Reliability of Brownsville Data

It will be evident from the above description of the method of daily data calculations and from consideration of the many factors involved, that the possibility of inconsistencies in the Brownsville data from day to day and run to run is great. Therefore,

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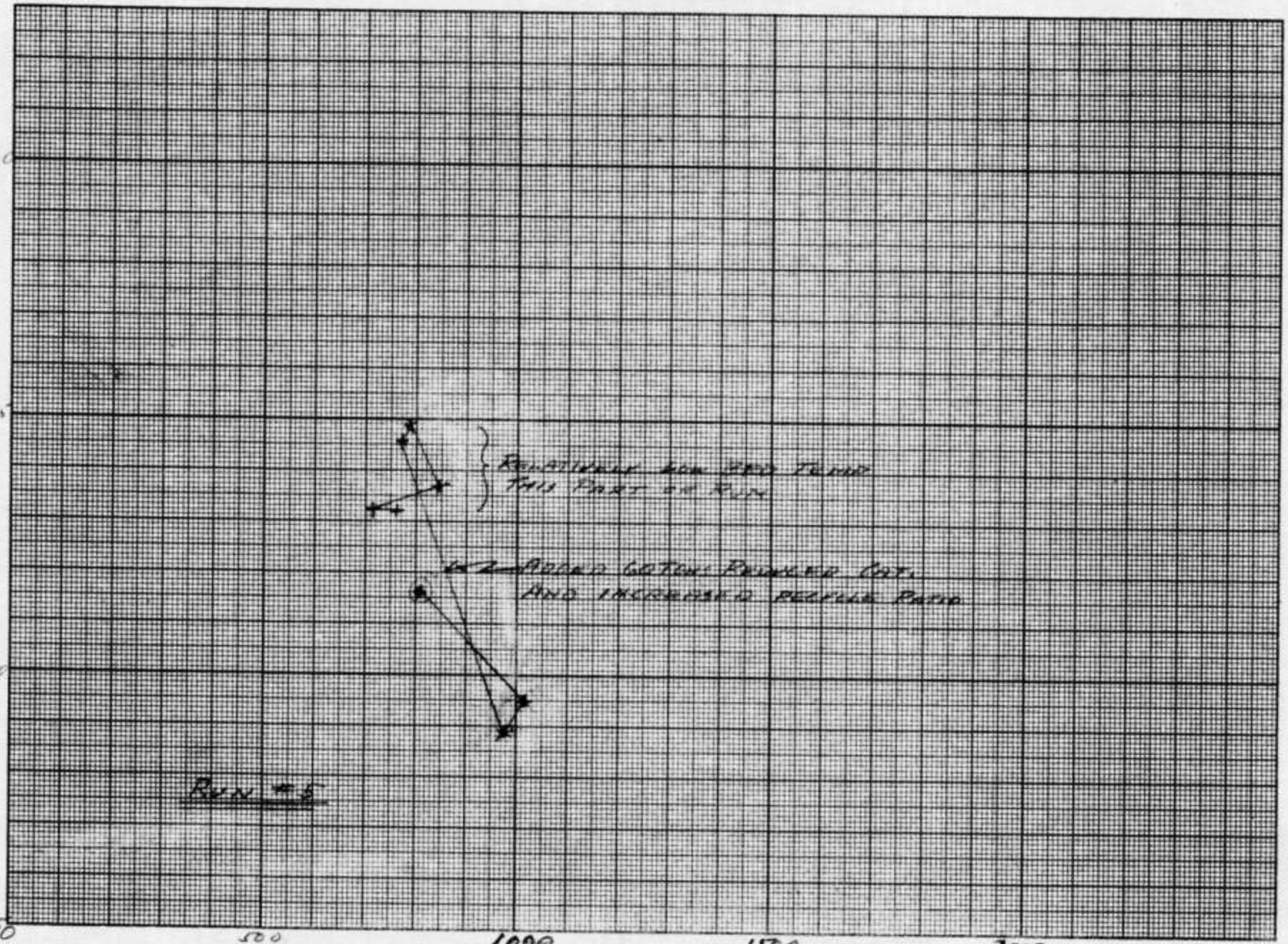
* The weight percentages in the Run Summaries do not add up to 100% because the CO_2 and CH_4 in the fresh feed have been subtracted from the CO_2 and CH_4 respectively in the reactor effluent. The total products shown are the 'make' products they are all expressed as wgt.% of the fresh feed synthesis gas and not of the pure H_2 plus CO input.

