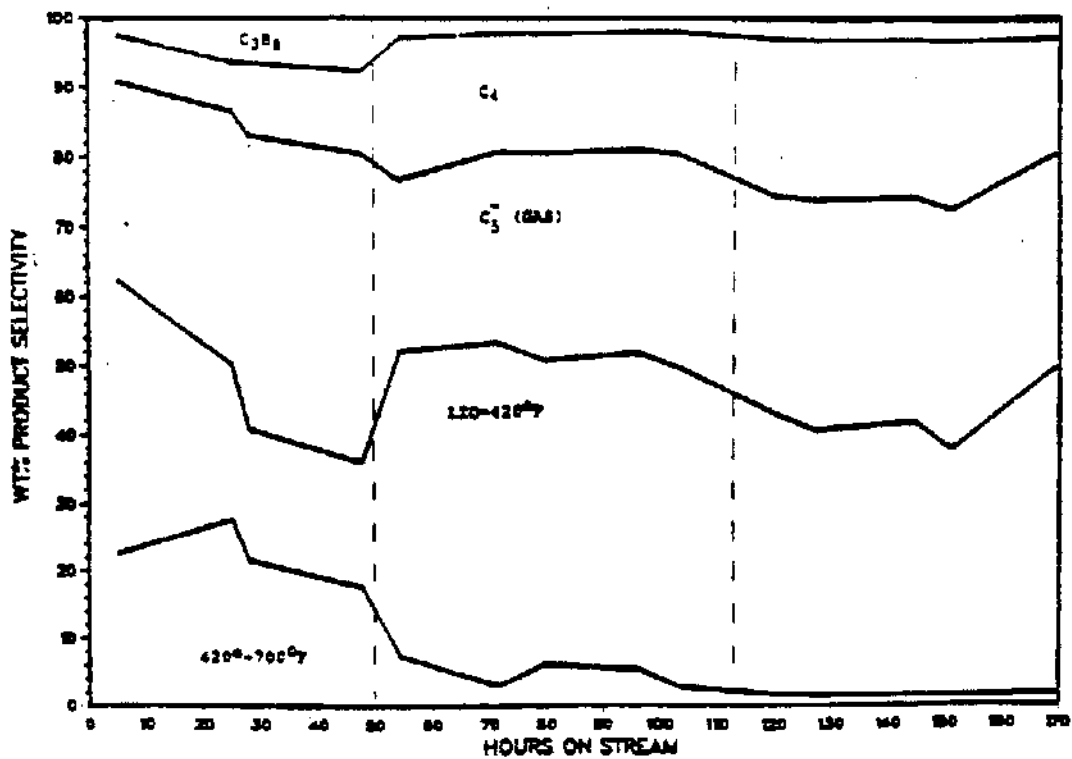
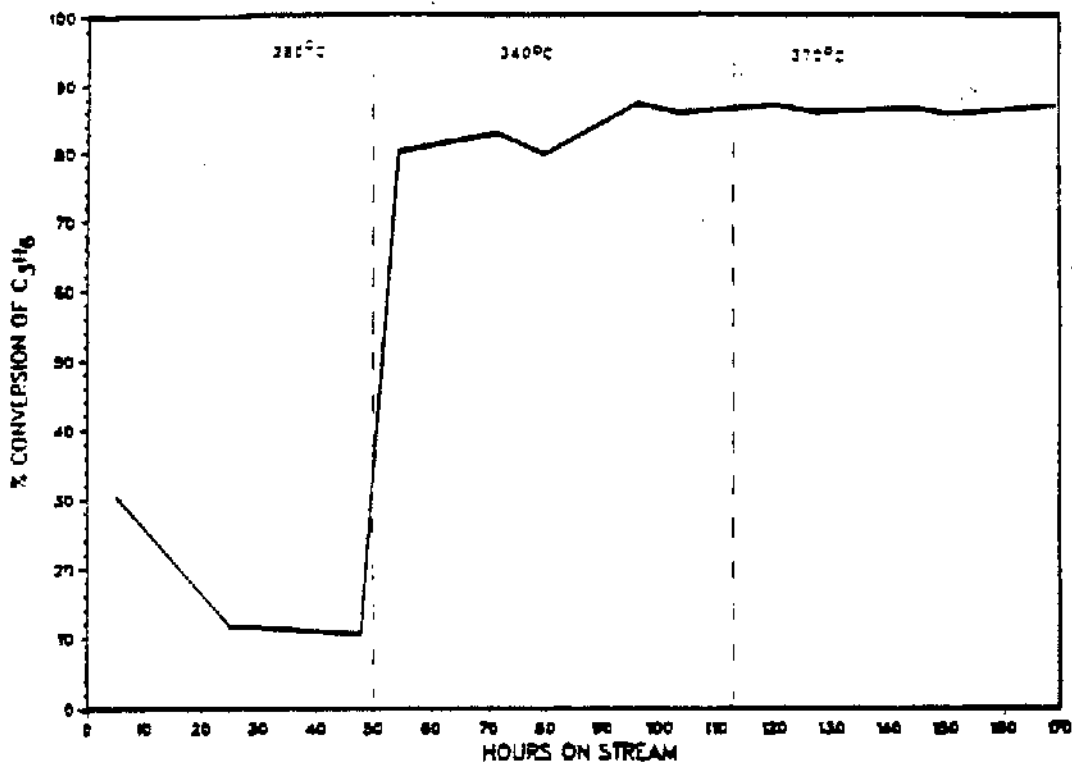


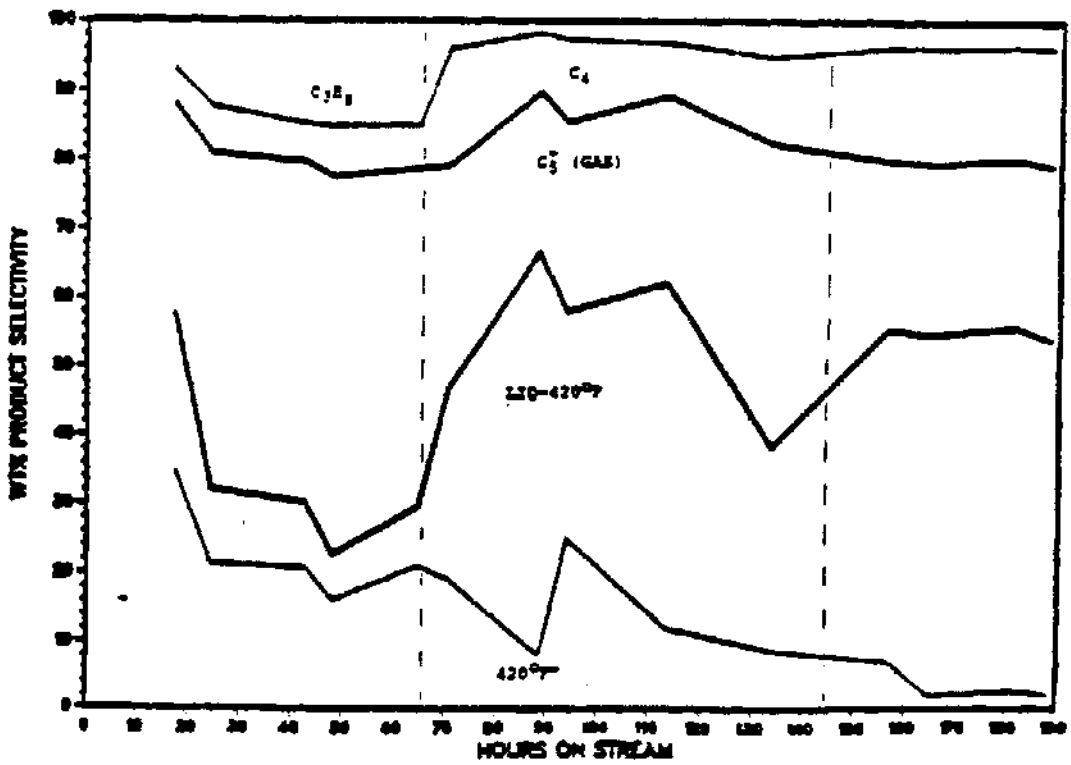
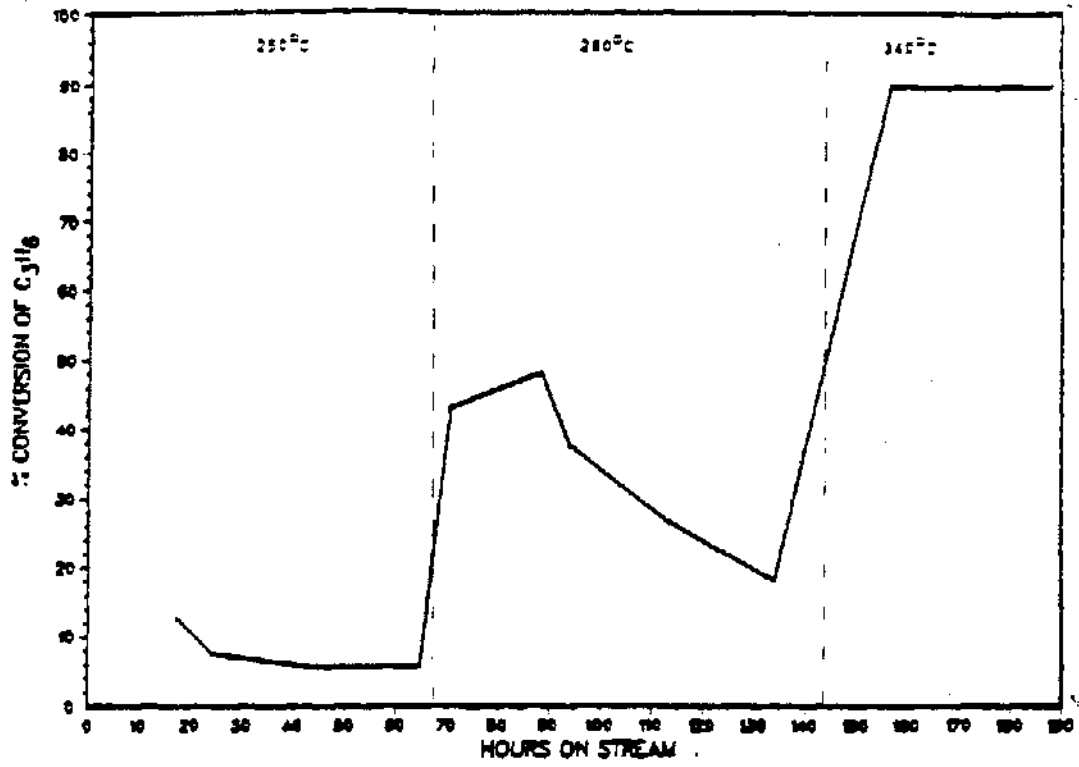
RUN NO. 9972-16

Fig. 49



RUN NO. 9972-17

Fig. 50



997218

0.00 WHSV
100 PpdG
220°C

340°C

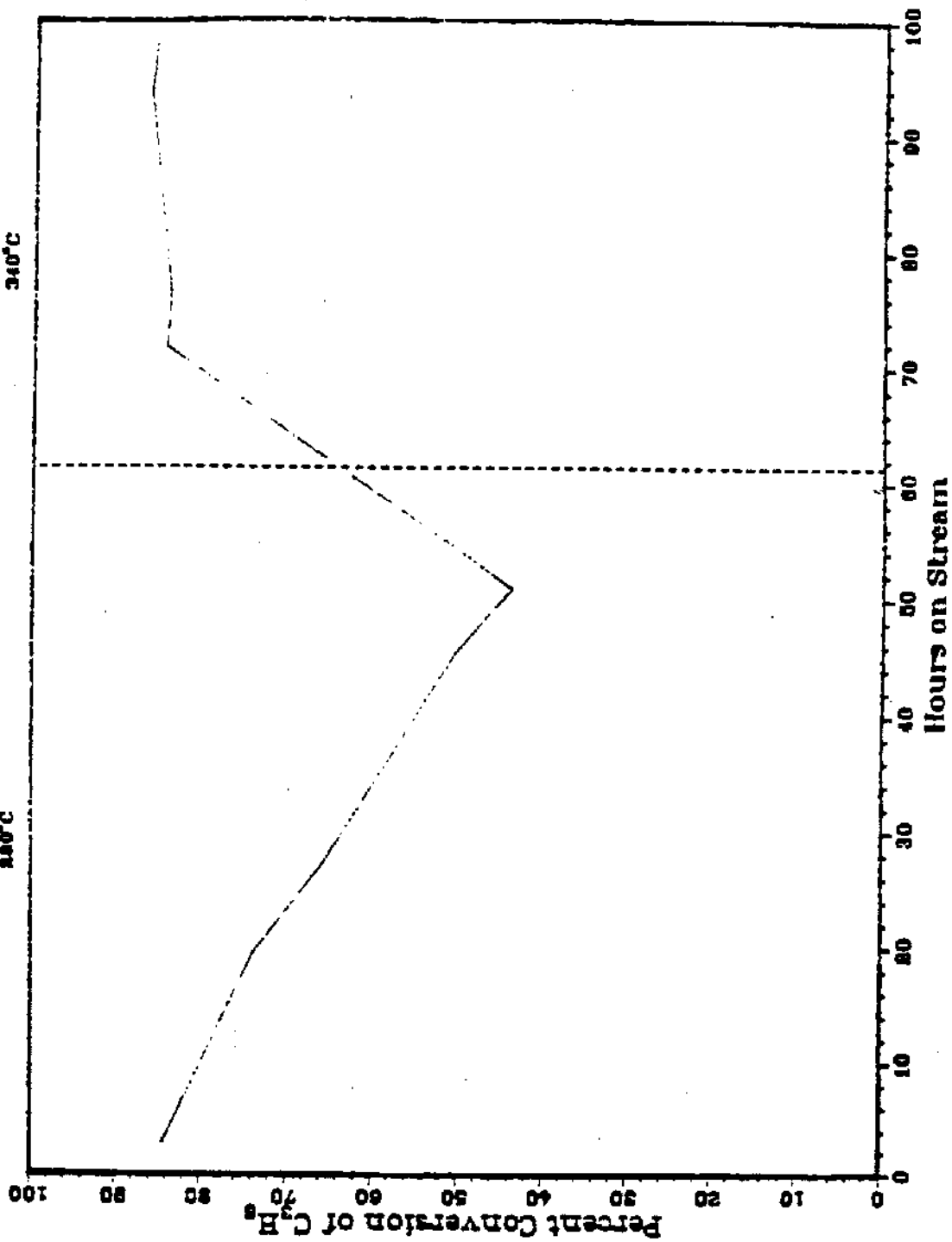
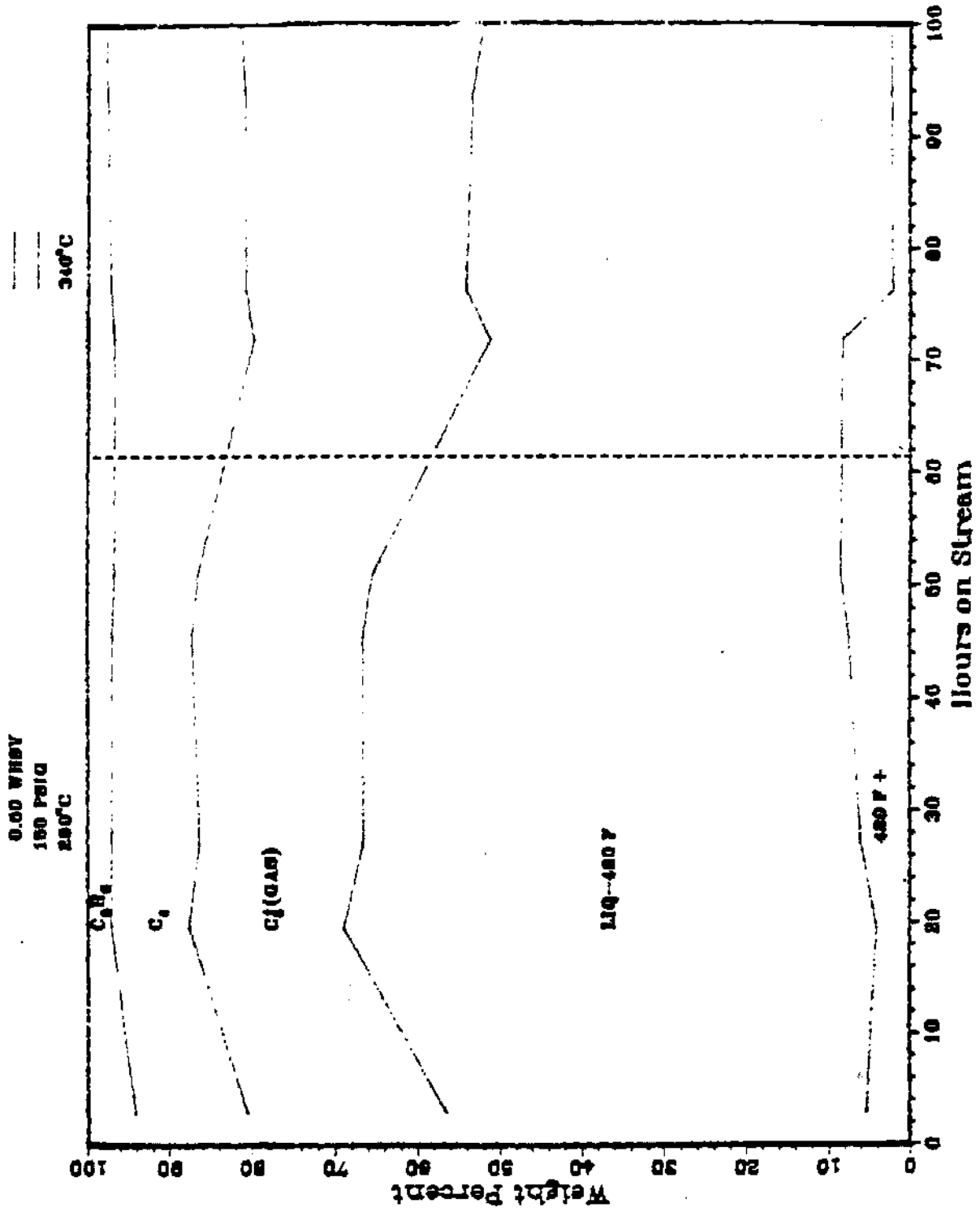


