

TABLE OF CONTENTS

3.2.2 Metal Casting.....	11
3.2.3 Cat Litter.....	11
3.2.4 Animal/Poultry Feeds.....	11
3.2.5 Additional Uses.....	12
 CHAPTER 4: OCCURRENCE, ORIGIN, AND PROPERTIES	
OF STANDARD (WYOMING) BENTONITE	13
4.1 WYOMING SODIUM BENTONITE.....	13
4.2 GENERAL PROPERTIES OF BENTONITE.....	14
4.3 MODE OF OCCURRENCE AND ORIGIN.....	15
4.4 PHYSICAL CHARACTERISTICS OF BENTONITE.....	15
4.5 PROPERTIES OF POWDER BENTONITE.....	16
4.6 BENTONITE SLURRY PROPERTIES.....	18
4.7 SUSPENSION OF SOLIDS.....	19
4.8 PUMPING.....	19
4.9 BENTONITE SPECIFICATIONS.....	19
 CHAPTER 5: OCCURRENCE, ORIGIN, AND PROPERTIES	
OF SABAH BENTONITE.....	23
5.1 OCCURRENCE.....	23
5.2 ORIGIN.....	24
5.3 SEDIMENTARY BENTONITE.....	25
5.4 HYDROTHERMAL BENTONITE.....	26
5.5 MINERAL COMPOSITION.....	26

5.6 PROPERTIES OF SABAH BENTONITE.....	27
5.7 PHYSICAL PROPERTIES.....	27
5.7.1 Atterberg Limits.....	27
5.7.2 Moisture Content (MC), Moisture Adsorption (MA), and Ignition Loss (IL).....	28
5.8 CHEMICAL PROPERTIES.....	29
5.8.1 Cation Exchange Capacity.....	29
5.8.1.1 Factors Determining CEC.....	30
5.8.1.2 How can CEC be modified.....	30
5.8.1.3 How CEC is measured and why is this important....	31
5.8.2 Specific Surface.....	32
5.9 CHEMICAL COMPOSITION.....	32
5.10 PERFORMANCE OF BENTONITE AS A DRILLING MATERIAL...	33
5.11 VISCOMETER 600 RPM DIAL READING.....	33
5.12 FLUID LOSS CONTROL.....	34
5.13 COMPARISON OF MALAYSIAN BENTONITE WITH THE STANDARD (WYOMING BENTONITE).....	36
CHAPTER 6: NEW METHODS FOR IMPROVING LOCAL BENTONITE PERFORMANCE FOR DRILLING FLUIDS APPLICATION.....	39
6.2 ADDITION OF CHEAP MATERIAL.....	40
6.1.1 Adding of CMC (Sodium carboxymethyl cellulose).....	40
6.1.2 Adding of Drispac (Polyanionic cellulose polymer).....	40
6.1.3 Adding of NaOH.....	40
6.1.4 Adding of bentonite extender.....	41
6.1.4.1 Adding Sodium Carbonate salt (Soda Ash).....	41

6.2 USING APPROPRIATE SHEARING SPEED.....	41
6.2.1 Increasing shearing or mixing speed.....	41
6.1 BLENDING.....	42
CHAPTER 7: CONCLUSIONS AND RECOMMENDATIONS...	43
7.1 CONCLUSION.....	43
7.2 RECOMMENDATION.....	44
REFERENCES.....	44