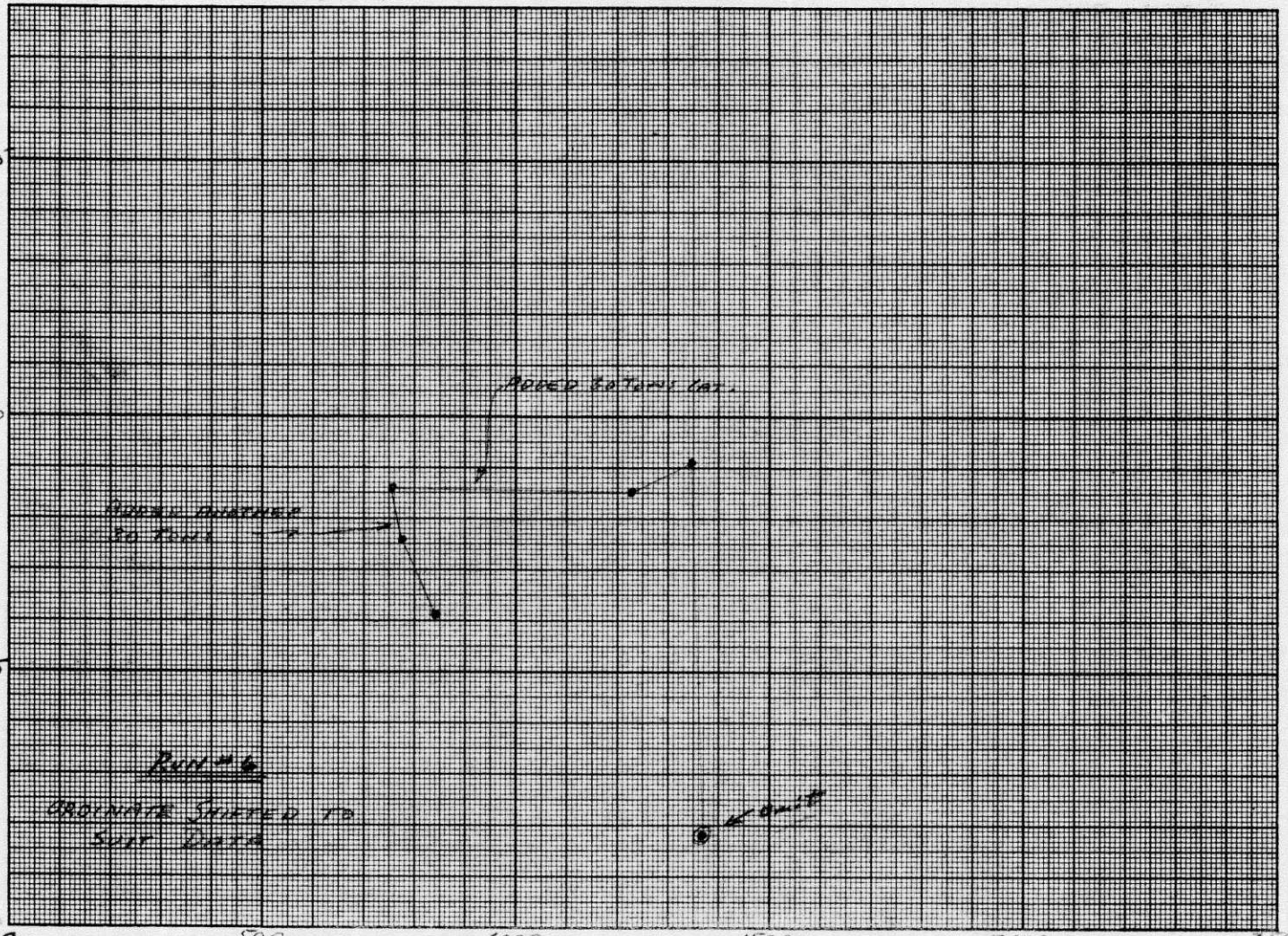
in order to explore the relative reliability of the point to point data and to examine the effect, if any, of changes in operations made during the runs a plot was made of all the Brownsville data run by run in the following separate graphs. These graphs are plots of space velocity (SCF of F.F./Hr/Cu.Ft. of fluidized catalyst) against yield of C_3^+ expressed in Bbls/MMSCF of fresh feed. They are numbered Run 5, Run 6, Run 8 etc. On each plot the points have been joined in chronological order with a ring around the first day's operation. Examination