Fig. 51

WINN



997220

0.01 WHBY
100 PSIG
280°C

310°C

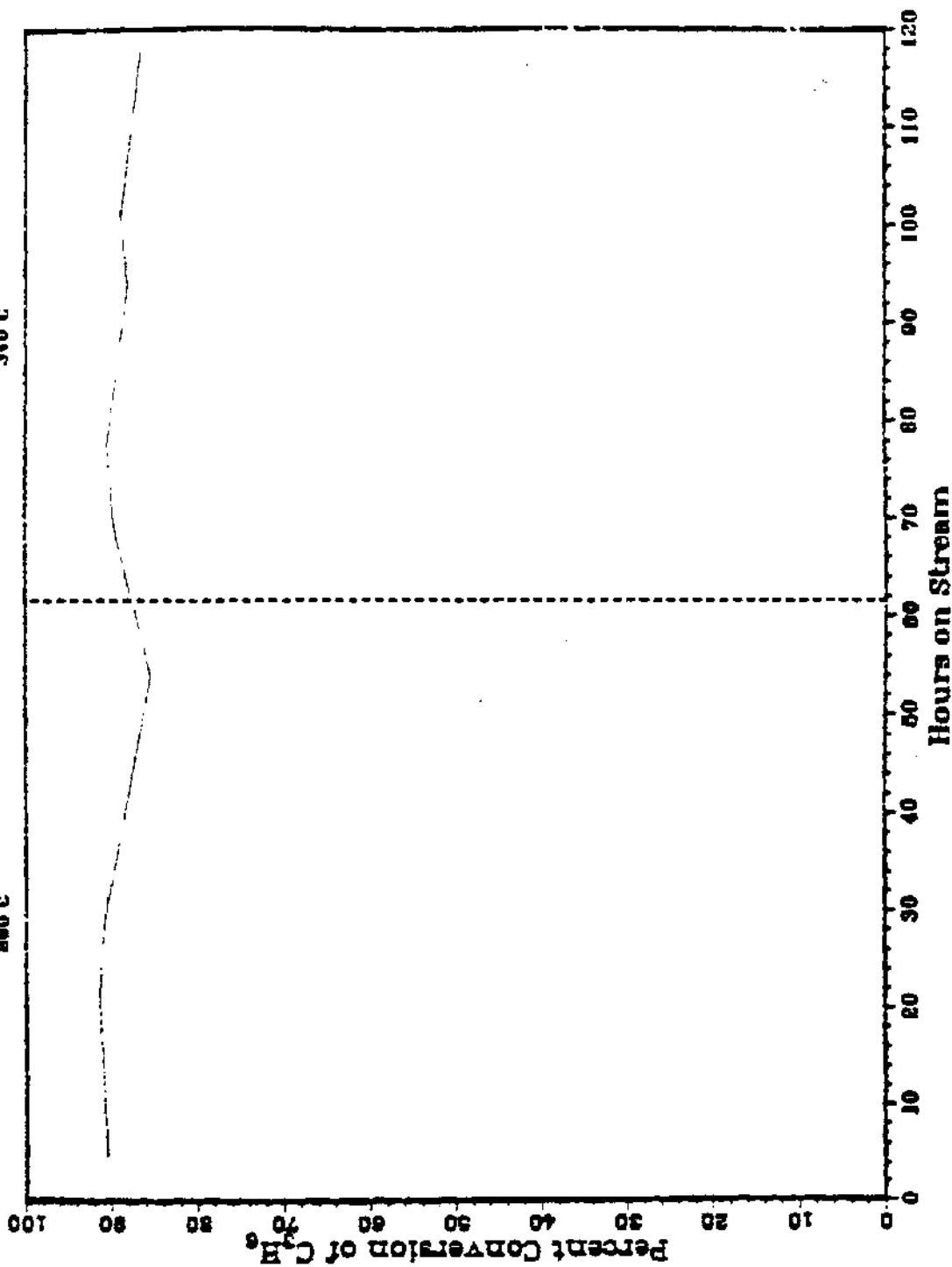
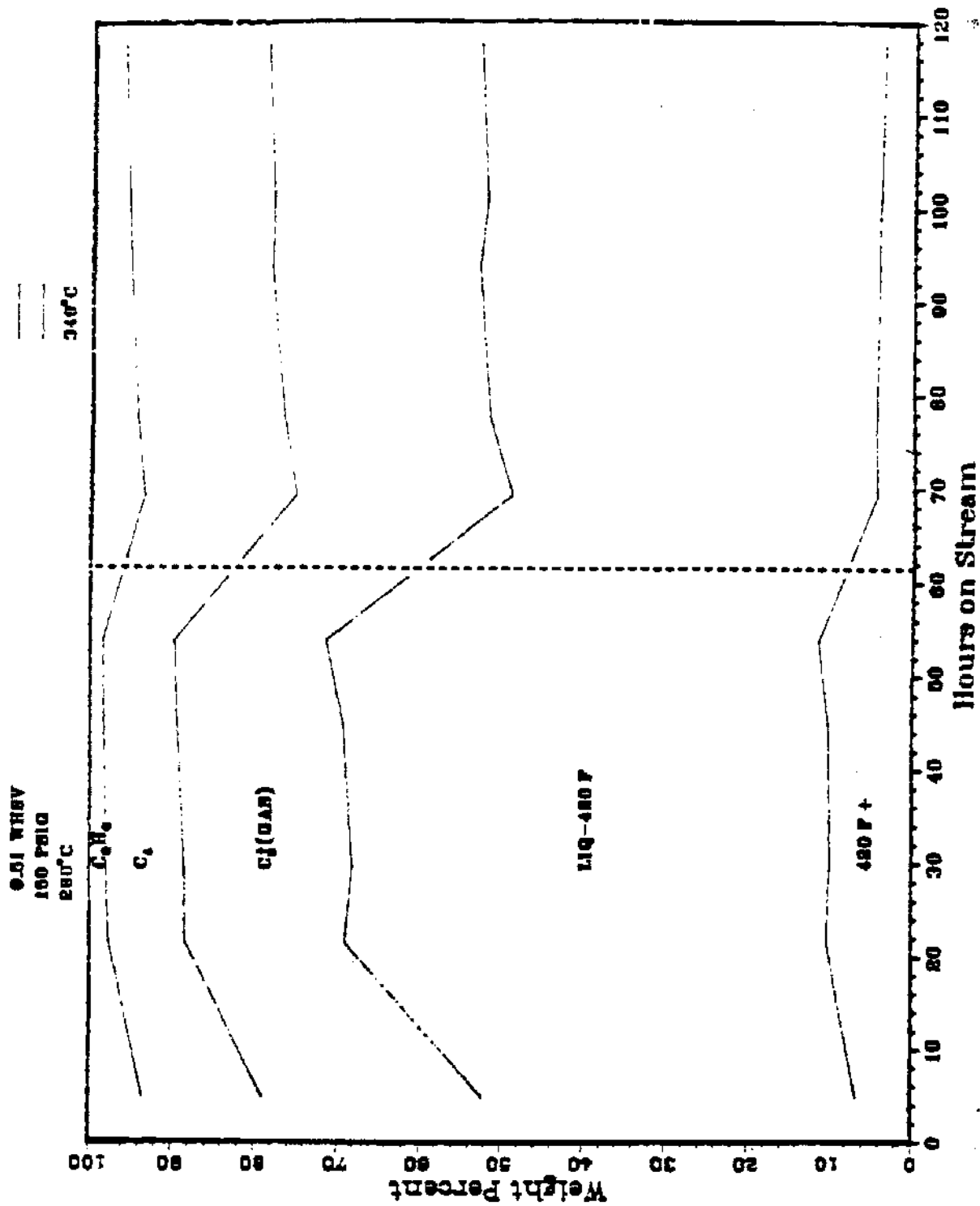


