

Some specialized gamma radiation logging distinguishes the three component decay chains (potassium, uranium, and thorium) by the wavelengths of their characteristic gamma emissions. The characteristic gamma ray line that is associated with each component:

- Potassium : Gamma ray energy 1.46 MeV
- Thorium series: Gamma ray energy 2.62 MeV
- Uranium-Radium series: Gamma ray energy 1.76 MeV

Another example of the use of spectral gamma ray logs is to identify specific clay types, like Kaolinite or Illite. This can be used for environmental interpretation as Kaolinite forms from Feldspars in tropic soils by leaching of Potassium; and low Potassium readings may thus indicate paleosols[2]. The identification of clay types is also useful for calculating the effective porosity of reservoir rock