

# [Department the control of mud density. the](https://assignbuster.com/department-the-control-of-mud-density-the/)

[Engineering](https://assignbuster.com/essay-subjects/engineering/)

DEPARTMENT OF PETROLEUM ENGINEERINGCOVENEANT UNIVERSITY, CANNANLAND, OTA, OGUN STATE. PET327PETROLEUM ENGINEERING LABORATORYA REPORT ON EXPERIMENT 1- DENSITY OF DRILLING FLIUDBYEMERUWA DENNIS15CN03244GROUP C 20TH JANUARY, 2018   ABSTRACTThe densityof any fluid is directly related to the amount and average specific gravity ofthe solids in the system.

The starting point of pressure control is the controlof mud density. The weight of a column of mud in the hole necessary to balanceformation pressure is the reference point from which all pressure controlcalculations are based. The density of the mud is very essential in order tomaintain the pressure exerted by the static and dynamic of the mud column. Themain apparatus used to determine the density of a mud is known as the mudbalance. This process explains the various processes involved in using mudbalance to measure the weight of the mud.                TABLE OF CONTENTS1.

TITLE2.    ABSTRACT3.    INTRODUCTION4.

EQUIPMENT (with diagrams)5.    PROCEDURES6.    CALIBRATION7.    MUD MIXING8.

DENSITY MEASUREMENT9.    RESULTS10. CONCLUSION11. REFERENCES              INTRODUCTIONIn order forus 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 isbeing 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         PROCEDURESCALIBRATION1.  Ifilled the cup with fresh water. Replace the lid and wipe dry2.

Iset 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 700mlof water Sample 1: 35g mixed in 350ml of waterSample 2: sample 1 + 10g of barite 1.   Imeasured appropriate amount of bentonite and barite. 2.   Inthe mixing cup, I poured the measured amount of water. 3.

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

IPlaced the mud balance base (in its carrying case) on a  level surface2.   Iensured the cup is clean and dry, I removed the lid and fill with the mud beingtested. 3.

Ireplaced the lid on the cup. I made sure that some mud is expelled through thehole in the cup as this showed that the cup is full and will remove any trappedair or gas. 4.   IPlaced my finger on the hole in the lid while cleaning and wiping off the mudfrom the outside of the cup5.   Iplaced the balance on the knife-edge and I moved the rider along the arm untilthe cup and arm are balanced. 6.   Itook the readings if the mud weightRepeat 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   PRECAUTION1.    I ensured that I poured the waterfirst into the mixer to reduce the amount of lumps in the mud.

2.    I ensured that I removed the trappedair in the cup before taking my measurement of density. 3.    I ensured accurate measurement of themud density.

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

I also ensured that I was wearing theappropriate safety equipment the experiment. Also, frommy results, it shows that solution 2 (with barite) is denser than solution 1and this is because of the addition of barite to the solution as barite is aweighting material.           CONCLUSIONAt the endof this experiment, I have come to the conclusion that this method is veryaccurate in the measurement of mud density and also barite can be used toincrease mud density.                    RECOMMENDATIONI recommendthat this method be encouraged as the mud balance is a fast, easy and accuratemethod of measuring mud weight/density. Also, barite is a suitable weighting materialthat can be used to increase the density if mud.                       REFERENCESMax R.

Annis, Martin V. Smith (1974); EXXON COMPANY, USA (August 1996). DrillingFluids TechnologyKing FahdUniversity of Petroleum & Minerals (April, 2003). PETE 203: DrillingEngineering Laboratory ManualFANN (2012).

Model 821 Rig Laboratory Instruction ManualBaker Hughes(2006). Drilling Fluids Reference ManualEngr. Seteyeobot (2018). Drilling Mud Manual. AdamT. beurgoynejr, k. k, applied drilling engineering Equipment, O. T (2007) instruction manual . Hamilton beach mixers