Fig. 53

Fig. 54

997220



997219

0.01 WUBOV
100 POUU
200°C

310°C

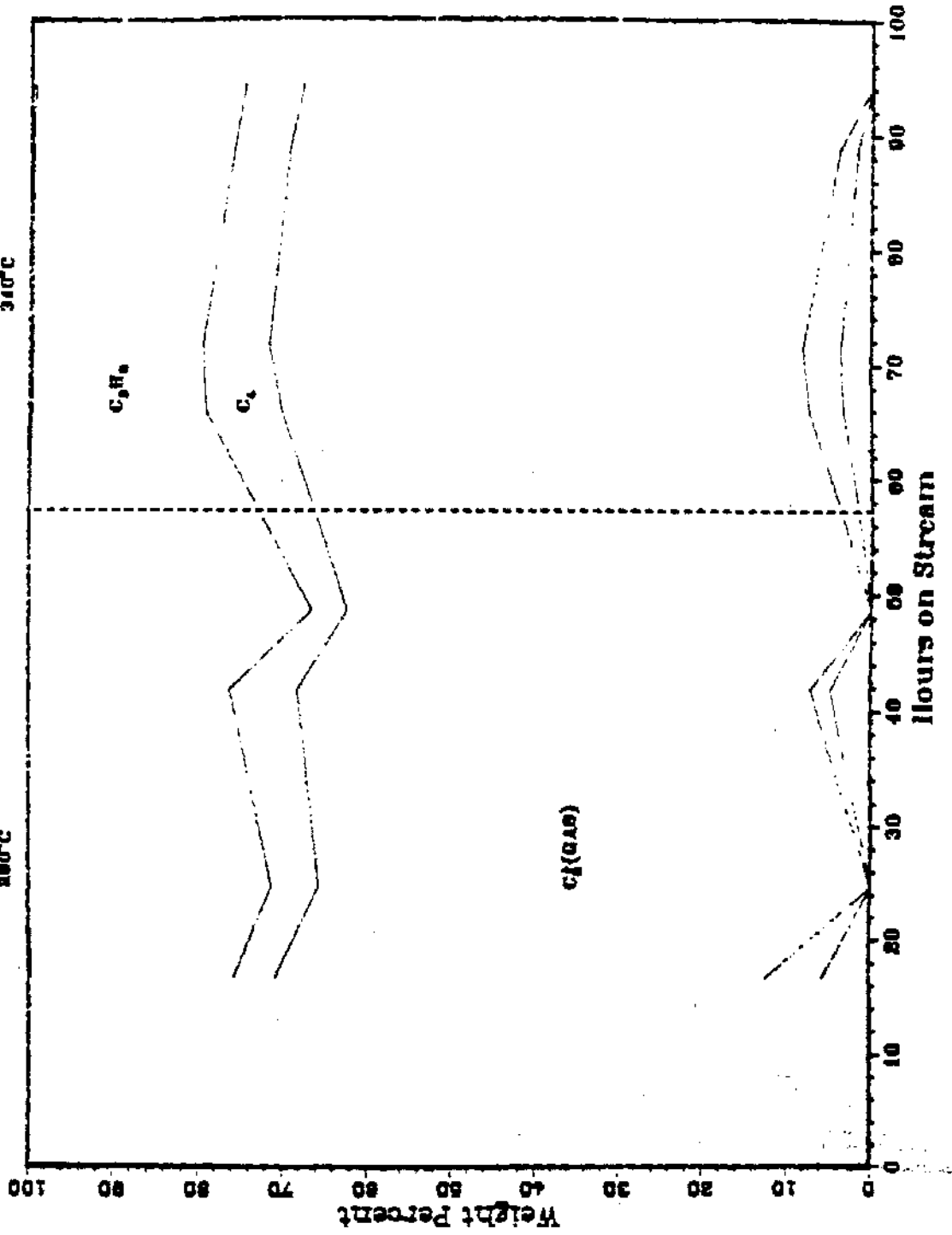


Fig. 55

Fig. 56

997222

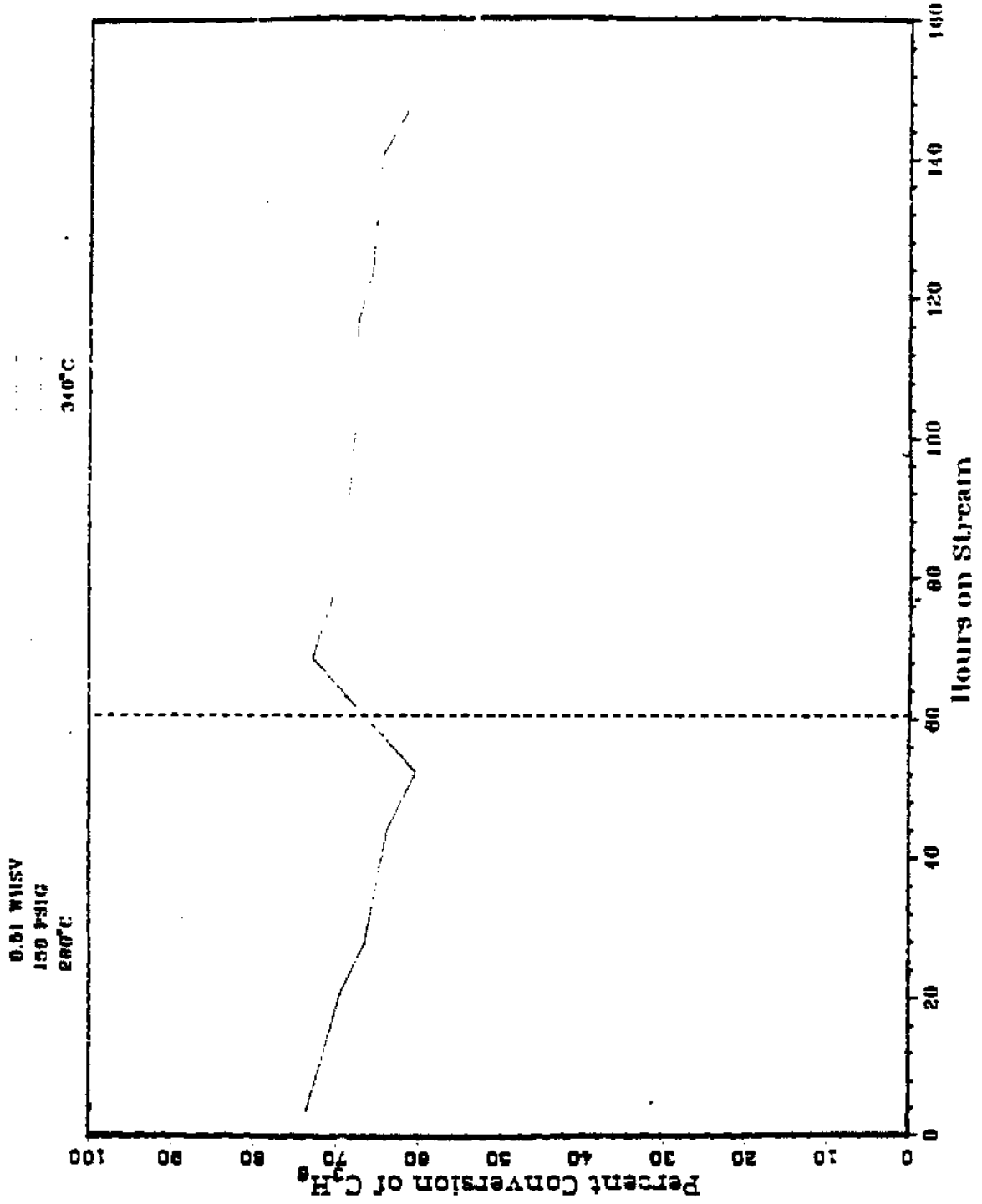
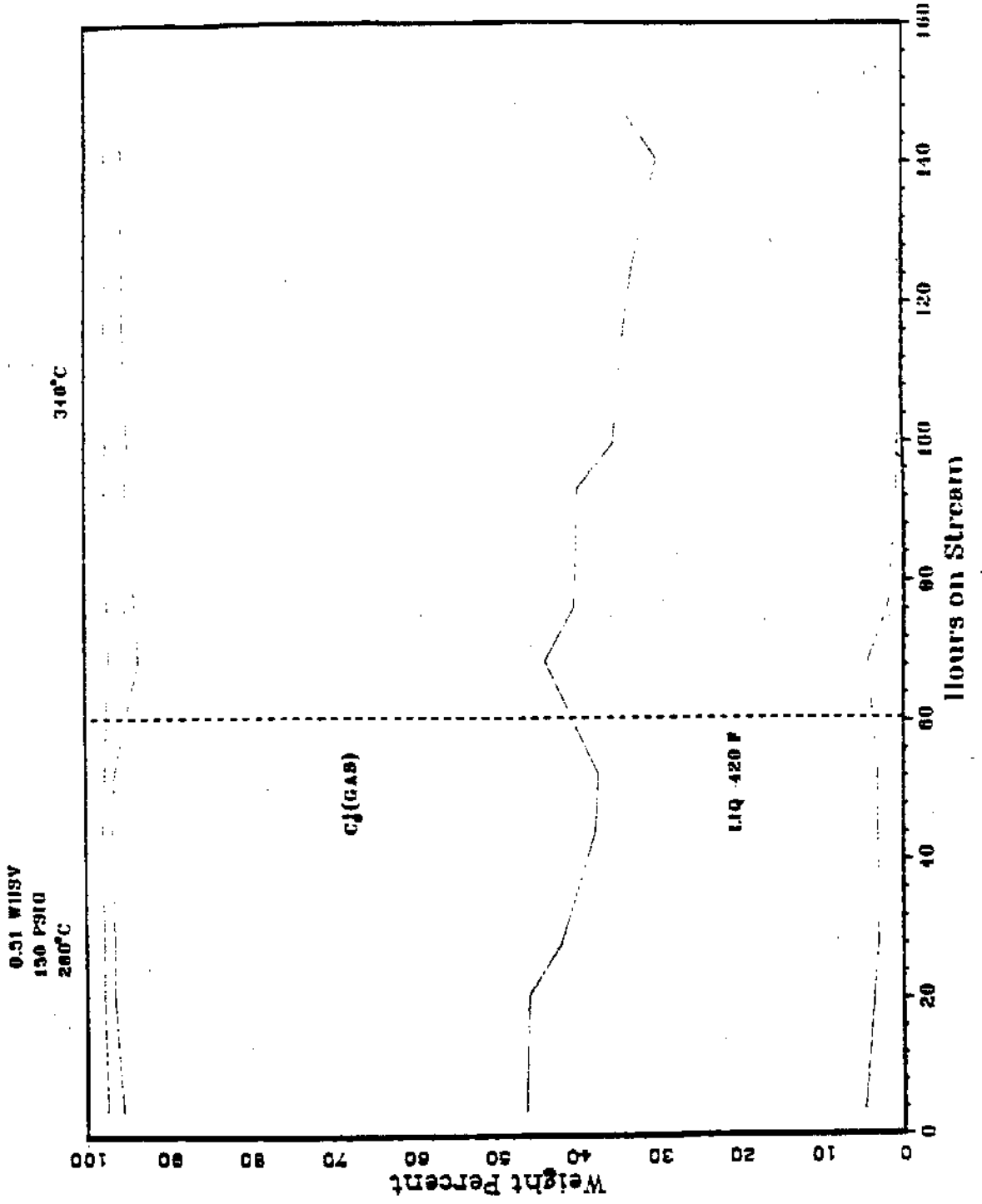
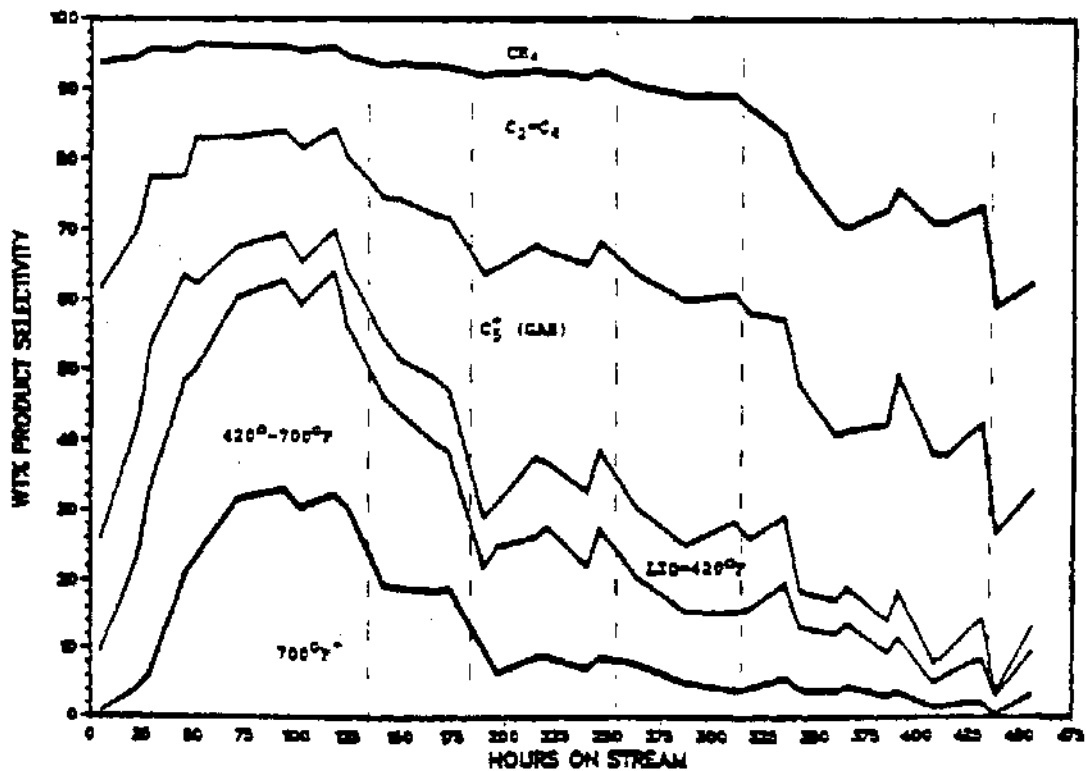
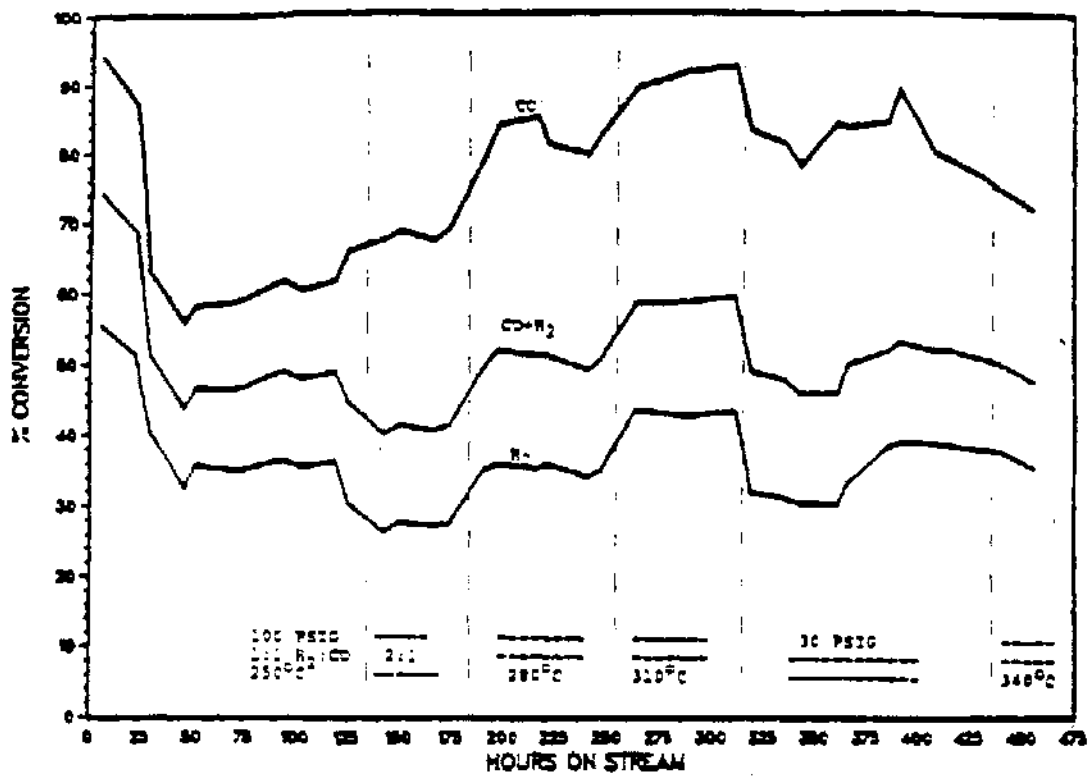


