ABSTRACT

Tests in the laboratory to determine the elasticity can be determined by two methods: static and dynamic. Static method to measure stress - strain in unconfined compressive strength test and measure strength index (Is) in the point load index test, whereas the dynamic method by measuring the ultrasonic wave velocity (Vp). In this study the results of both methods will be known to do.

Tests conducted on five types of rock, claystone, coallyclay, silt, coal and sandstone yang conditioned in the original water content of the field. To maintain the authenticity of the water content of each rock, early preparation is done by inserting a pipe into the rock samples with sawdust so that additional rock samples suffered no damage and the loss of the original water content of the field.

The test results showed that the ultrasonic wave velocity values, unconfined compressive strength and point load index values have a strong relationship. Can be demonstrated with a correlation coefficient close to one between rapid propagation of ultrasonic waves to unconfined compressive strength, point load index of the unconfined compressive strength and ultrasonic wave propagation speed of the point load index. In determining similarities and third correlation coefficient test results used linear graph.

Relationship of ultrasonic velocity (Vp) with a unconfined compressive strength (c) using a linear graph approach , so we get the equation at every lythology claystone c = 0,032Vp - 27,72, coallyclay c = 0,034Vp - 29,73, silt c = 0,009Vp - 7,88, coal $_{c} = 0,019V_{p} - 16,10$ and sandstone $_{c} = 0,02 V_{p} - 17,57$.

Relationship of point load index (Is) with a unconfined compressive strength (c) using a linear graph approach, so we get the equation at every lythology claystone $_{c} = 11,81$ Is - 0,483, coallyclay $_{c} = 13,7$ Is - 0,064, silt $_{c} = 10,8$ Is - 0,022, coal $_{c} = 10,45$ Is + 0,263 and sandstone $_{c} = 15,66$ Is + 0,19.

Relations of ultrasonic velocity (Vp) with a point load index (Is) using a linear graph approach, so we get the equation at every lythology claystone Is = $0.023V_p - 20.12$, coallyclay Is = $0.022V_p - 18.93$, silt Is = $0.003V_p - 3.112$, coal Is = $0.013V_p - 11.34$ and sandstone Is = $0.013V_p - 11.51$.