

Limestone survey by seismic reflection: Abdul Halim Quazi, School of Physics, Universiti Sains Malaysia, Penang.

Limestones are rocks composed of calcite (CaCO_3), usually with some dolomite ($\text{CaCO}_3\text{MgCO}_3$), sandy and clay particles. In pure varieties of limestone impurities do not exceed 5%. Limestones may be variously coloured depending on the quantity and nature of impurities. A most important use of limestone is for the production of portland cement for which purpose they are mixed in a definite proportion with certain clays. About 1.23 tons of limestone, 0.31 ton of clay and 0.04 ton of gypsum are required for producing one ton of cement. Depending on the quality of coal, about 20 to 25% coal is needed for burning purpose and in case of gas-fired kiln about 5000 to 6000 cu. ft. of gas are required for a ton of cement.

Special type of limestone is used in the production of glass. Limestones are used as fluxes in metallurgy, in agriculture (for soil liming), to produce lime, as building, road and railway stones etc. so, limestone is a very important material for the economical and industrial development of the country especially for Bangladesh where commercial quantities of limestones are not available in sufficient quantity at mineable depth.

So, the survey was conducted in the month of April 1978 and subsequently the drilling confirmed in 1979 the postulated depth of limestone is 1693 feet from the surface in the north eastern side of the survey area.

The quality of seismograms were very good. A strong reflection band of three to five phases was prominent. The average thickness of low velocity layer was about 10 m and the velocity varied from 800 to 1400 m/sec. A continuous reflection-line-up was recorded around 0.55 sec., which is likely to be sylhet limestone. The depth of the top of sylhet limestone from sea level is about 550 m with an average velocity of 2000 m/sec.

Unconformities could not be identified by this survey. It cannot be confirmed whether minor faults will block or lead ground water flows at the time of limestone mining especially at the time of shaft sinking.

Sylhet limestone does not consist of a homogeneous thick layer. The time lags between the different reflections within limestone beds are smaller than $1/4$ of a phase of the prevalent wavelength and are below the possible resolution of the method. This prevents the mapping of the bottom of the limestone and consequently the drawing of an isopach-map.

The accurate depth calculation is possible because two deep wells are situated in the western side of the survey area.
