

## Scope

The first step in this survey was to trace all pertinent lines in the field to become familiar with the location of flow meters, sampling connections etc. and to look for by-passing and leakage possibilities. None of the latter were found. In the course of this step flow diagrams were made of the important lines and these diagrams are included in the appendix for future reference.

Next, a detailed review was made of the methods used by the plant to calculate and report run data. Checks were made on the reliability of the data, as discussed in the report where pertinent, and then after innumerable false starts the correlations presented here were developed.

### Correlations - $H_2$ Conversion vs %CO in FF to $C_3+$

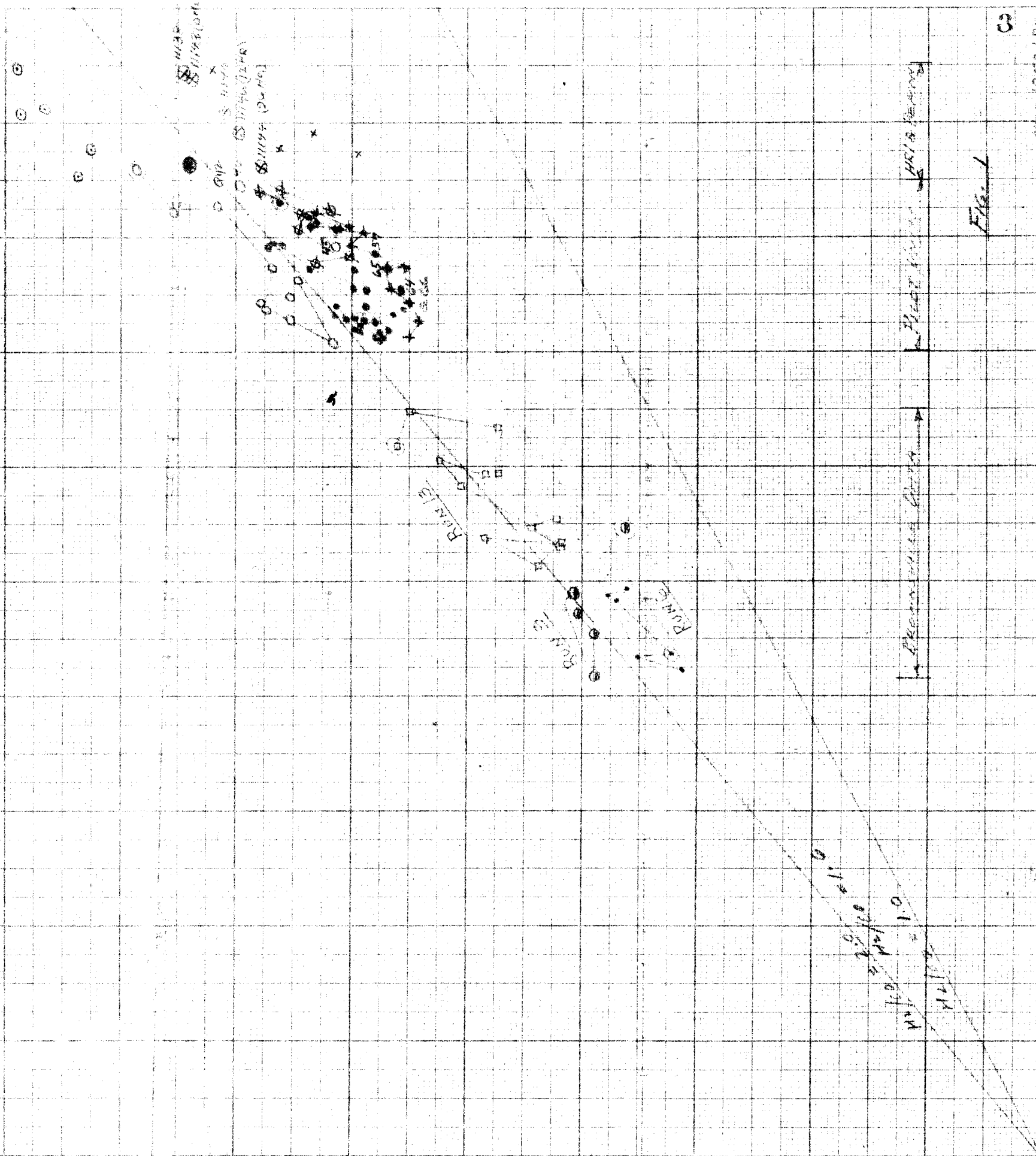
The following Figs. 1, 1A and 1B, which are a plot of  $H_2$  converted vs % of CO in fresh feed which went to  $C_3+$ , are a graphical comparison of all the following data:

