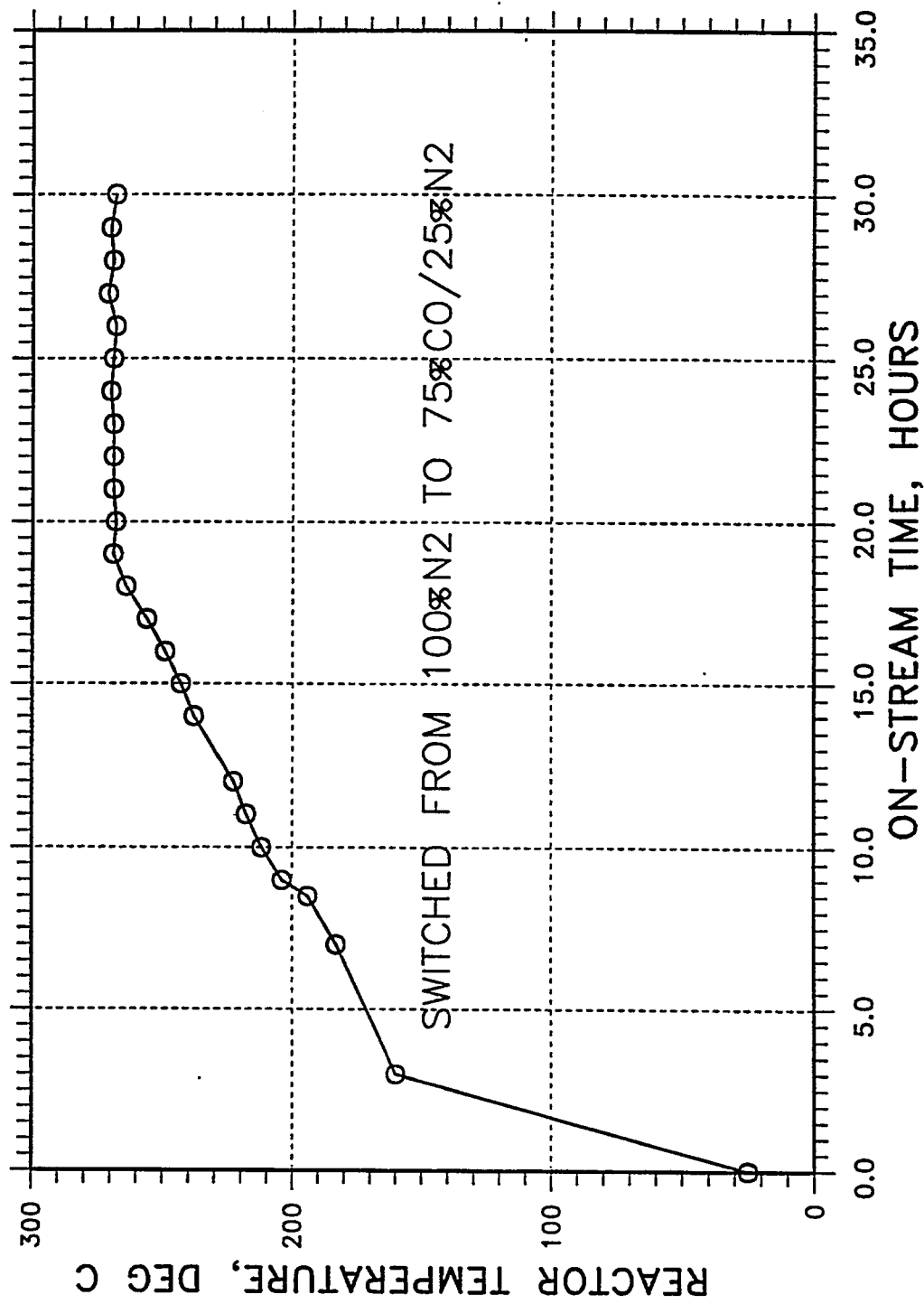


FIGURE 15

CATALYST (UCI-78) ACTIVATION IN CAER BUBBLE COLUMN
(270 DEG C, 88 PSIG, 6 SL/HR-G FE, 0.13 FT/SEC)