Fig. 57

997222



RUN NO. 10011-06
Fig. 58



1001115

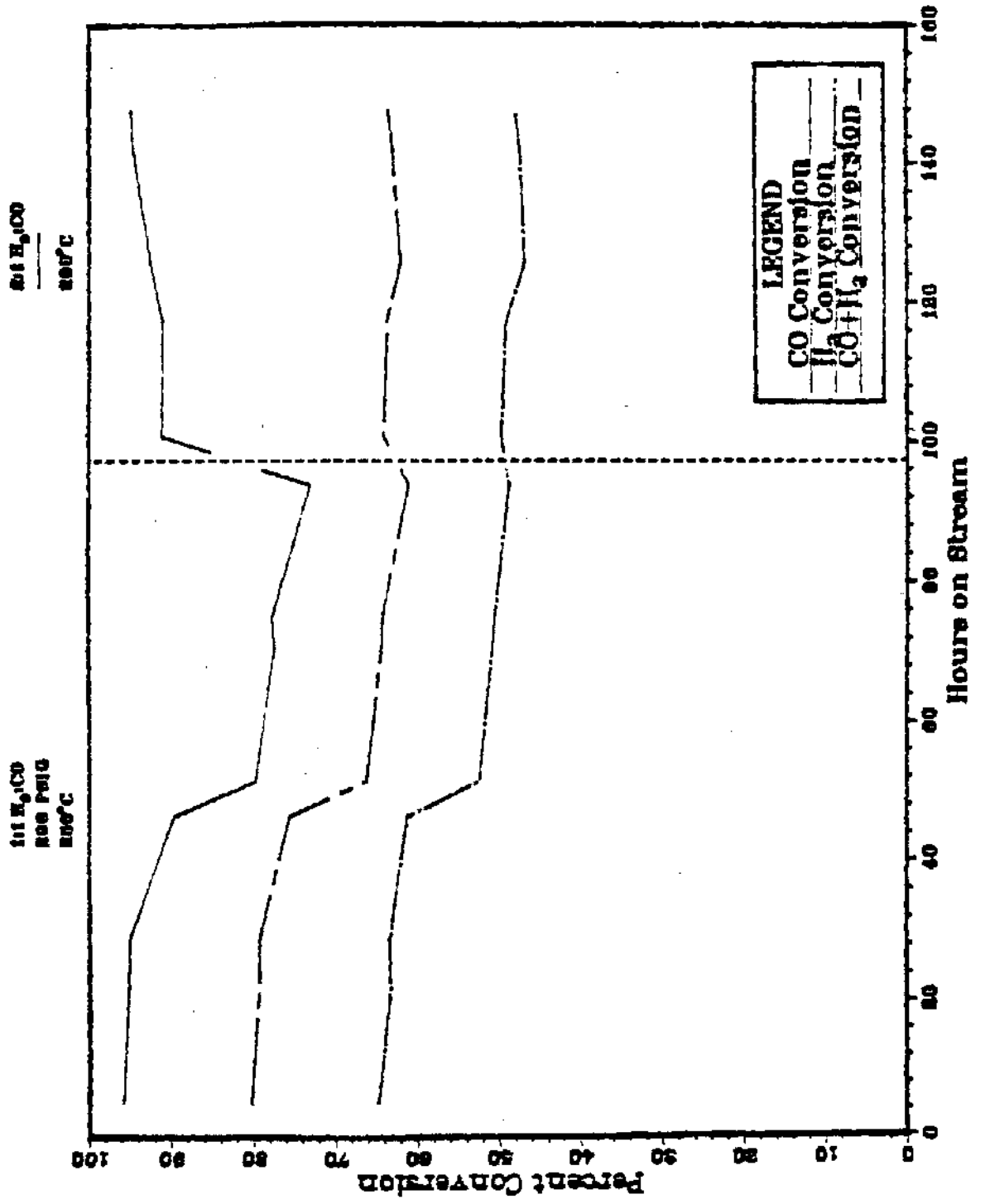
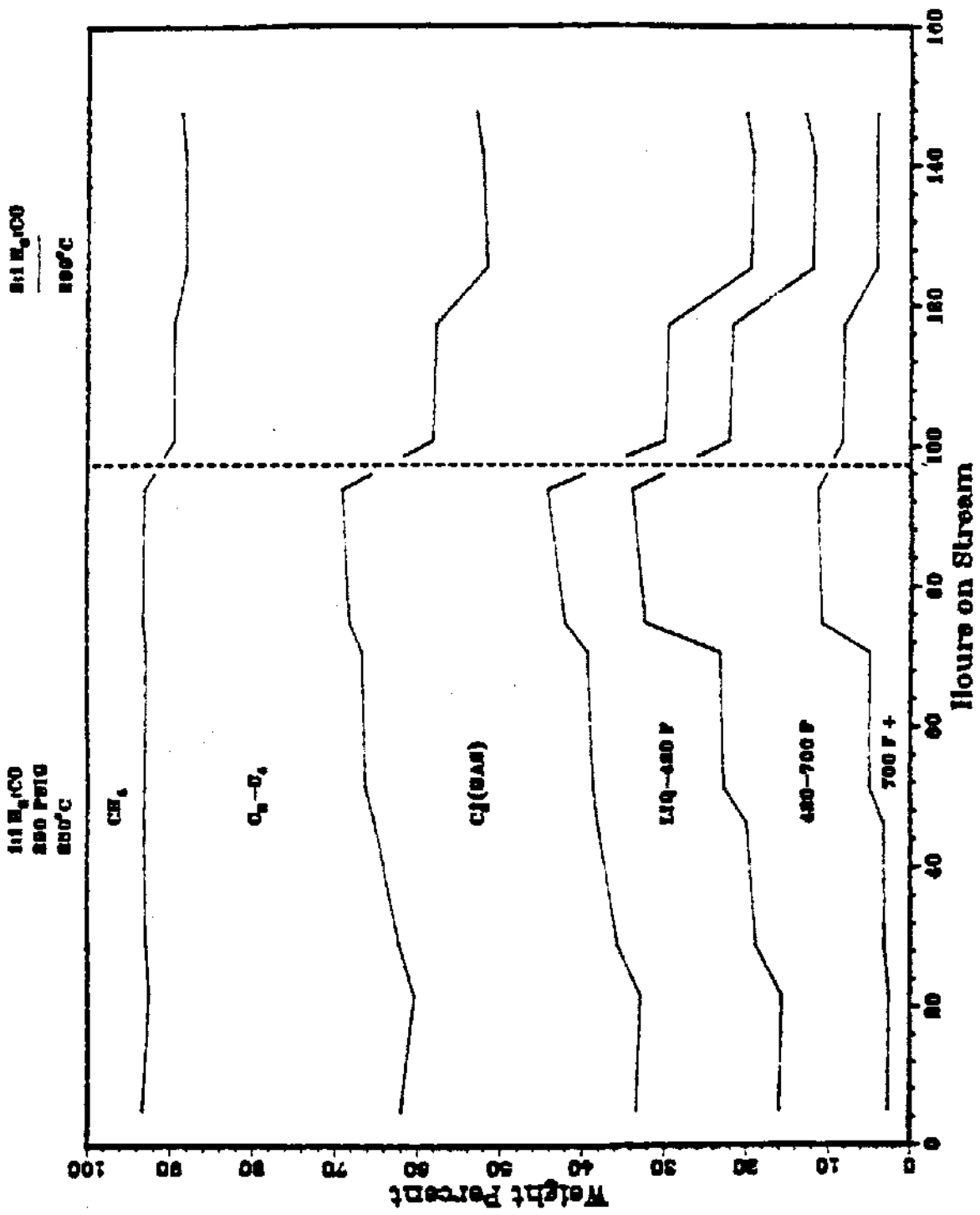


Fig. 59

1001115

Fig. 60



RUN NO. 10011-07

Fig. 61

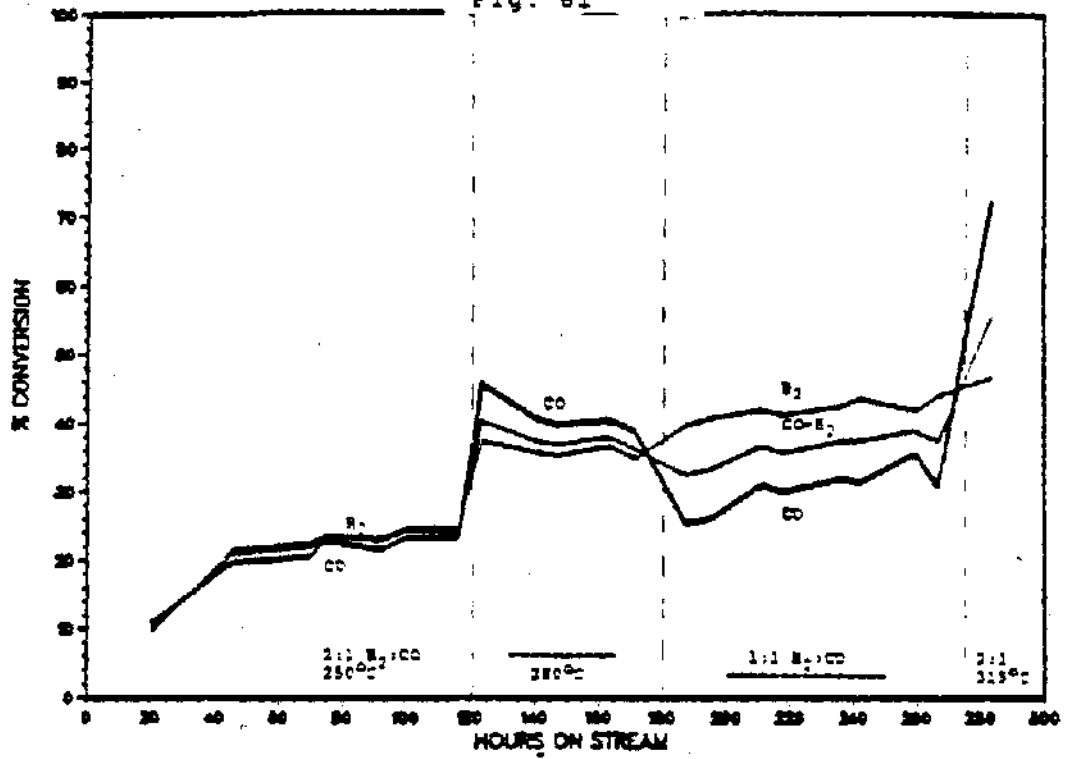
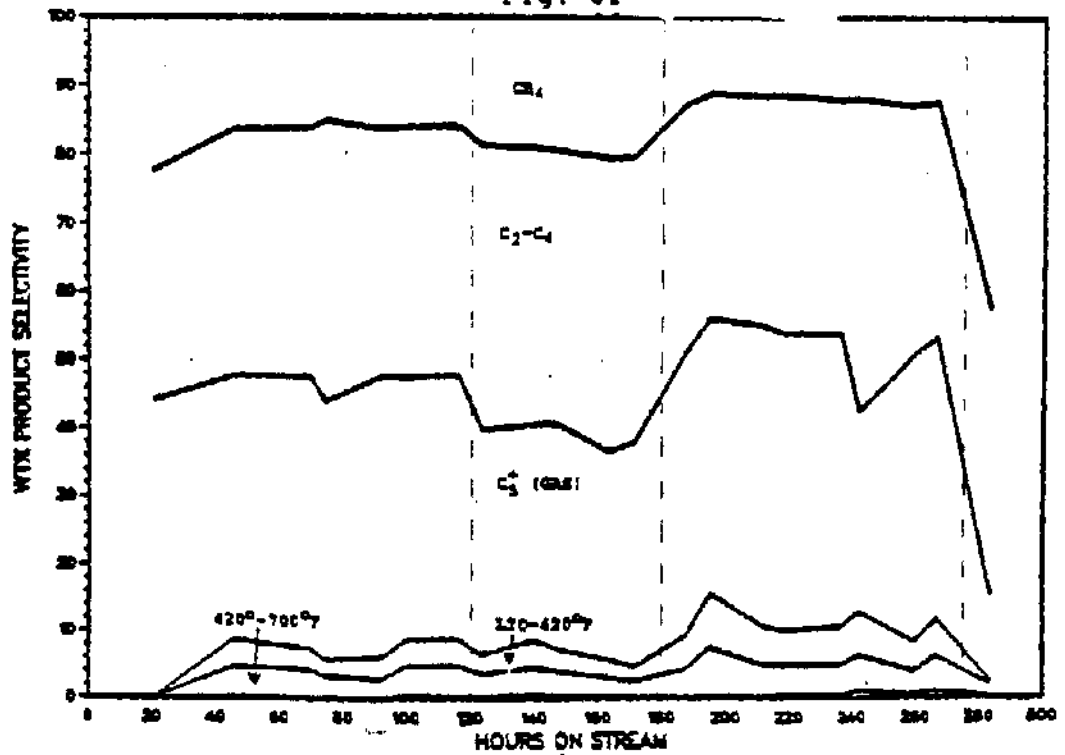


Fig. 62



RUN NO. 10011-08

Fig. 63

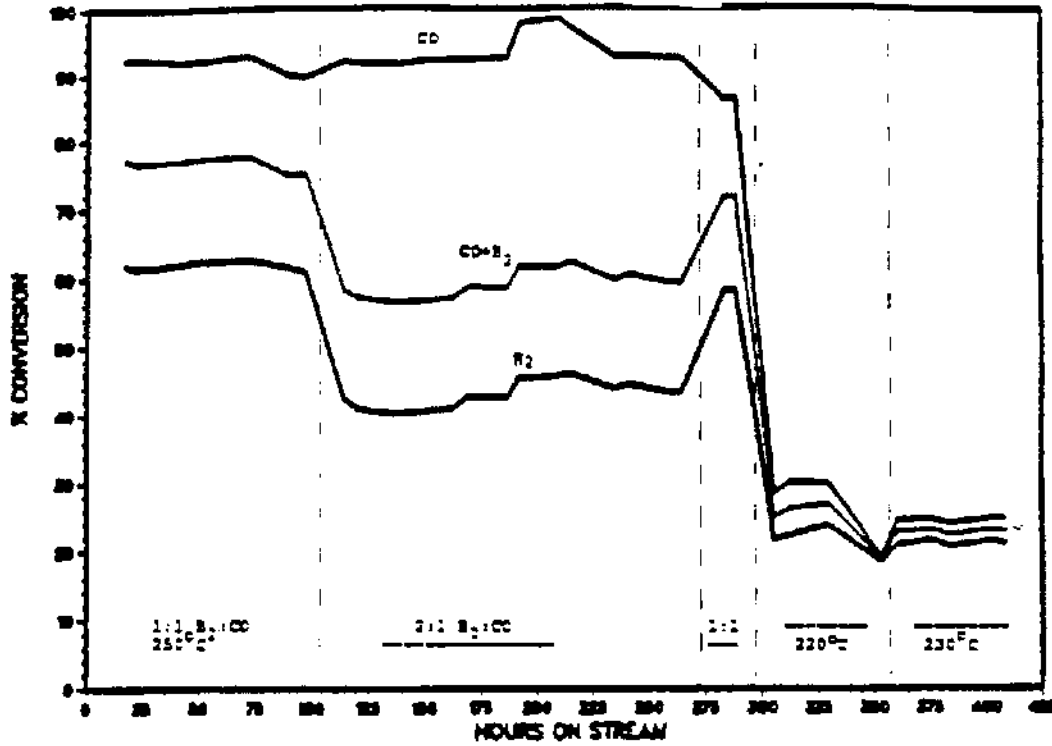
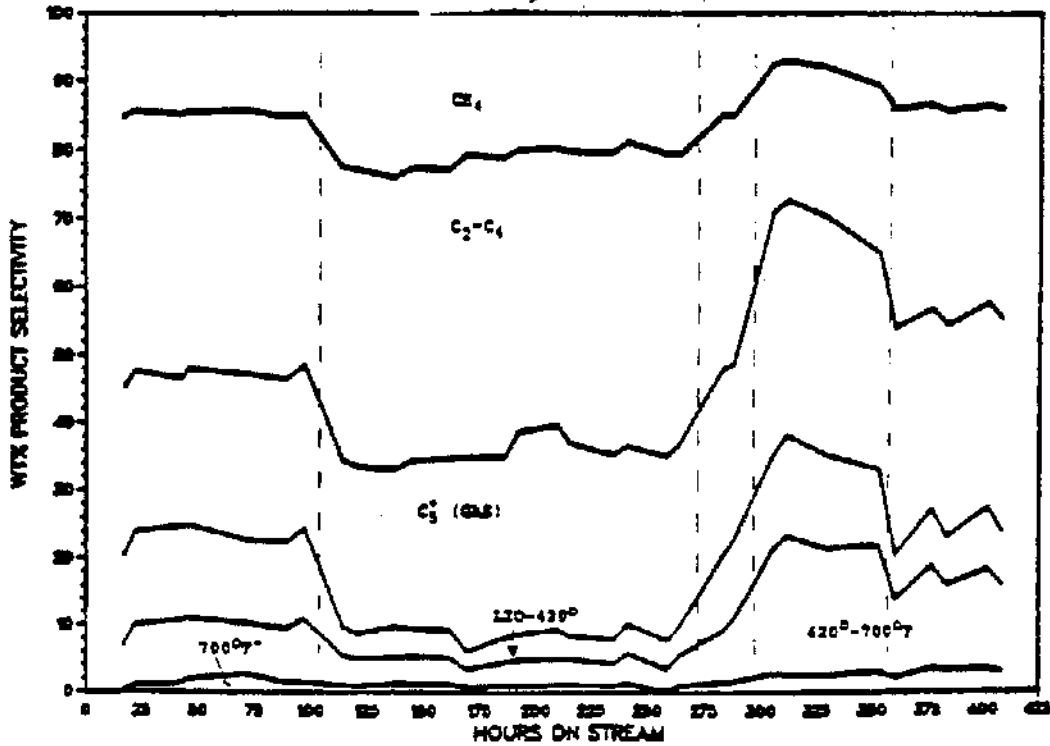


