TECHNICAL AND RESEARCH DIVISION

ENGINEERING DEVELOPMENT GROUP (N.Y. OFFICE)

REPORT NO. 25 MARCH 29, 1952

CARTHAGE HYDROCOL, INC.

BROWNSVILLE PLANT OPERATIONS

ANALYSIS OF SYNTHESIS REACTOR DATA

Introduction

The conversions and yields on the Synthesis Reactors at Brownsville have been consistently very much lower than those predicted in design and also much lower than those obtained with the same catalyst on pilot and laboratory units.

For over a year this has been the subject of much concern to many individuals and almost every conceivable reason to account for this discrepancy has been expressed at some time or another.

The latest widely accepted opinion is that poor catalyst contacting efficiency in the large commercial reactors relative to that obtained in the small pilot units is responsible for much if not most of the trouble and steps are now being taken to compartmentalize one of the reactors at Brownsville to simulate operation with a number of smaller reactors in parallel.

In addition, on the assumption that this may not be the answer, engineering studies are being made to determine what changes would be required to operate the two reactors in two stages instead of in parallel. So far, the opinion seems to be divided on whether two stage operation will result in better conversion and yields than parallel operation.

On the off-chance that an additional independent review of the situation, and particularly a detailed study of the Brownsville data itself, might disclose some factors which had been overlooked, or help to establish which opinions are correct, arrangements were made for the writer to make such a survey at Brownsville. This study which was made during the period of February 12 to March 25, 1952 is the subject of the present report.