

**DEPTH AND VELOCITY ESTIMATES FROM SEISMIC WAVES REFRACTION  
PATHS AT EBONYI STATE UNIVERSITY STAFF SCHOOL, ABAKALIKI,  
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**ABSTRACT**

Depths of refractors and velocities of beds have been estimated for crustal layers at Ebonyi state university staff school, Abakaliki, Nigeria through seismic refraction surveying. The study area is located on the Abakaliki anticlinorium (latitude  $6^{\circ}17'N$ - $6^{\circ}20'N$ ; longitude  $8^{\circ}05'E$ - $8^{\circ}20'N$ ) situated within the sedimentary basin of south eastern Nigeria. The instrumentation used consists of a digital - type signal enhancement seismograph, electromagnetic - type compressional wave geophones, geophone cable, hammer, metal plate, piezoelectric starter and measuring tape. The objective of the survey was to obtain information on the seismic velocities and thickness of beds at different depths which would be useful for engineering and hydrogeological purposes in the area. Three locations within the staff school were surveyed and three layers of the subsurface were delineated in each location by the waves. The result showed that the average compressional wave velocity for the first three layers from the earth's surface were 575m/s, 971m/s and 2593m/s for the first, second and third layers respectively. These layers were interpreted to be made up of sandy clay, moist clay and limestone accordingly. The depths to the horizons measured from the surface of the earth were estimated to be 6m and 12m for the first and second refractors respectively.

**Keywords:** Anticlinorium, sedimentary basin, piezoelectric, hydrogeological.