of these individual graphs and Table II in the appendix, which lists the plotted data as well as the operating conditions used, discloses the following:

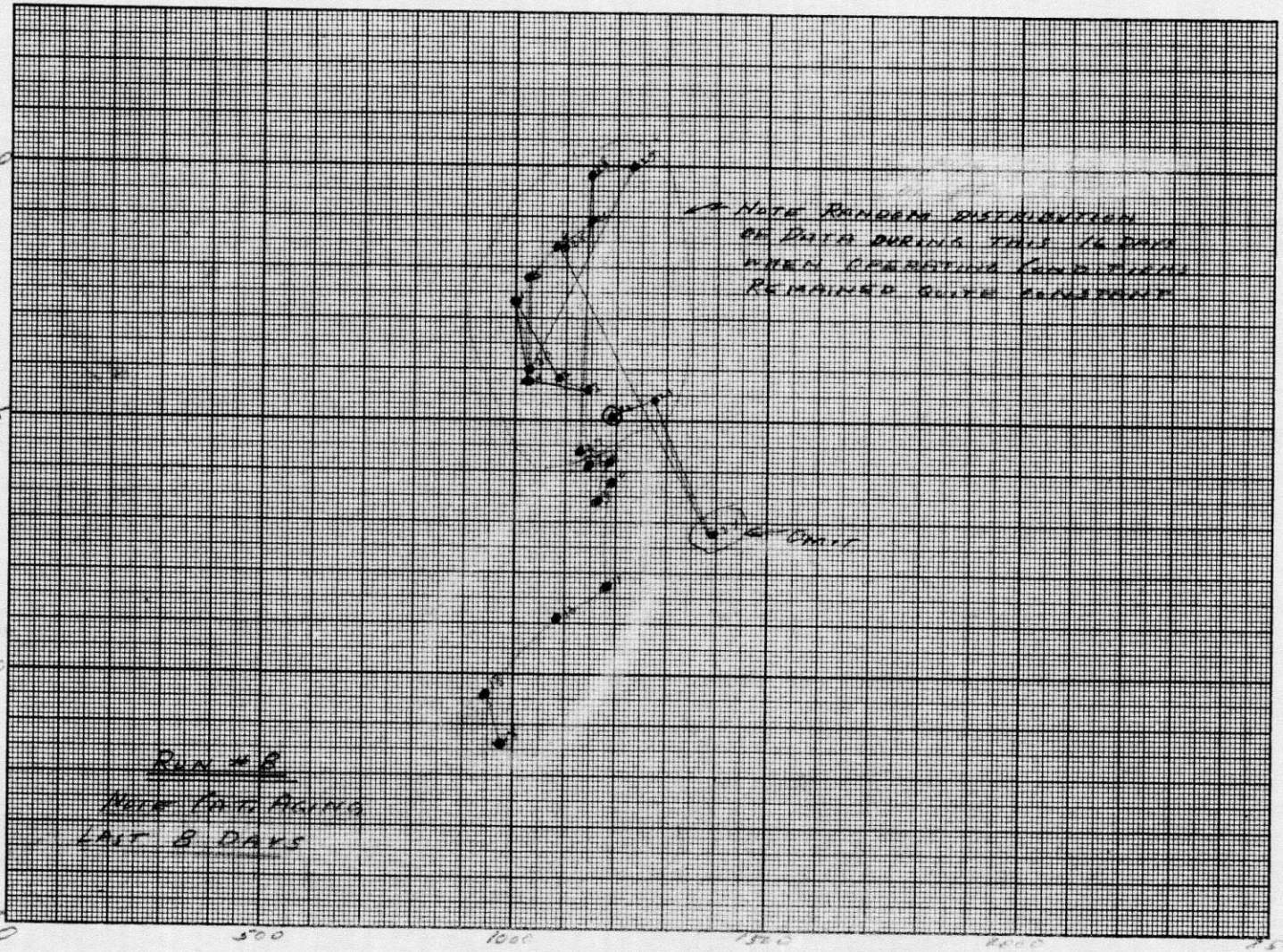
1. Some points, but not too many, are obviously way out of line and can legitimately be discarded if necessary to avoid confusion. (Note: A great many points which were out of line in the original rough graphs were corrected when on checking back to the original stock room calculations, it was found that errors in arithmetic or errors in transcription or errors of ommission were responsible).