Fig. 64



1001111

100 R₂CO
300 P₁₀
250°C

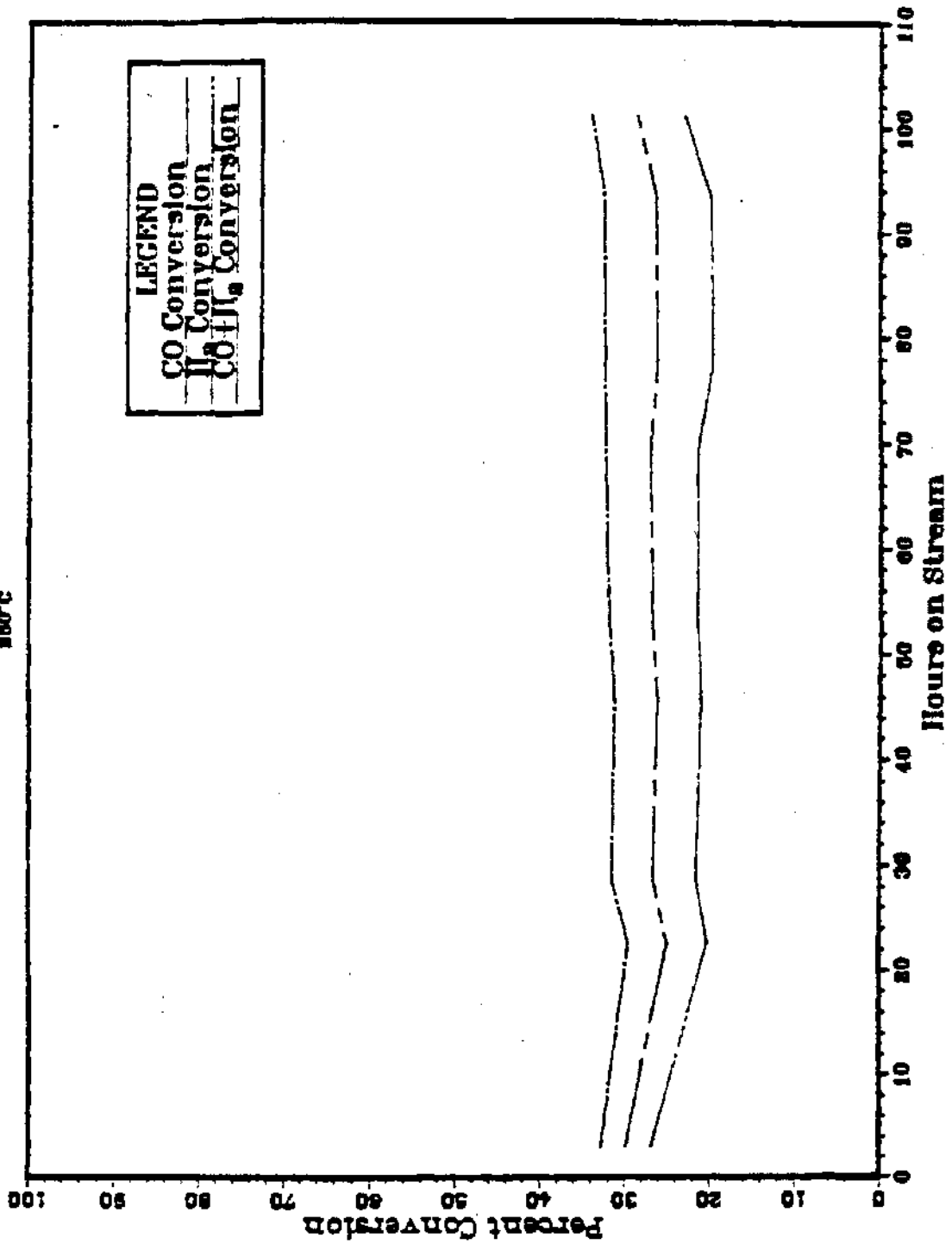


Fig. 65

1001111

1:1 H₂O
300 PPM
200°C

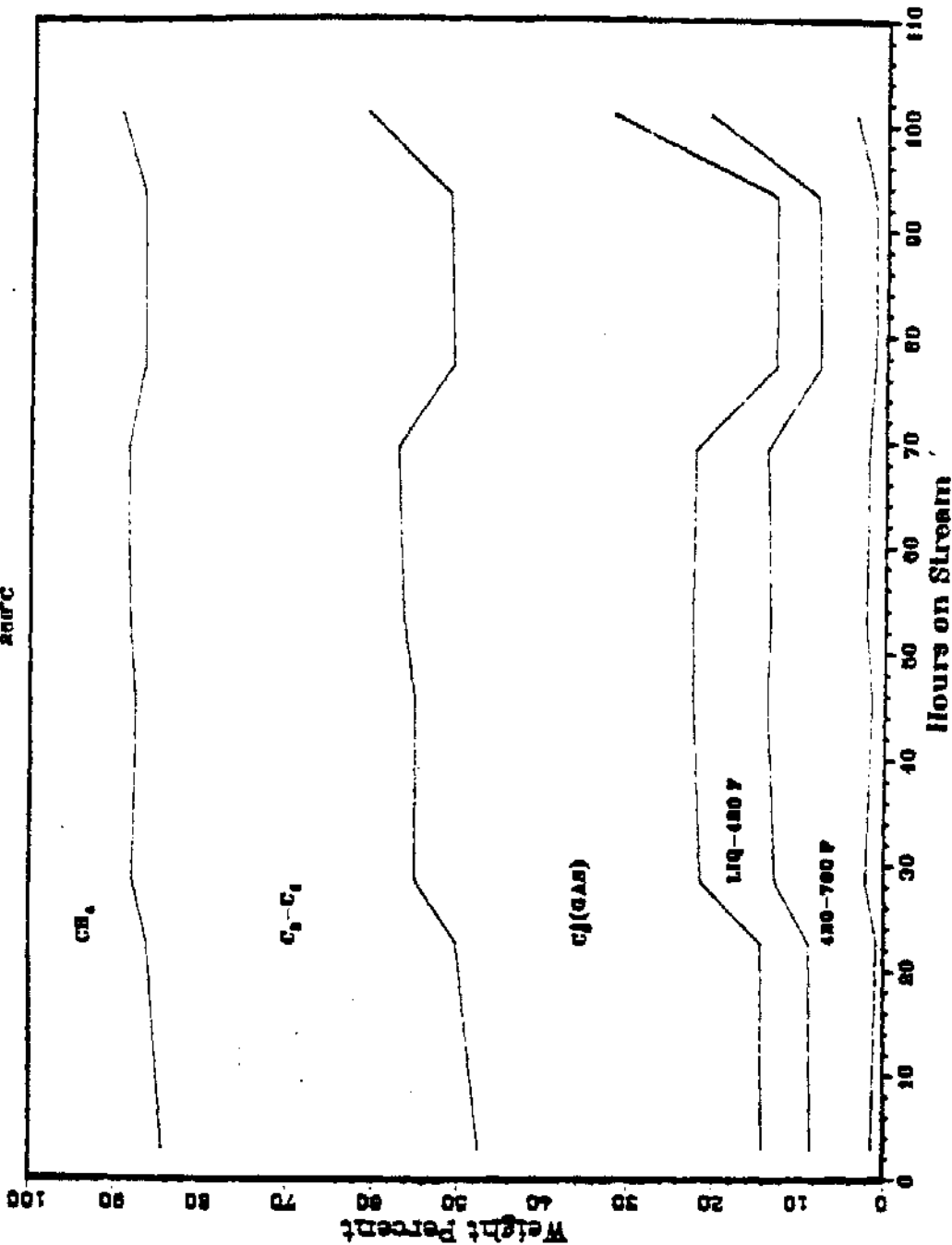
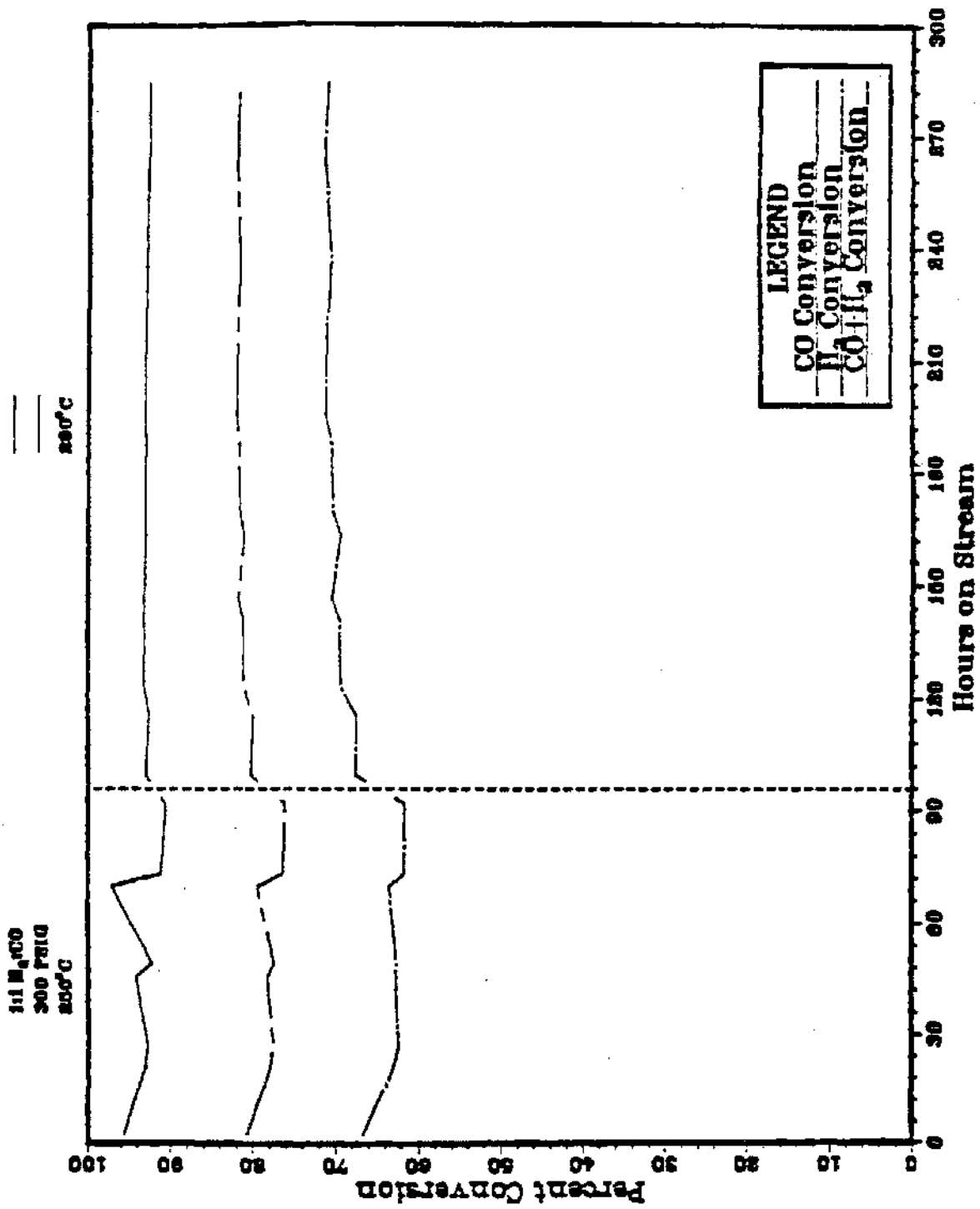


