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BRIEF OF PARTIAL REPORT

Laboratory Montebello  
Date Approved January 10, 1951  
Date Work Completed Aug. 17, 1949

Experiment No. TDC-802  
Partial Report No. 37  
Subject: Hydrocarbon  
Synthesis

Subject: Synthesis Operations on Alan Wood Catalyst Under  
Brownsville Conditions - Montebello Run 49

Object: To study the synthesis operation with Alan Wood  
Catalyst in the Montebello Reactor, revised to  
duplicate the vertical gas velocity gradient of the  
Brownsville reactor design.

Experi-  
mental  
Work: The reactor was changed in the following respects  
from that used in Runs 45-48: Approximately ten feet  
was added to the length of the 12-inch diameter reactor  
thus extending it eleven feet above the top of the  
three steam cooling tubes. This change made the  
reactor 29 feet tall. Run 49 was made with Alan Wood  
magnetite catalyst, 1.2 K<sub>2</sub>O/100 Fe, at 650°F., 400  
psig, and with a 1:1 recycle ratio using a fresh feed  
rate of 15 MCFH. These are equivalent to Brownsville  
design conditions. From 497 hours to 528 hours  
(the end of the run), the fresh feed rate was 11 MCFH.

Conclu-  
sions:

1. The data for Run 49 show that the catalyst level  
can be increased from the design level of about  
10 feet to a maximum level of about 20 feet.
2. This increase in catalyst level resulted in an  
increase in total liquid yield, basis Brownsville,  
from 5000 Bbls./day to 6400 Bbls./day. This is  
still substantially below the Brownsville design  
value of 7855 Bbls./day.
3. Data from the Stanolind 8-inch reactor on Alan  
Wood catalyst at one-half the bed depth and one-  
half the linear velocity agree very closely with  
Montebello data on this same catalyst.
4. Catalyst replacement rates in the range of 20 to  
50 tons per day at Brownsville (300 to 120 Bbls./  
ton) is not important economically.

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HYDROCARBON SYNTHESIS

PARTIAL REPORT NO. 37

Montebello Laboratory  
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SYNTHESIS OPERATIONS ON ALAN WOOD  
CATALYST UNDER BROWNSVILLE CONDITIONS

MONTEBELLO RUN 49

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