

STRICTLY CONFIDENTIAL

HYDROCARBON SYNTHESIS

PARTIAL REPORT NO. 31

Montebello Laboratory
Work Completed July 23, 1948

Experiment No. TDC-802
Report Approved April 15, 1950

RUNS 39 THROUGH 43 WITH

THE STRATCO REACTOR

I. INTRODUCTION

The general objective of the research conducted at Montebello Laboratory under Experiment No. TDC-802 is to investigate in a pilot plant scale the generation of synthesis gas (carbon monoxide and hydrogen) and its conversion to liquid hydrocarbons and salable by-products. The present report describes the testing of a powdered catalyst synthesis reactor equipped with a mechanically driven stirrer. The results of these tests, Synthesis runs 39 through 43, are discussed in some detail and compared in a general way with those obtained during the earlier operation of a conventional type of fluidized catalyst contactor.

The use of the stirred reactor (manufactured by the Stratford Engineering Company and referred to henceforth as the Stratco Reactor) was prompted by the fear that fluidization difficulties might be encountered with the conventional type of unit. The Beacon Laboratories' hydrocarbon synthesis group had earlier resorted to a stirred reactor in order to avoid such difficulties in small scale units. The Beacon reactor, however, differed from the Stratco Reactor not only in size but also in the fact that the latter unit provided for the internal circulation of catalyst fines to the bottom of the reactor while the

Beacon unit was not so designed.

A considerable portion of the time spent on the Stratco unit was devoted to overcoming the many mechanical difficulties that arose since the unit as originally built was designed for use at lower pressure operation than the 250 psig level at which it was employed for the hydrocarbon synthesis work.