Fig. 66

Fig. 67

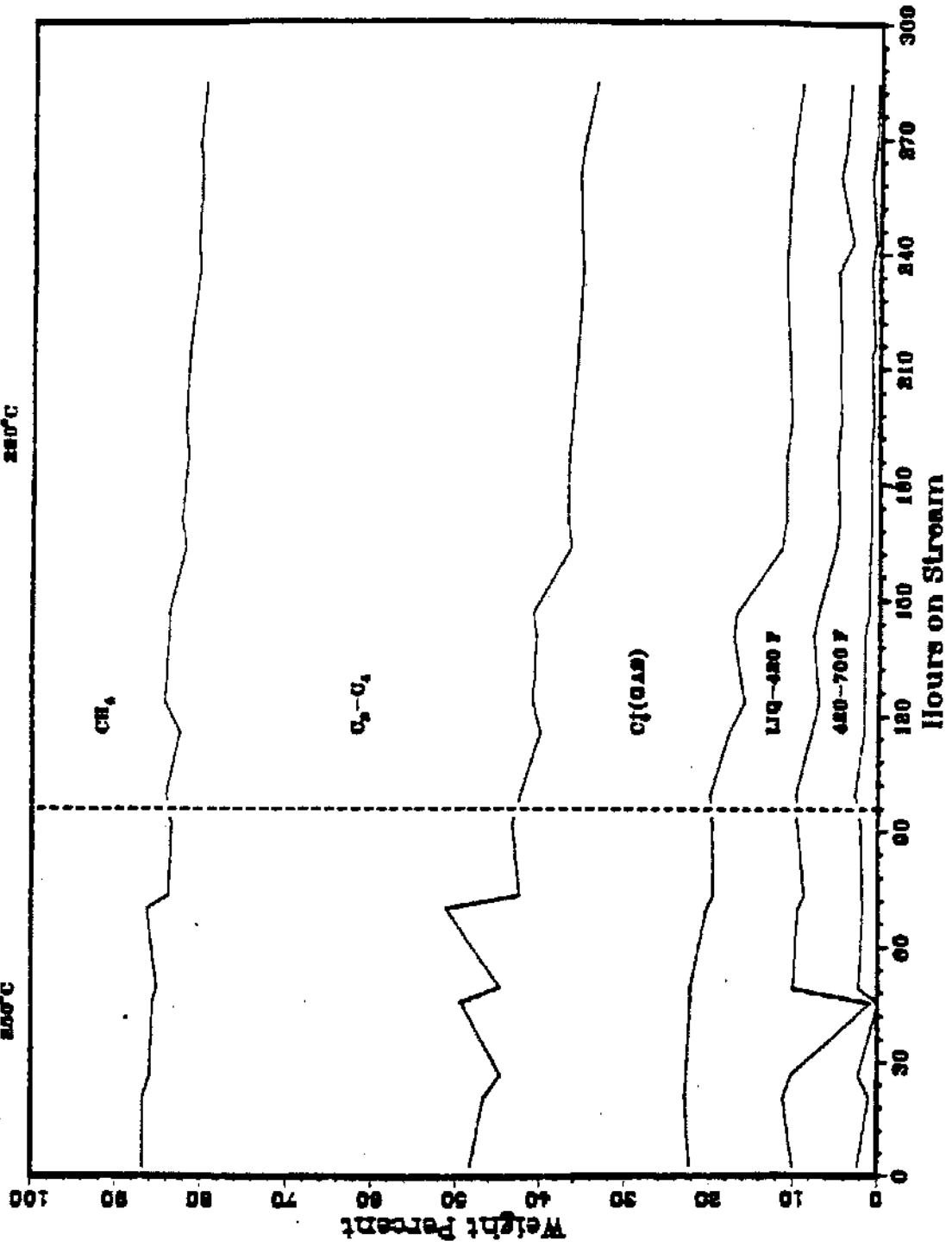
1001110



1001110

100 lb CO
300 Paig
250°C

250°C



RUN 11677-07

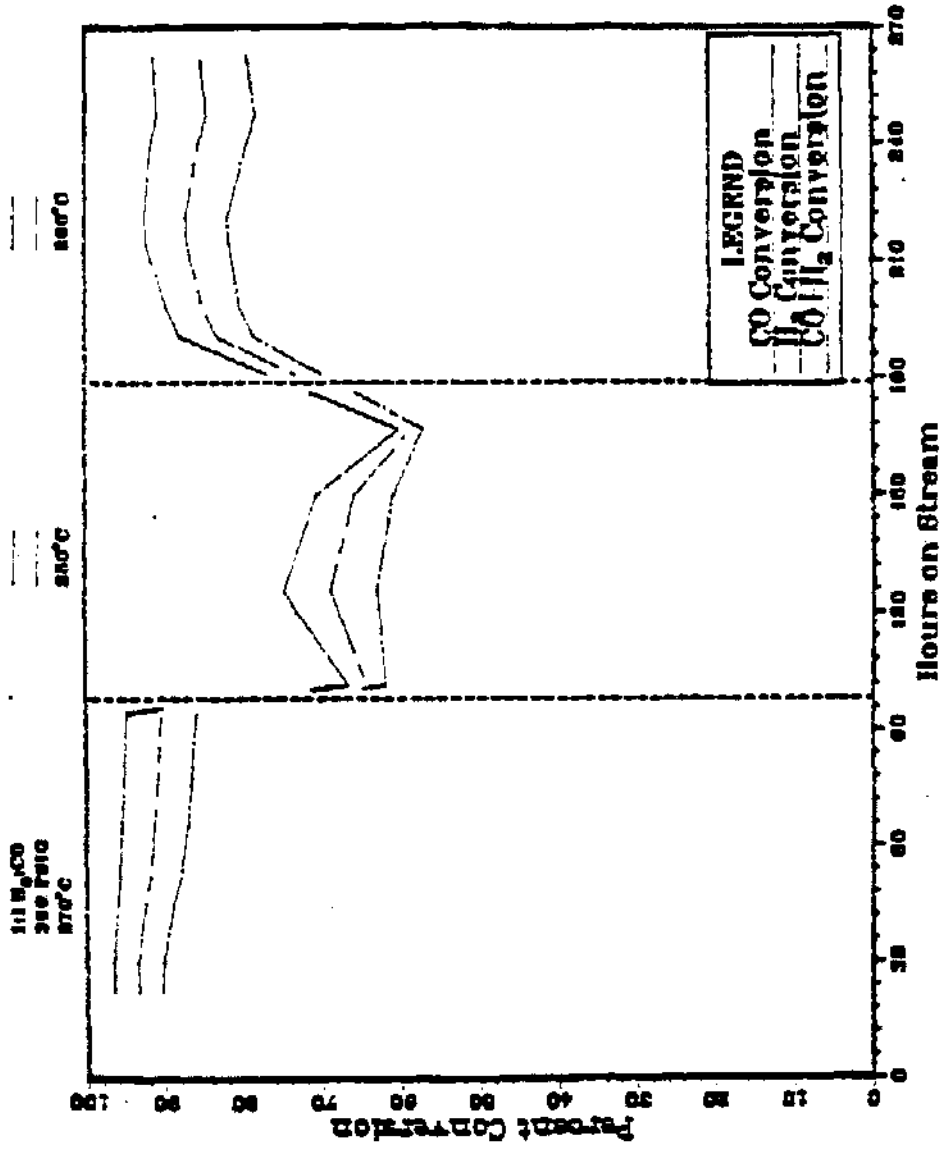


Fig. 69

RUN 11677-07

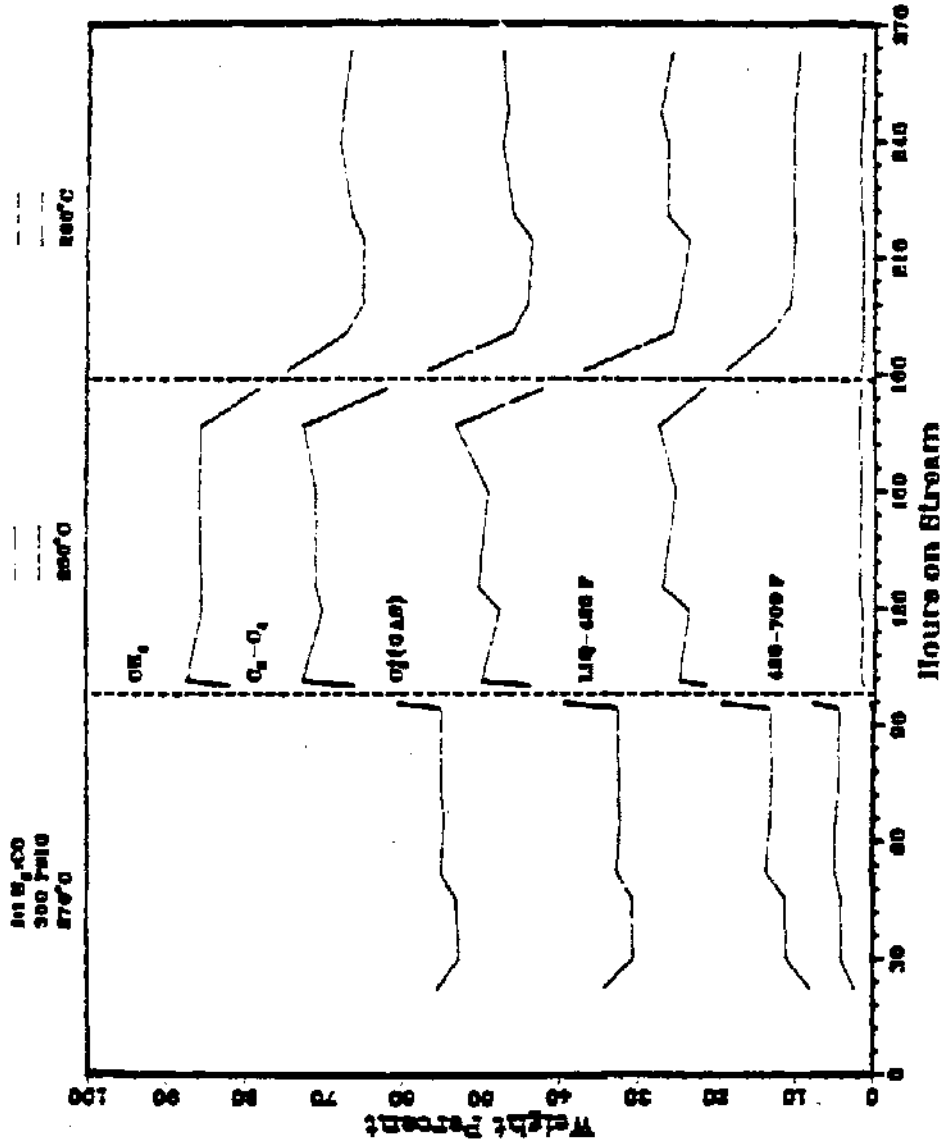


Fig. 70

RUN 10225-08

111 H₂/CO
300 PAID
270°C

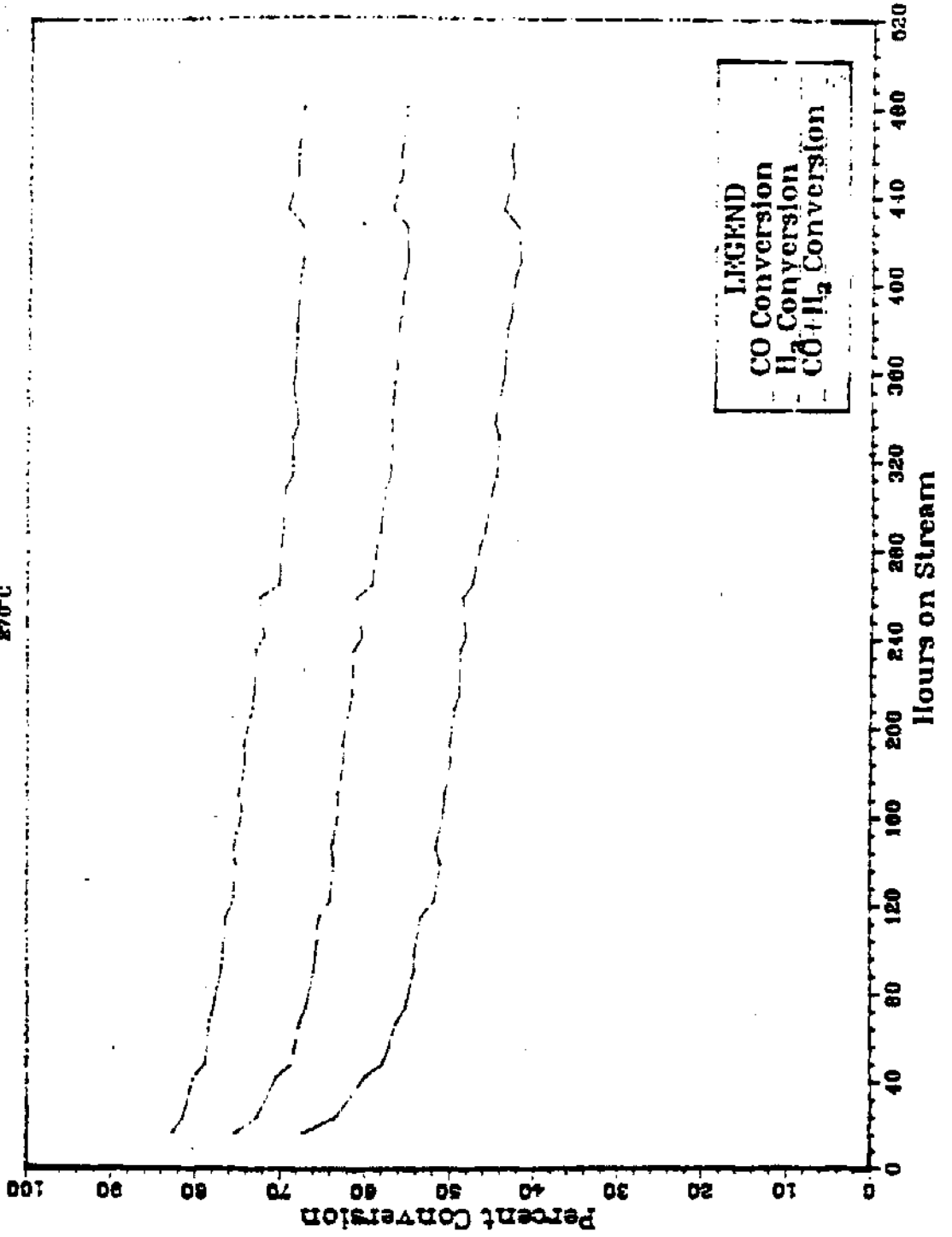


Fig. 71

RUN 10225 08

115 H_2CO
300 PSIG
27°C

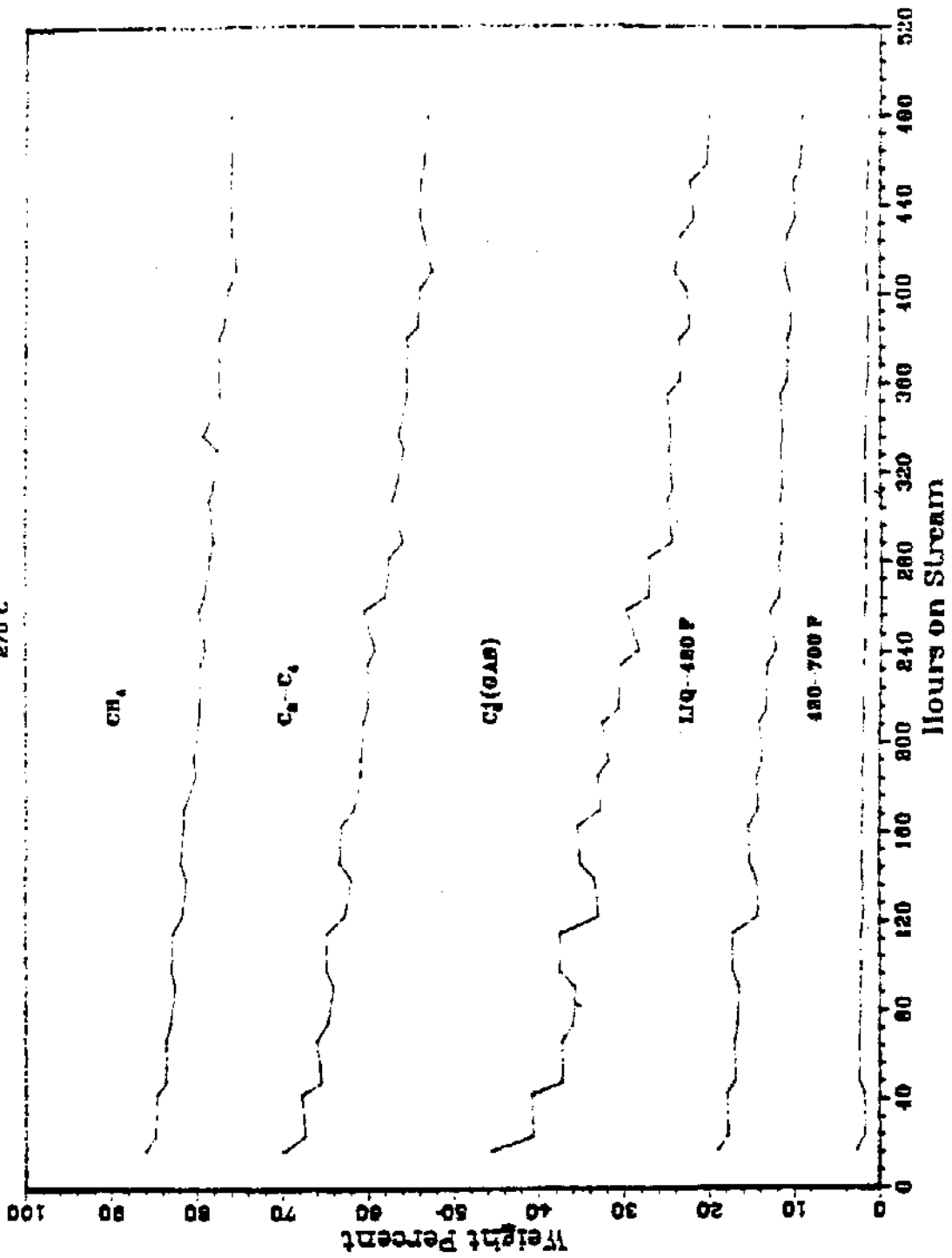
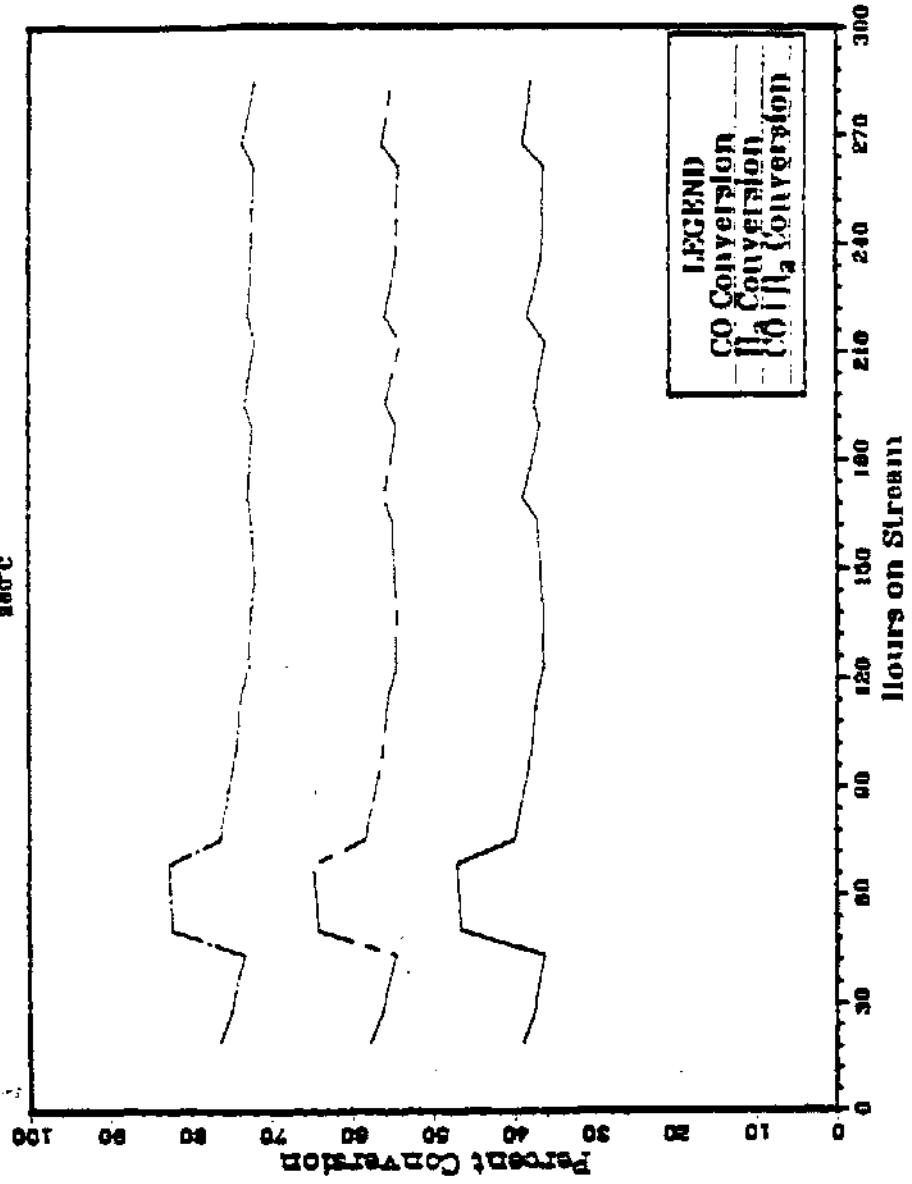


Fig. 72

Fig. 73

RUN 11677-11

101 W₂CO
300 PSIG
280°C



RUN 11677-11

111 P₁100
300 P₂10
200°C

