CARBON ANALYSIS OF MISSISSIPPIAN ROCKS OF WESTERN FRANKLIN MOUNTAINS, EL PASO COUNTY, TEXAS

DAVID AYODELE SHEBA

Department of Geological Sciences

APPROVED:

Richard Langford, Ph.D., Co. Chair

William C. Cornell, Ph.D., Co. Chair

John A.R Dick, Ph.D.

Pablo Arenaz, Ph.D.
Dean of the Graduate School

Dedication

This thesis is dedicated to Almighty God, the Creator of Heavens and Earth for enabling me to successfully complete this Masters degree.

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by

DAVID AYODELE SHEBA, B.Sc.

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Abstract

Carbon analysis of Mississippian rocks, Vinton Canyon, Western Franklin Mountain has been carried out. Mississippian sedimentary rocks of the western Franklin Mountains; specifically (in ascending order) the Las Cruces Limestone, the Rancheria Formation and the Helms Shale, were analyzed in this study.

Total Organic Carbon (TOC) was measured for a suite of samples from the three formations. This was done by drying the samples at 105^0C and subjecting them to a temperature of 500^0C for one hour. Then, the samples were put in desiccators for another thirty minutes. A subset of these samples – those with relatively high TOC was processed by drying the samples and crushing them to powder. The crushed samples were digested in hydrochloric acid to remove the carbonates, then in hydrofluoric acid to remove the silicates to yield non-contaminated insoluble organic matter (Kerogen). Kerogen slides were prepared from this and the Kerogen types in the various formations were studied and photographed.

The TOC data was used to estimate the hydrocarbon generating potential of the units while the Kerogen analysis indicated whether or not the strata have passed through the petroleum generation "window" or not. Based on this information, although some have passed through the catagenetic (oil generating window) phase of the metamorphism, they still have the prolific capacity of generating thermogenic gases.

The Helms has the highest TOC but not the best quality of kerogen. It has predominantly type III. The Rancheria formation has mainly type II that has been completely matured- especially the Lower and Upper members. The Las Cruces has mainly type II but it is not as abundant and mature as that the Rancheria.

Table of Contents

Page

Acknowledgements ---------- v

Abstract ---------- vi

Table of Contents ---------- vii

List of Tables ---------- ix

List of Figures ---------- x

Chapter 1: Introduction ---------- 1

Location ---------- 2

Stratigraphy ---------- 4

Regional Setting and Physiography ---------- 5

Climate ---------- 7

Previous Work ---------- 7

Chapter 2: Regional Geology ---------- 8

Structure ---------- 8

Mississippian System ---------- 9

Las Cruces Limestone ---------- 10

Rancheria Formation ---------- 11

Helms Shale ---------- 12

Chapter 3: Methods of Study ---------- ----------13

Field Phase ----------13

Laboratory Procedures ----------13

Total Organic Carbon Analysis ----------13

Kerogen preparation ----------19

Microscopic Observations ----------19

Oil and Gas Generation ----------24

Chapter 4: Results and Analysis of total organic carbon ----------25

Kerogen Analysis for Las Cruces Limestone ----------28

Kerogen Analysis for Rancheria Formation ----------29

Kerogen Analysis for Helms shale ----------31

Chapter 5: Quality and Quantity of TOC ----------33

Discussion ----------33

References ----------35

Curriculum Vita ----------38