1. All available Brownsville data.
2. Stanolind Pilot unit data on Allan Wood and Brownsville Mill Scale catalysts.
3. Montebello Pilot unit data on Allan Wood, Brownsville Mill Scale and Spent CM&S catalysts.

- BROWNSVILLE DESIGN
- OLEAN RUNS N-24 R. HAYS (BANK FOR DESIGN)  
C.M.S. CATALYST (230' x 24')
- x BEACON RUNS ON C.M.S. CATALYST  
(202', 242', 200' x 100') (300' x 100')
- ⊗ BEACON RUNS ON BROWNVILLE PILES LEASE
- MARYLENE AND AGENS EX "
- STAMPALEND RUNS EX "
- STAMPALEND RUN P-10179 ON PHUMS LEASE
- MARYLENE RUN 49 ON BROWN WOOD
- ◆ " RUN 43 ON MARYLENE
- BROWNVILLE RUN 418
- BROWNVILLE RUN 419
- BROWNVILLE RUN 416
- ⊗ MARYLENE RUN 50 SEAN'S CURVE

WATER IN FT

1.85  
1.95  
2.00  
2.00  
1.62  
1.90  
1.93  
1.63  
1.62  
1.87  
1.51  
1.80  
1.71



H<sub>2</sub> CONVERSION

Fig. 1

3

M<sub>2</sub> CONVERSION

+	BROWNVILLE RUNS	1.83
v	"	1.82
x	"	1.82
o	"	1.85
◇	"	1.84
★	MONTEBELLO RUN #13 (MILL SCALE)	1.62
○	STANDLER RUNS (MILL SCALE) 42-129	42-129
●	MONTEBELLO RUNS (MILL SCALE)	1.62
⊗	BERGON RUNS (MILL SCALE)	2.00
●	BROWNVILLE DESIGN	1.84
◇	BROWNVILLE RUN #10	1.84
⊗	MONTEBELLO RUNS (MILL SCALE)	1.71