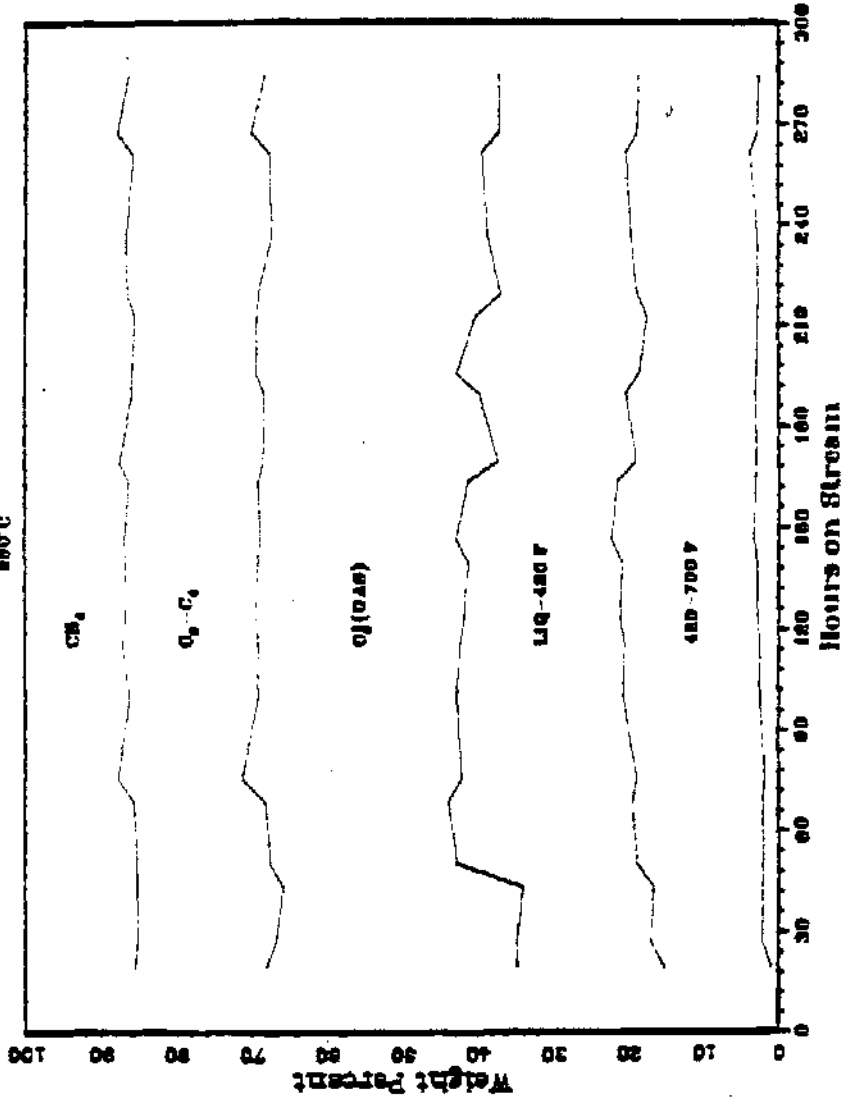


Fig. 75

RUN 11677-11

110,000
300 Feet
240°C

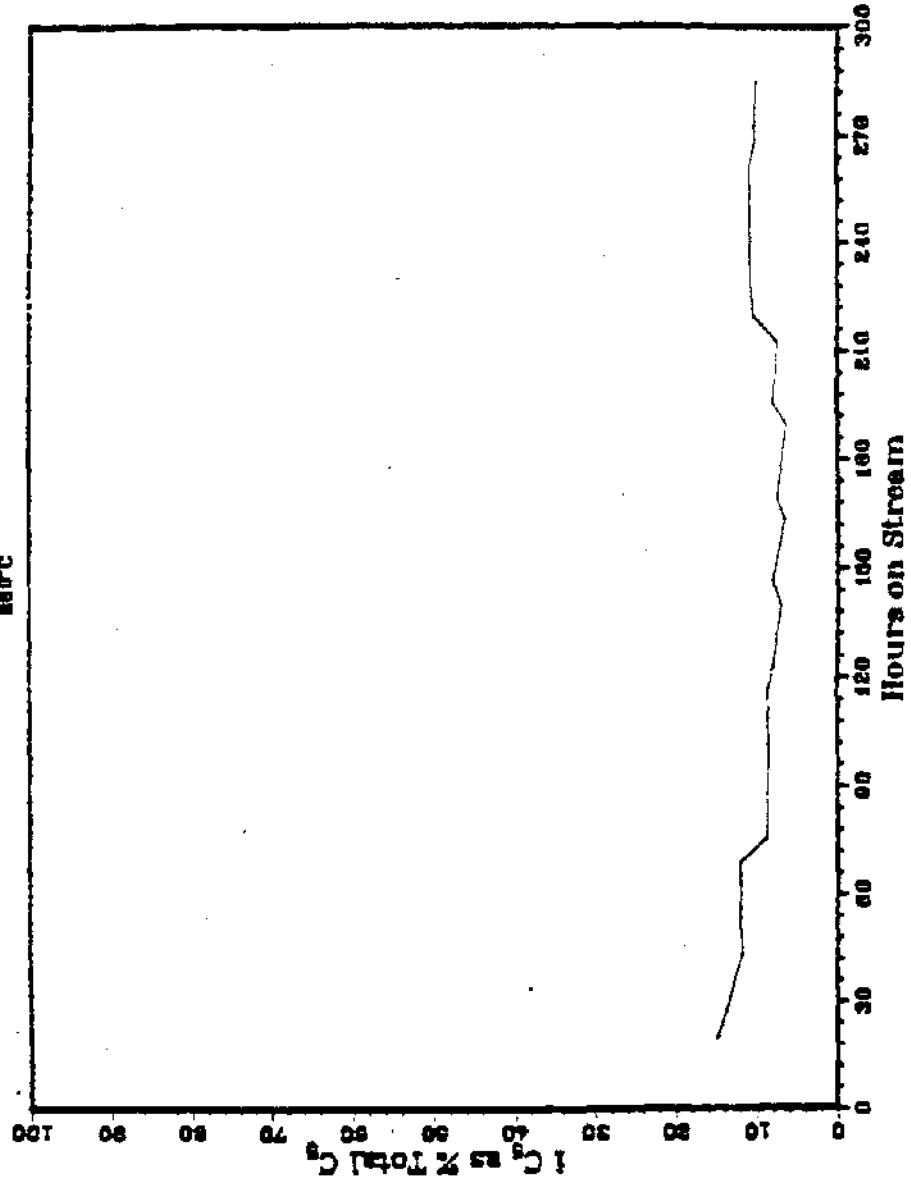


Fig. 76

RUN 11677-11

111 W. 100
31st Polo
260'c

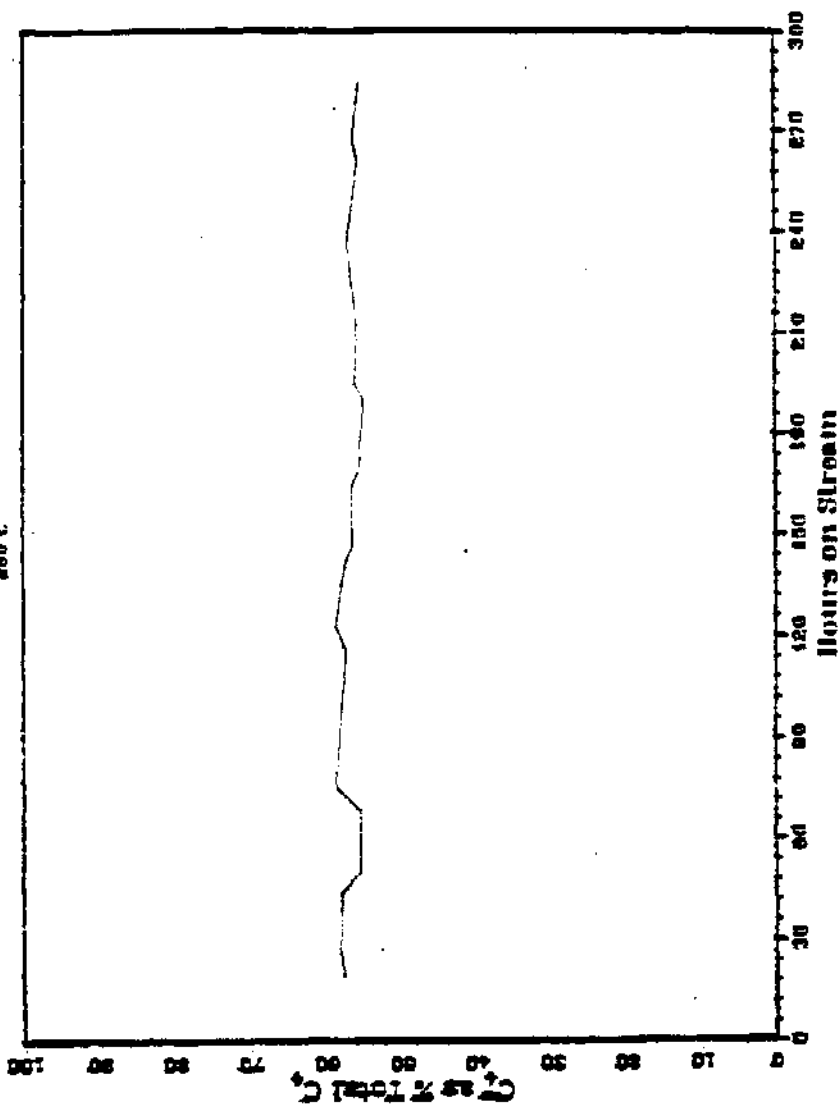


Fig. 77

SCHMATIC DIAGRAM OF UNION CARBIDE
TUBULAR REACTOR SIMULATION PROGRAMS
INPUT/OUTPUT RELATIONS

THE BERTY REACTOR, a CSTR (CONTINUOUS-FEED STIRRED TANK REACTOR) operates under steady state conditions with a high internal recycle rate, causing the catalyst to be exposed to a known and unvarying gas phase composition.