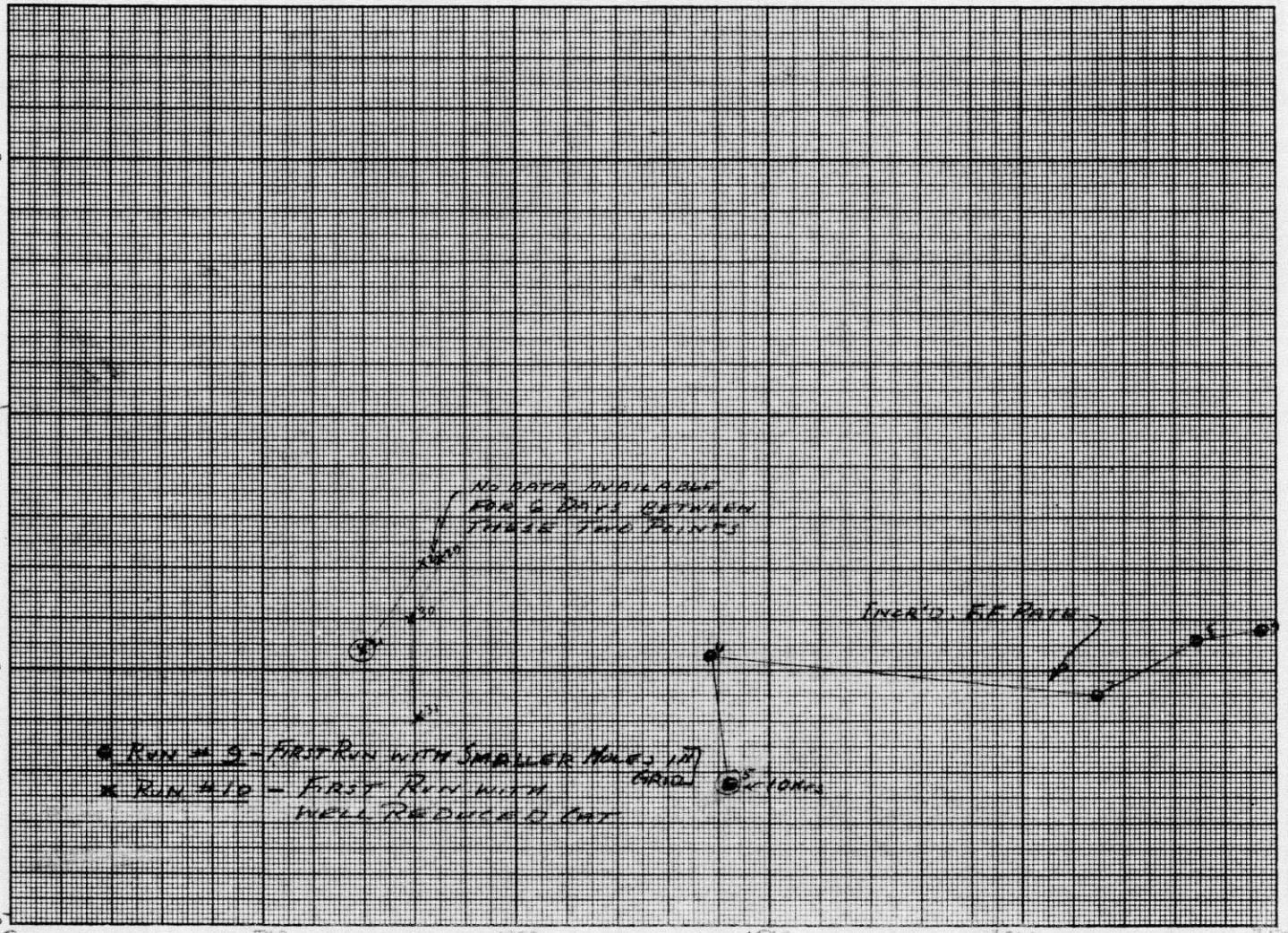
2. In the first part of Runs 8, 13 & 14 all of Runs 11, 12 and the last part of Run 17 there is obviously a wide random distribution of the data during periods when operating conditions were deliberately being maintained as constant as possible in