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Gamma ray spectrometry for recognition of hydrothermal alteration zones related to a low sulfidation epithermal gold mineralization (eastern Pontides, NE Türkiye)

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Abstract: This study presents an interpretation of radiospectrometric and magnetic data of Arzular mineralization site, which is one of the best examples for epithermal gold deposits located in southern zone of the Eastern Pontides (NE Türkiye). Potassium is generally the most useful pathfinder element for gold mineralization zones because of its increase in altered rock surrounding the deposits. Where gold is hosted within quartz veins, typically the vein is low in the radioelements, but the hydrothermally altered host rocks will usually have a distinct radioelement signature useful for exploration. In this study, magnetic, susceptibility and radiospectrometric survey data radiometric signatures associated with the host rocks favorable for the mineralization, enhancing techniques such as the ratio maps as well as potassium (%K), equivalent thorium (eTh ppm) and equivalent uranium (eU ppm) maps were utilized. Our analysis showed that the gold mineralization associated with the alteration is significantly related to increase in potassium, due to adularia, a low T K-

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