

STRICTLY CONFIDENTIAL

HYDROCARBON SYNTHESIS

PARTIAL REPORT NO. 33

Montebello Laboratory  
Work Completed June 20, 1949

Experiment No. TDC-802  
Report Approved August 17, 1950

RUNS 46, 47, AND 48  
MONTEBELLO REACTOR NO. 3

I. INTRODUCTION

A. Object

The object of the work described in this report was to obtain yield data from the operation of Montebello Reactor No. 3 under conditions comparable to those planned for the Carthage Hydrocol synthesis unit at Brownsville, Texas.

B. History

Previous synthesis runs on the Montebello Reactor No. 3 had been made at 300 psi pressure with catalyst derived from mill scale. Since the composition of this material was subject to variation from one mill to another and from time to time at the same mill, it was decided to consider magnetite as a catalyst source. Magnetite is an iron ore found in relatively large homogeneous deposits in this country, thus assuring a possible source of catalyst of constant quality.

At the conclusion of Run 45 the necessary changes in equipment were made to allow for synthesis operation at 400 psig in order to conform with the operating conditions planned for Brownsville.

C. Scope

This report discusses the operating and analytical data obtained from the 400 psig operation of the Montebello Reactor No. 3 using Alan Wood magnetite catalyst promoted with 0.6 parts

by weight of  $K_2O$  per 100 parts of iron. The approximate synthesis operating conditions were: 16,000 SCFH fresh feed, 1:1 recycle ratio, 1-foot per-second superficial gas-velocity in the reactor, at 400 psig and  $650^{\circ}F$ . catalyst bed temperature.

The work was conducted during the period March 20, 1949 through June 20, 1949.