the plant. This random distribution shows that the plant data cannot be depended upon too much, from point to point at least, to show anything but large effects of changes in operating variables. We must look instead to the mass of the data to show trends

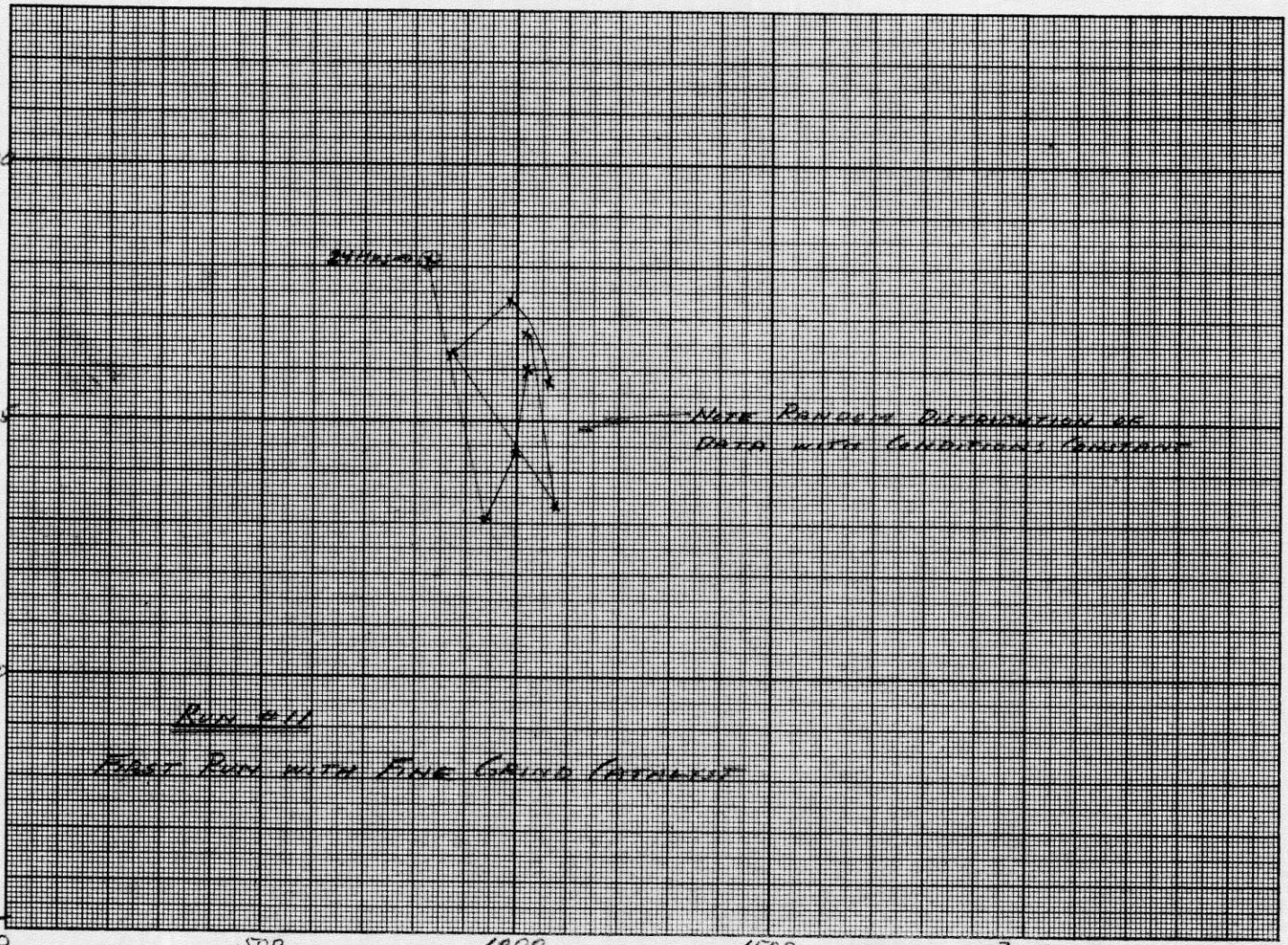
