

RESULTS

The most striking feature of Run 15 is the demonstration that catalyst carry-over can be very small in an open reactor with no catalyst return from the cyclone. This is particularly notable in view of the fact that the catalyst density in the reactor fell to about 3 lbs./cu.ft. at the end of the run and that the inlet velocity at this time was about 1.8 ft./sec.

Figure 1 is a plot of reactor catalyst density against time and shows that after 60 to 70 hours the decline of density with time was substantially linear.

Figure 2 is a plot of reactor inventory with time which is also linear except for the early portion of the run where some rise was noted, no doubt due to carbide accumulation.

Figure 3 is a plot of apparent bed depth calculated from the data of Figures 1 and 2. The curve is rather irregular due to the sensitivity of this function to small errors in bed density and inventory. The general reliability of these measurements is demonstrated by the agreement of bed depth measured in this way with the penetron measurement made at 82 hours.

Figure 4 shows the relation of percent contraction with time. Although a straight line has been drawn, it seems likely that the increase in conversion noted in previous runs may have been experienced in this case during Run 14 and that conversion passes through a maximum at 50 to 75 hours catalyst life.

Figure 5 shows the ultimate oil yields estimated

from the correlations for the observed contractions, both on the basis of Montebello gas and for Brownsville gas. Values are plotted both for the yields of the individual test periods, and for the cumulative yields for the entire run.

Figure 6 shows the cumulative oil yield expressed in terms of gallons of oil produced per pound of catalyst charged. These values were calculated on the basis of 268 lbs. of catalyst.