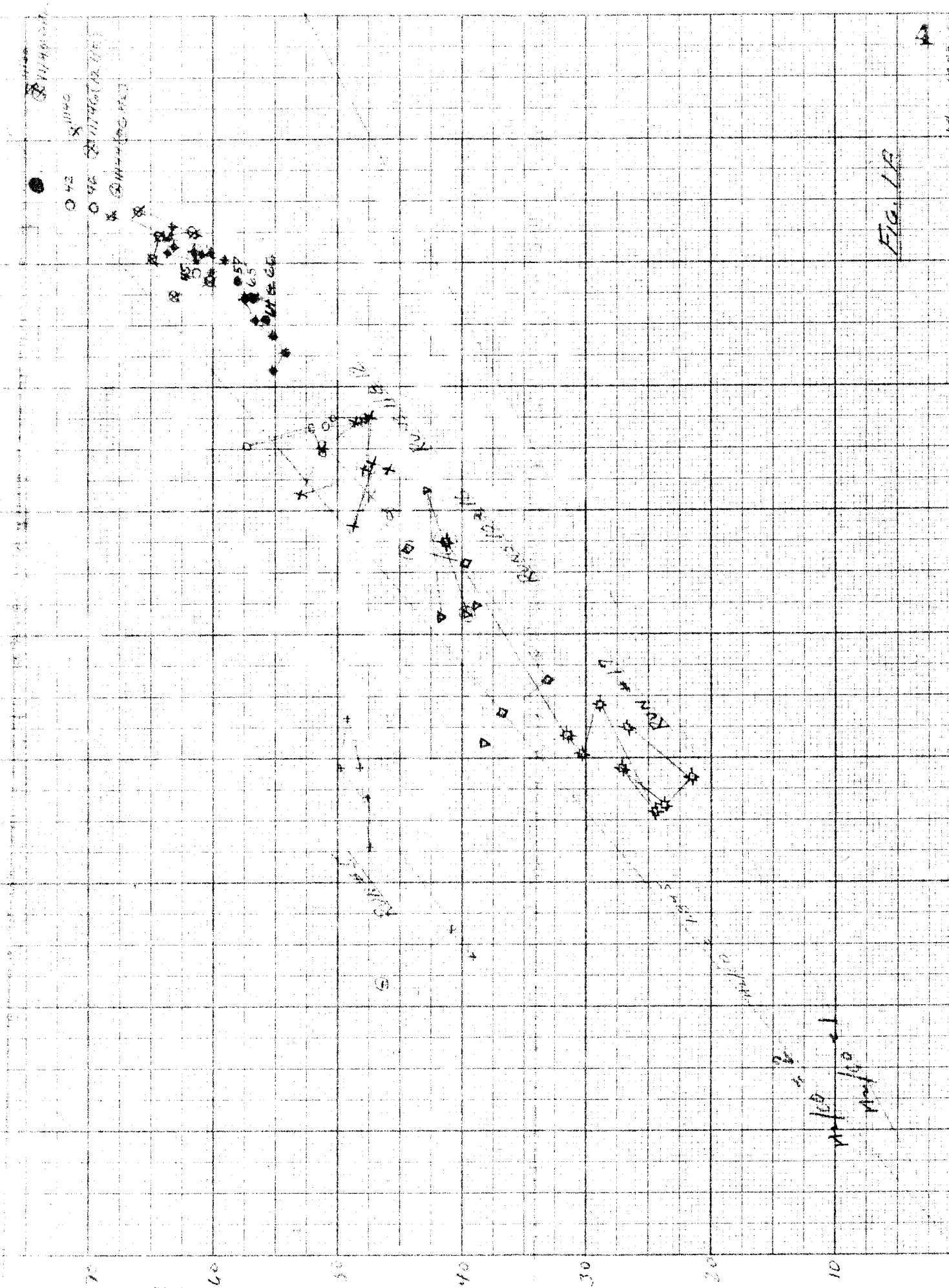


FIG. 18

M<sub>2</sub> CONVERSION

MAY 1952

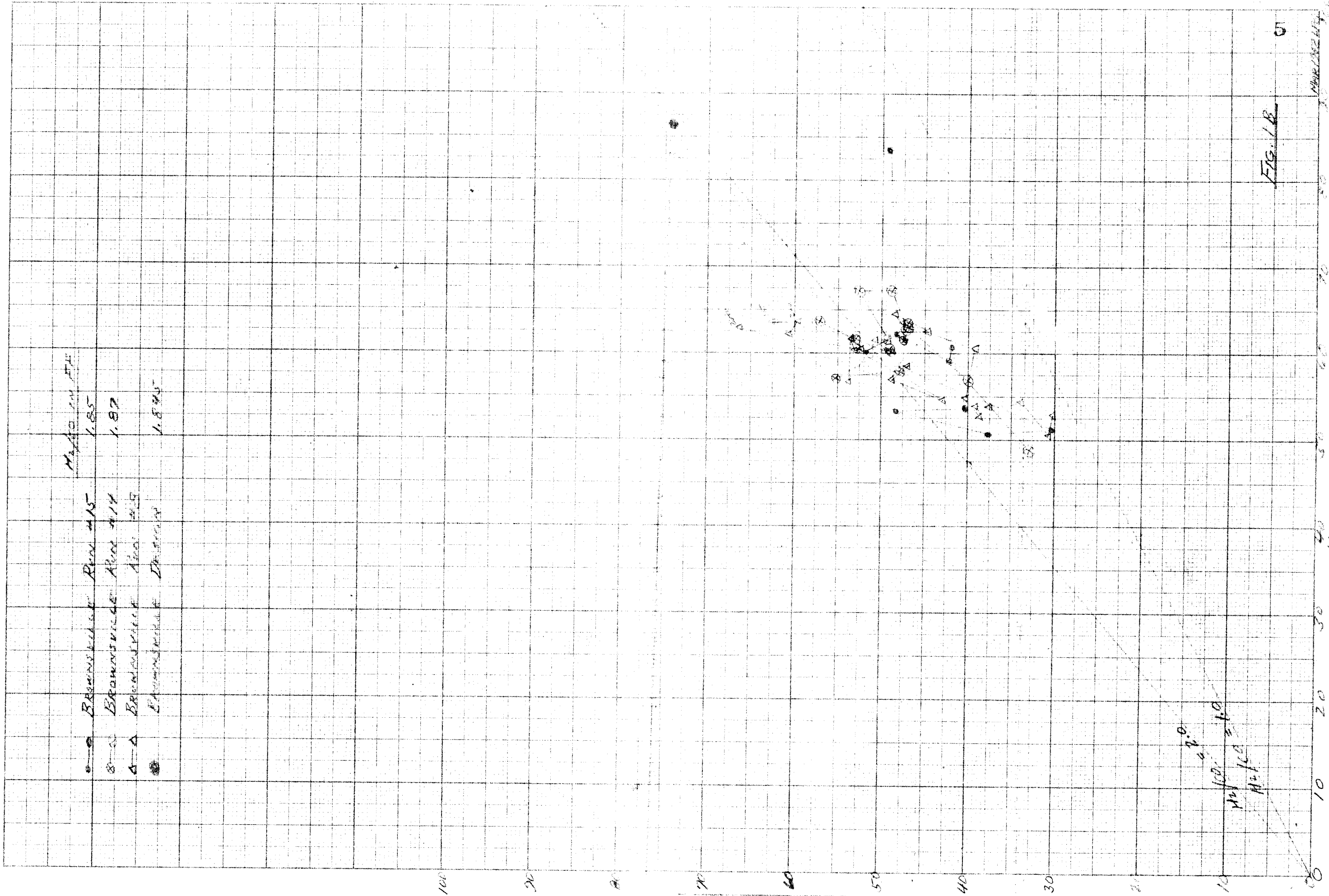


FIG. 18

4. Beacon data on Brownsville Mill Scale and Spent CM& S catalysts.
5. HRI Olean Runs H-24 & H-25 on Spent CM&S catalyst, which runs formed the basis for the Brownsville Plant Design.
6. The Brownsville Design.

On these graphs each point which is joined by lines, represents about 24 hrs. operation. The points are joined together in chronological order. A ring has been placed around the first day of each run. The unjoined points which are all laboratory or pilot unit data, represent averages of several periods or of a whole run.

The Brownsville data were divided into three plots, Figs. 1, 1A & 1B simply to avoid cluttering. The Beacon, Montebello and Stanolind data obtained with Brownsville Mill Scale catalyst, the design point and the Montebello data on CM&S catalyst have been repeated on Fig. 1A.

The solid lines on all three of these plots, one for Fresh Feed having an  $H_2/CO$  ratio of 2.0 and the other for an  $H_2/CO$  ratio of 1.0 are those which were developed in EDG Report No. 1 dated May 20, 1947. These lines represent an extremely large number of runs made at various conditions in HRI, Beacon, Stanolind and Jersey laboratories.

The data for Figs. 1, 1A & 1B and for others which will be described later are included in Tables I & II of the appendix.

We shall discuss these figures after we have developed sufficient background to understand what they mean.