3. The effect of catalyst deactivation is quite pronounced in many runs. Note especially the sharp drop after the first or second day in Runs 5, 11, 12, 14 & 15. Note also the



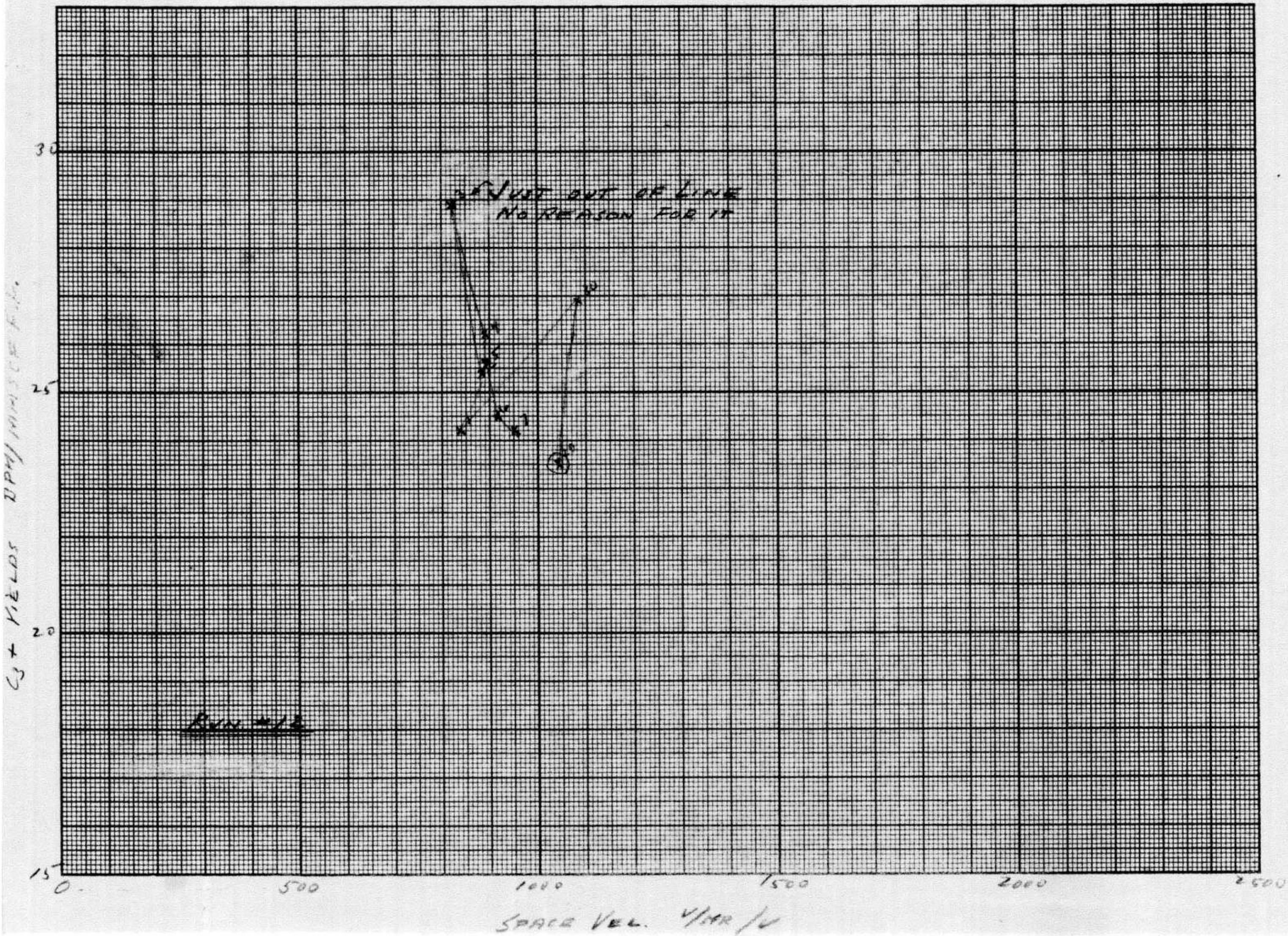





30
25
20
15
0
500
1000
1500
2000
2500
Gr BPH / MMSCF OF FR.