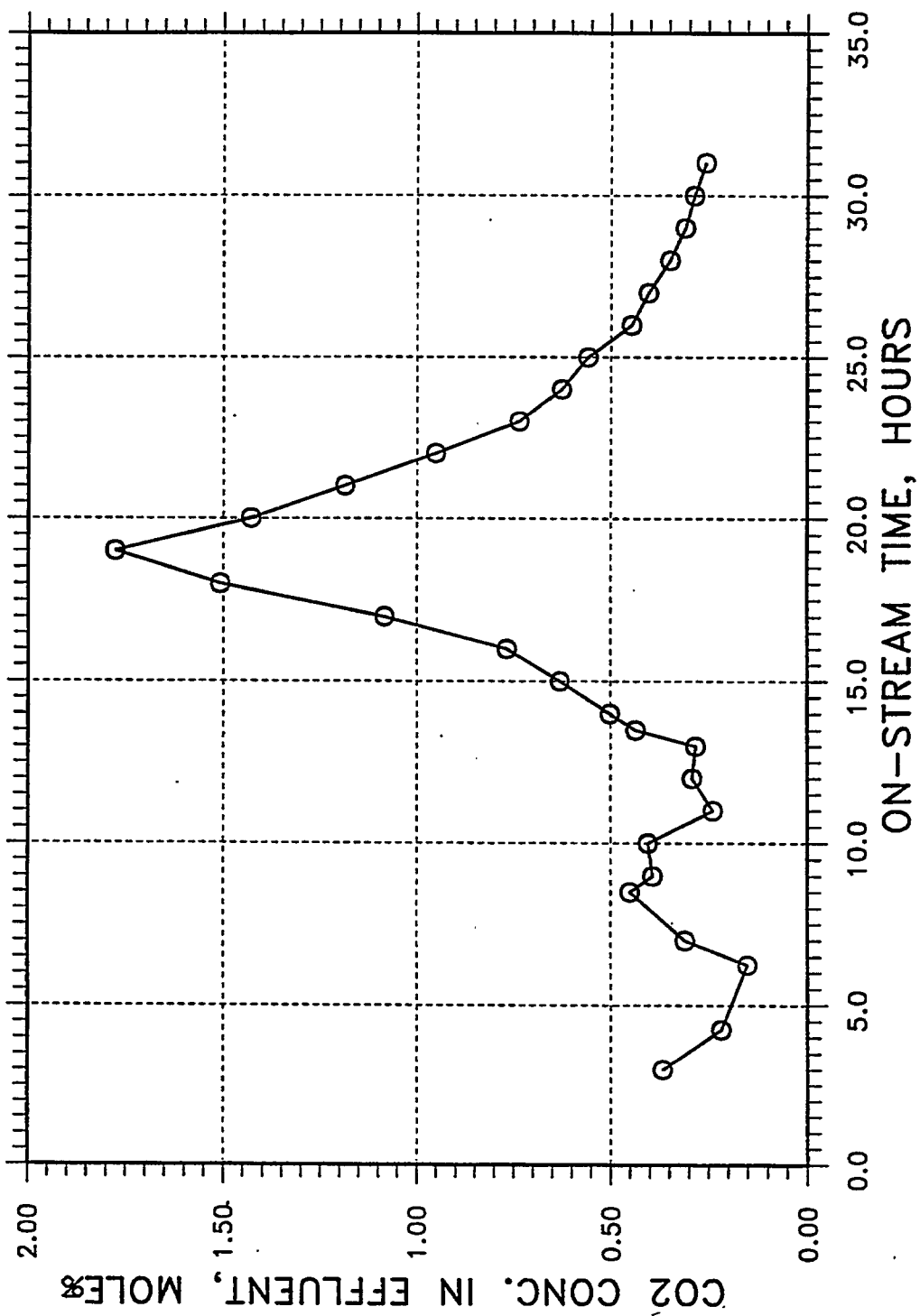


FIGURE 16

CATALYST (UCI-78) ACTIVATION IN CAER BUBBLE COLUMN
(270 DEG C, 88 PSIG, 6 SL/HR-G FE, 0.13 FT/SEC)

