

Department the control of mud density. the

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DEPARTMENT OF PETROLEUM ENGINEERING COVENANT UNIVERSITY,
 CANNANLAND, OTA, OGUN STATE. PET327 PETROLEUM ENGINEERING
 LABORATORY A REPORT ON EXPERIMENT 1- DENSITY OF DRILLING
 FLUID BY EMERUWA DENNIS 15CN03244 GROUP C 20TH JANUARY,

2018 ABSTRACT The density of any fluid is directly related to the amount
 and average specific gravity of the solids in the system.

The starting point of pressure control is the control of mud density. The
 weight of a column of mud in the hole necessary to balance formation
 pressure is the reference point from which all pressure control calculations
 are based. The density of the mud is very essential in order to maintain the
 pressure exerted by the static and dynamic of the mud column. The main
 apparatus used to determine the density of a mud is known as the
 mud balance. This process explains the various processes involved in using
 mud balance to measure the weight of the mud.

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INTRODUCTION In order for us to determine the density
 or weight of a given mud, we can use a mud balance.

In our experiment a 4-scale metal mud balance was used. The mud balance
 is being made in a way that the fixed volume cup at one end of the beam

isbalanced by a fixed counter weight at the opposite end, with a sliding weightrider free to move along the graduated scale and calibrated to read directlythe density of the mud in four scale ranges, density also affects drilling mudbecause of the the mud balance used which are; 6. 5- 23. 0lbs/gal (ppg)0.

79 - 2. 73specific gravity (s. g)49 - 179lbs/ft3340 -

1190psi/1000ft EQUIPMENT1. 4- scale mud balance Fig. 1: 4-scale mud balance withcarrying case 2. Hamilton beach mixer 3.

Measuring cylinder4. Weighing balance5. Spatula6.

Syringe PROCEDURES CALIBRATION1. Filled the cup with fresh water. Replace the lid and wipe dry2.

1set the rider on 8. 3ppg or 1. 0s. g. I added or removed lead shot from the shotwell until instrument is in balance. 3.

Ifthe reading is less than 8. 3ppg, add the difference between 8. 3ppg and thereading to mud weight when a test is made.

If the reading is higher than8. 3ppg, subtract ii the same manner.. MUD MIXING 70g of bentonite in 700ml of water Sample 1: 35g mixed in 350ml of waterSample 2: sample 1 + 10g of barite 1. I measured appropriate amount of bentonite and barite. 2. Inthe mixing cup, I poured the measured amount of water. 3.

It turned on the mixer and carefully added the bentonite. 4. I mixed until it was completely homogenous. 5. ForSample 2, I added barite and repeated step 4. MEASUREMENT1.

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I placed the mud balance base (in its carrying case) on a level surface. 2. I ensured the cup is clean and dry, I removed the lid and fill with the mud being tested. 3.

I replaced the lid on the cup. I made sure that some mud is expelled through the hole in the cup as this showed that the cup is full and will remove any trapped air or gas. 4. I placed my finger on the hole in the lid while cleaning and wiping off the mud from the outside of the cup. 5. I placed the balance on the knife-edge and I moved the rider along the arm until the cup and arm are balanced. 6. I took the readings of the mud weight. Repeat this for sample 2.

RESULTS MUD DENSITY Ppg lb/ft³ s.

g psi/1000ft Sample 1 (WATER AND BENTONITE) 8.7 65 1.04 450 Sample 2 (with barite, WATER AND BENTONITE) 8.9 66.55 1.11 460.05

PRECAUTION 1. I ensured that I poured the water first into the mixer to reduce the amount of lumps in the mud.

2. I ensured that I removed the trapped air in the cup before taking my measurement of density. 3. I ensured accurate measurement of the mud density.

4. I avoided error due to parallax when taking my reading at the lower meniscus. 5. I ensured that the cup was completely wiped before making sure it was balanced. 6.

I also ensured that I was wearing the appropriate safety equipment throughout the experiment. Also, from my results, it shows that solution 2 (with barite) is denser than solution 1 and this is because of the addition of barite to the

solution as barite is a weighting material. **CONCLUSION**At the end of this experiment, I have come to the conclusion that this method is very accurate in the measurement of mud density and also barite can be used to increase mud density. **RECOMMENDATION**I recommend that this method be encouraged as the mud balance is a fast, easy and accurate method of measuring mud weight/density. Also, barite is a suitable weighting material that can be used to increase the density if mud. **REFERENCES**Max R.

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Model 821 Rig Laboratory Instruction Manual Baker Hughes (2006). Drilling Fluids Reference Manual Engr. Seteyeobot (2018). Drilling Mud Manual. Adam T. beurgoyne jr, k. k, applied drilling engineering Equipment, O. T (2007) instruction manual . Hamilton beach mixers