Sp. Vol. ft³/lb
NO DATA AVAILABLE FOR 6 DAYS BETWEEN THESE TWO POINTS
INCR'D. FR RATE
RUN # 9 - FIRST RUN WITH SMALLER HOLES IN ORIFICE PLATES
RUN #10 - FIRST RUN WITH WELL REDUCED RAT



(4)



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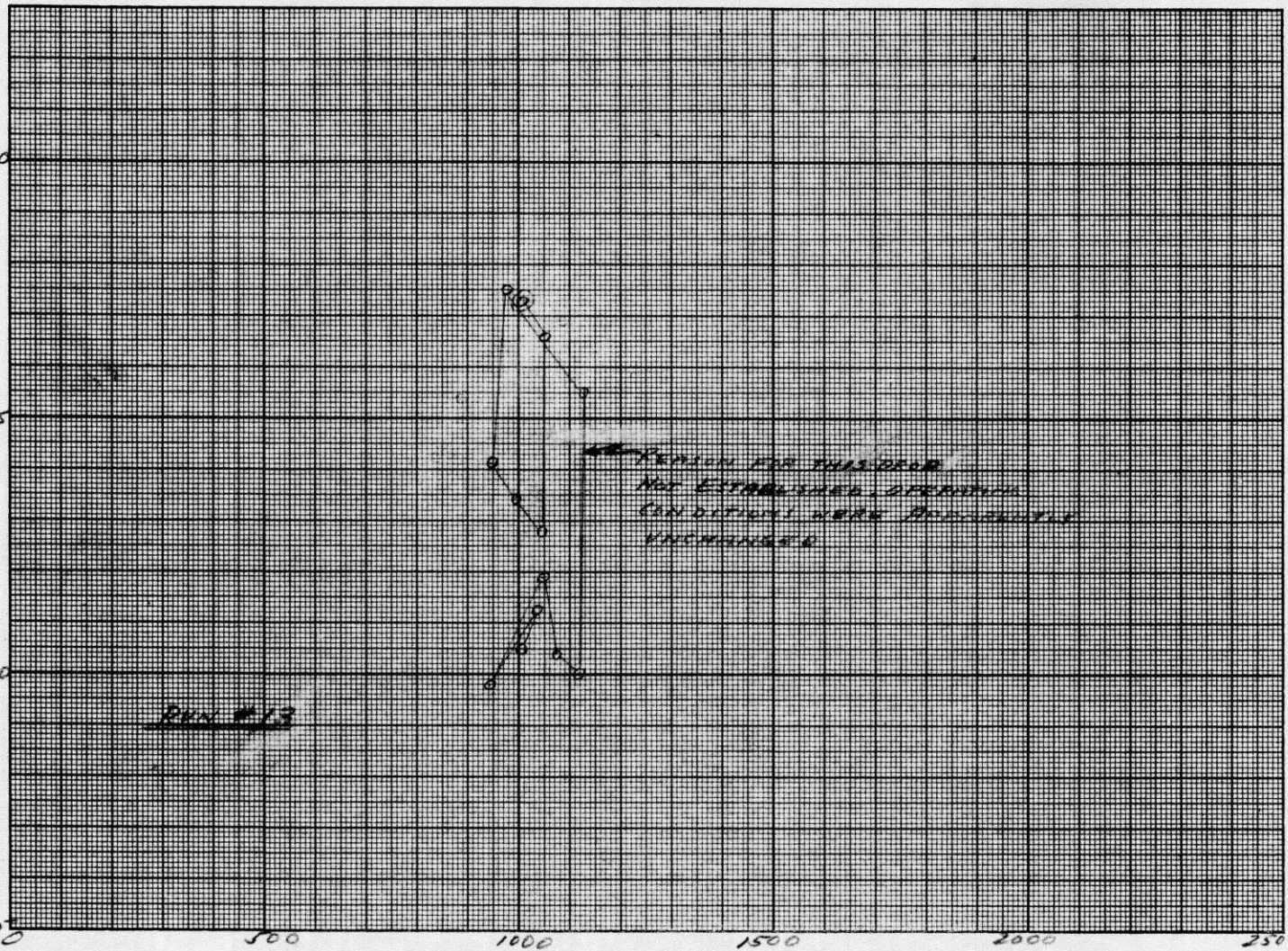
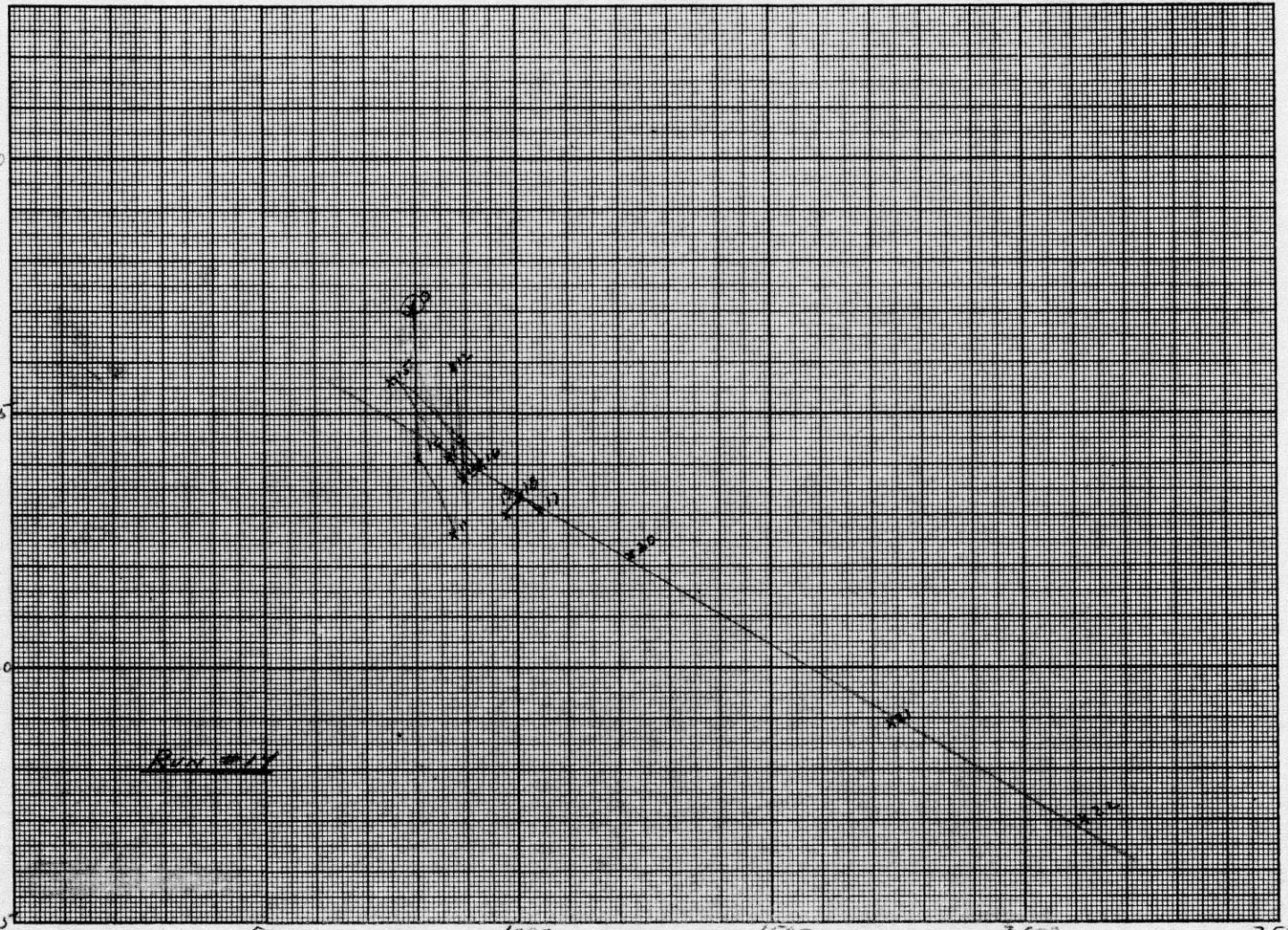


C3+ BPH/MASCF OF H.F.

SPACE VELOCITY V/HR/V

230


30
25
20
15
0
500
1000
1500
2000
2500
Run #14
Sp. Vel. V/HR/V