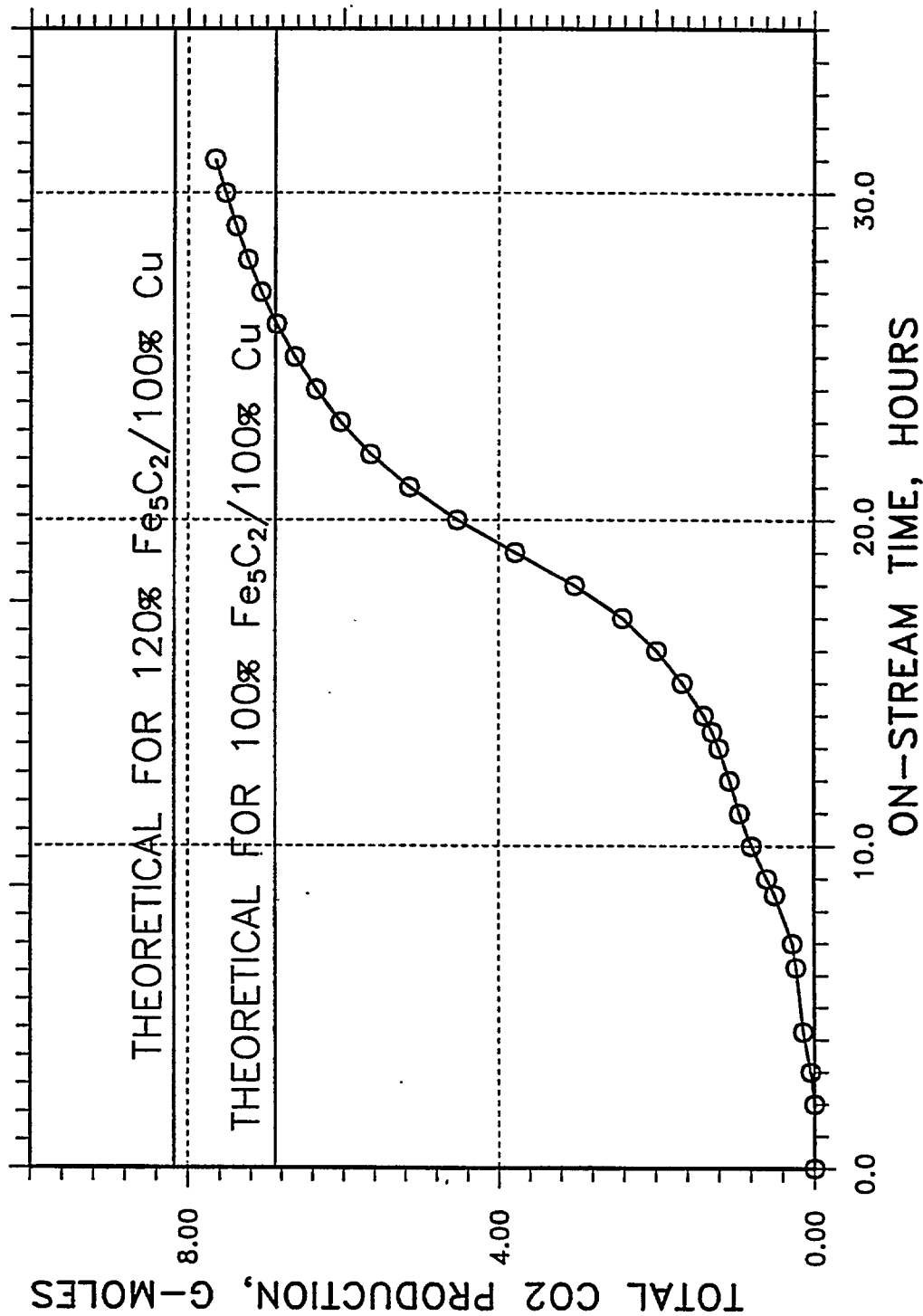