YIELDS DATA



DATA CORRELATION by MULTIPLE REGRESSION FOR:

1. CO Conversion Rate as a function of partial pressures of H₂, CO and Temp. in the Power Law form
2. W_XCH₄ as a function of H₂/CO ratio and Temp.
3. Schulz-Flory alpha as a function of H₂/CO ratio and Temp.



is put into

- INPUTS >>>
1. CATALYST PROPERTIES
 - . Specific Activity
 - . Usage Ratio
 - . Bulk Density
 2. FEED GAS CONDITIONS
 - . Space Velocity
 - . H₂/CO Ratio
 3. REACTOR CONDITIONS
 - . Pressure
 - . Temperature
 - . Recycle ratio

The FIXED program

which is a simulation of an isothermal packed bed tubular reactor having a recycle stream, a condenser, a knock-out pot (to remove H₂O & C₅+ products) and off-gas stream

>>> OUTPUTS

PRODUCT STREAM QUANTITIES:

- . H₂ & CO Conversion
- . H₂O & CO₂ Production
- . CH₄ make
- . C₂+ hydrocarbon production

Fig. 7B Schematic diagram of the F-T reactor system.

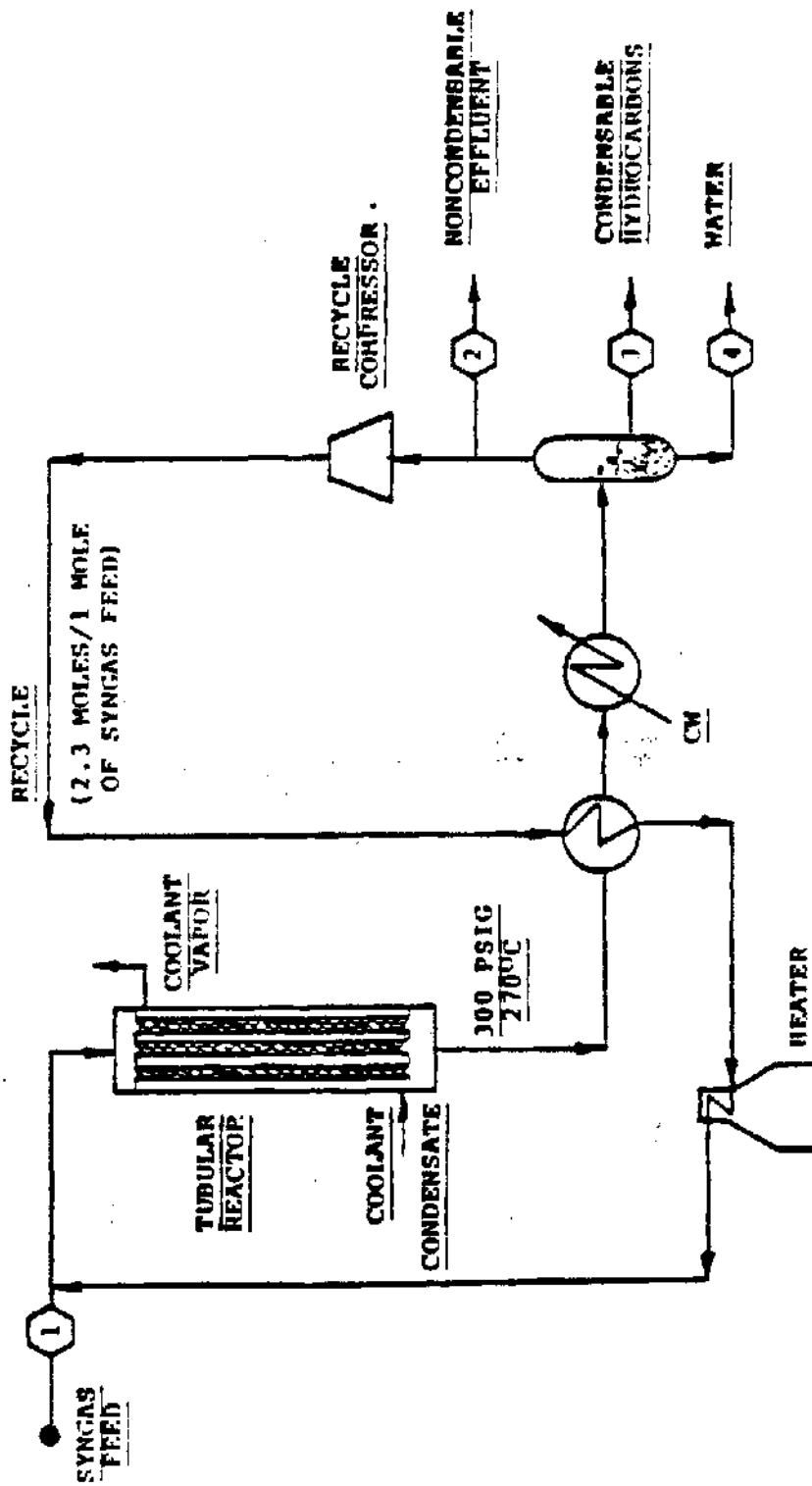
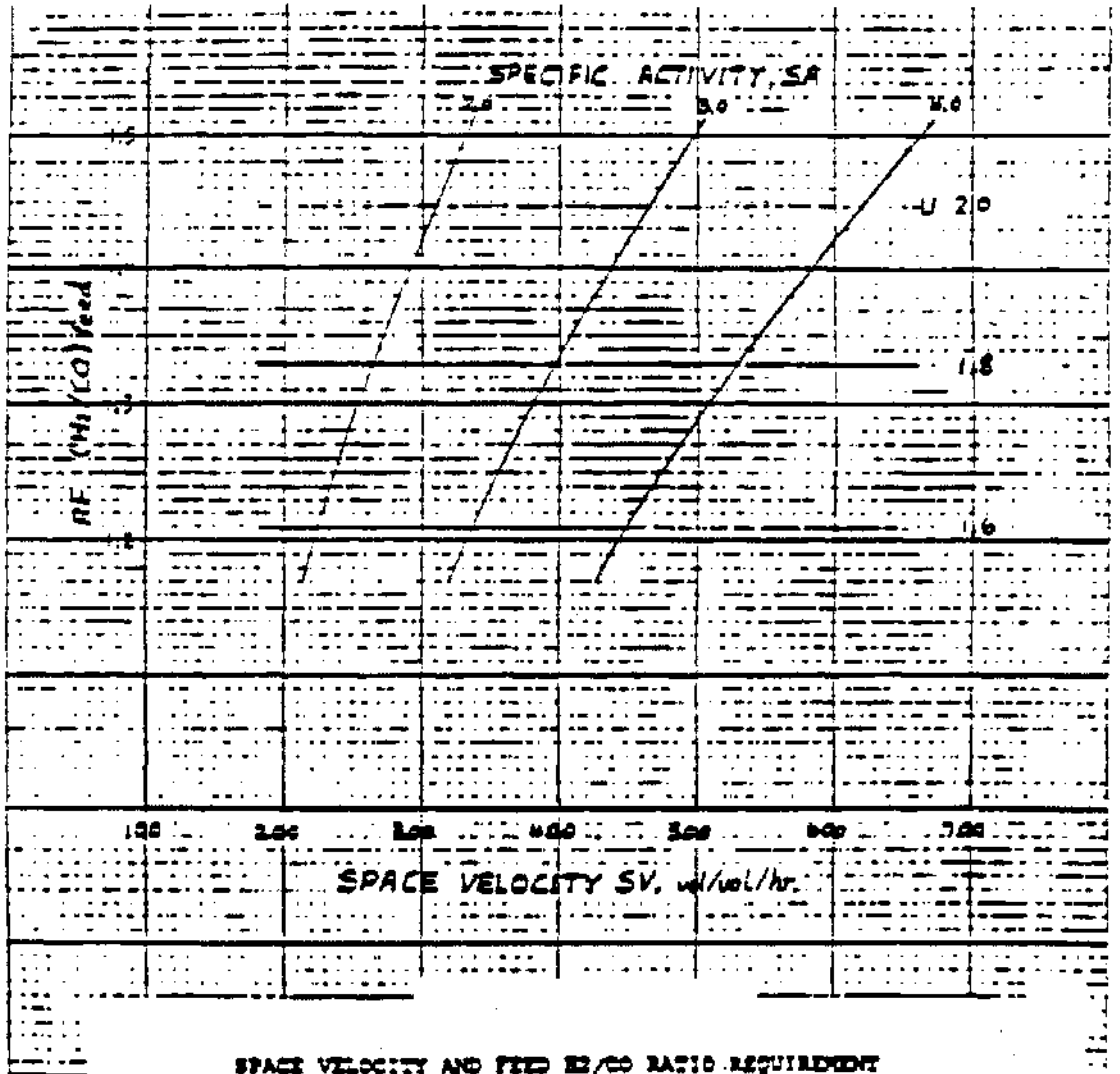
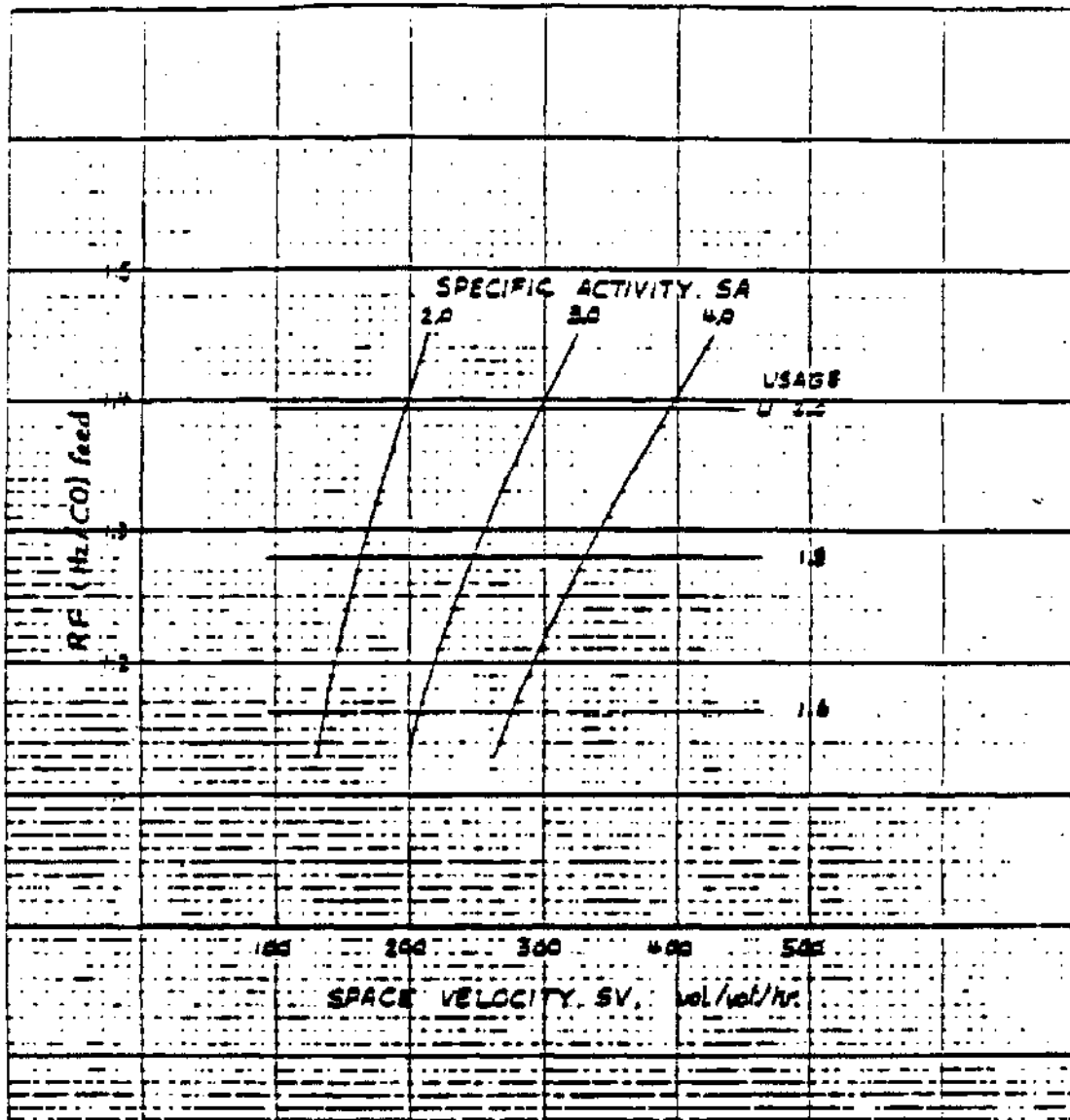


Fig. 79



SPACE VELOCITY AND FEED H₂/CO RATIO REQUIREMENT
 FOR TUBULAR REACTOR AT 270 C 300 PSIG 1.1 RECYCLE RATIO
 WITH A CATALYST CAPABLE OF CERTAIN USAGE RATIO U
 SPECIFIC ACTIVITY SA, AND BULK DENSITY 0.8 GR/CC
 FOR 85 % SYNGAS CONVERSION AND 12.3 WT% H₂ PRODUCT SELECTIVITY



SPACE VELOCITY AND FEED H₂/CO RATIO REQUIREMENTS
 FOR TUBULAR REACTOR AT 270 C 300 PSIG 2.3 RECYCLE RATIO
 WITH A CATALYST CAPABLE OF CERTAIN USAGE RATIO U
 SPECIFIC ACTIVITY SA, AND BULK DENSITY 0.6 GN/CC
 FOR 85 % SYNGAS CONVERSION AND 7.8 WT%⁴ PRODUCT SELECTIVITY