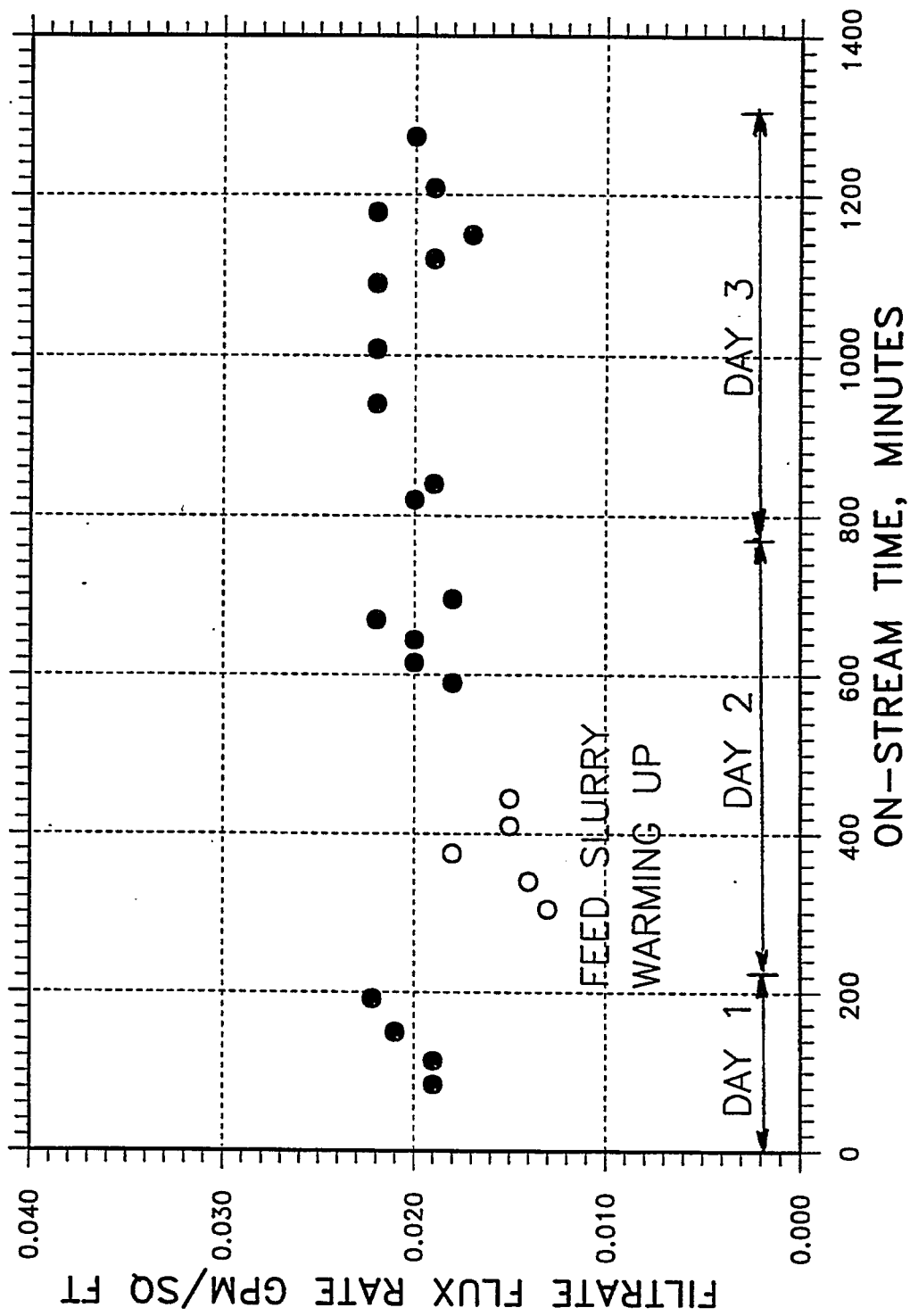


FIGURE 17

MOTT FILTER TEST FOR F-T II (NOV 93)
(CAER ACTIVATED UCI CAT # 1185-78 IN C30 OIL)

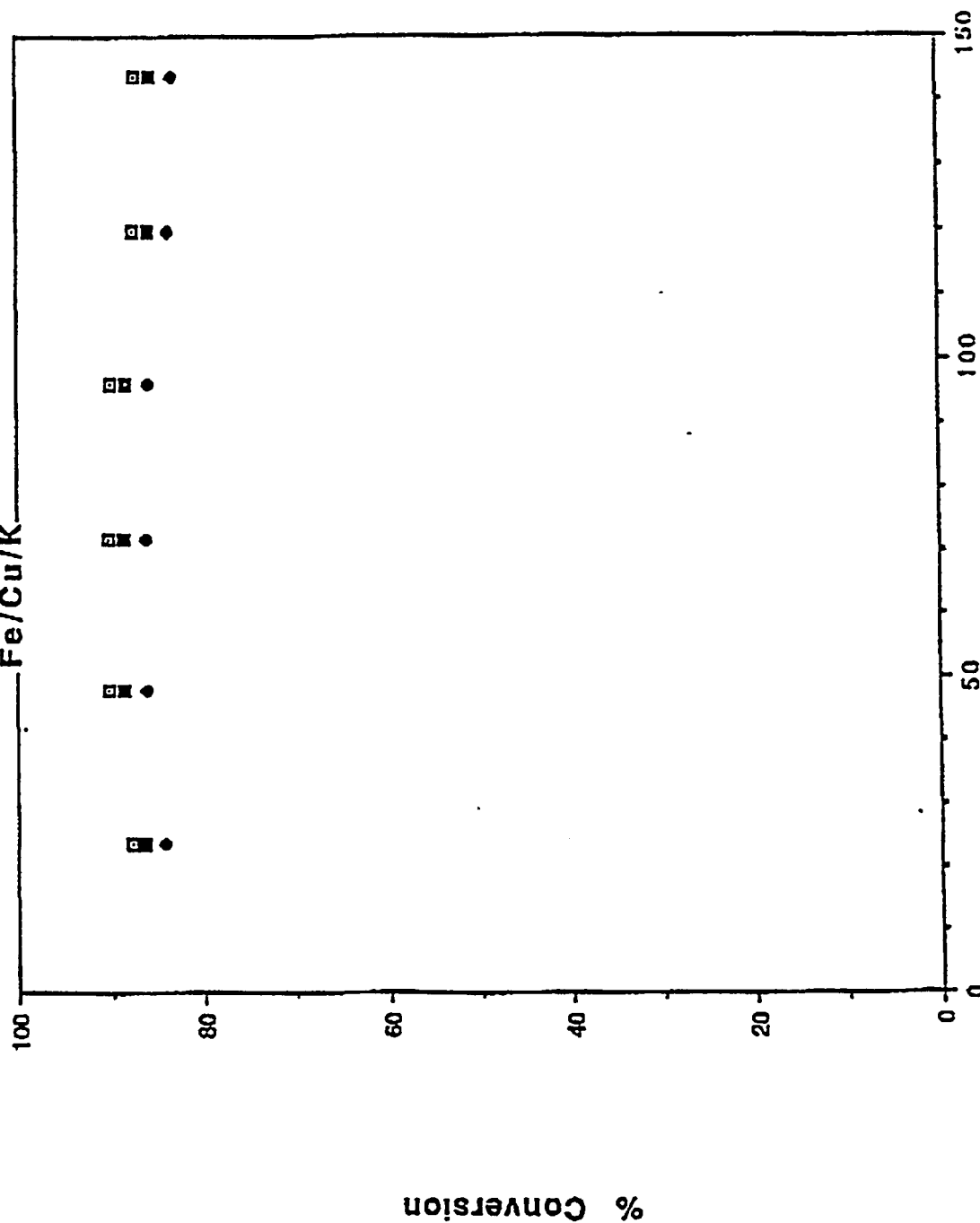


LGX129

UCI #1185-149

Fe/Cu/K

H₂/CO=0.7
 Pretreat=CO/24 Hrs
 S. V. = 2.4 NL/h/g(Fe)



Time (Hrs)