GEOLOGY,MINERALOGY AND RADIOACTIVITY STUDIES ON NUWEIBI AREA,CENTRAL EASTERN DESERT,EGYPT

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Nuweibi area is located in the Central Eastern Desert, 30 km north of Marsa Alamand about 33 km west of the Red Sea coast. It lies between latitudes 25○ 10 30\ and 25○15 15\ N and longitudes 34○ 29 00\ and 34○ 38 29\ E, covering an area of about 135km2. It is mainly covered by metasediments, serpentinites, metagabbros, grey granites,albite granites, post and pre-albite granite dykes.The Nuweibi albite granite is one of 14 Known Sn-Ta-Nb bearing granitoids (Hawashis, Umm Naggat, Umm Samra, Nuweibi, Ineiga, Humer Waggat, Igla, Zabara,Muweilha, Nugrus, El Gharabiya, Nikeiba and Humr Akarem) in the Eastern Desert ofEgypt.Nuweibi area is drained by two main wadis, the first one is Wadi El-Nabi located atthe north while the second is Wadi El-Nuweibi at the south. The Nuweibi albite granitewas divided by N-S fault into two unequal parts, Eastern (with dimension of about950m*400m with elevation of about 300m) and Western parts (with dimension of about1.37km*1.33km with elevation of about 450m). The present study concerned with theEastern part and the stream sediments of both wadis. The area has been studiedgeologically, minerlogically, chemically, geophysically and stream sediment analysis.Structurally, from Structural Lineament Statistical Analysis there are three sets offaults controlling the regional framework of the study area. They are E-W, NNW-SSEand NNE-SSW respectively. They are controlling the distribution of albite granite, maficand intermediate dykes. The area of study characterized by different rock unitesrepresented by serpentinites, metasediments (schist), metagabbros, grey granite, prealbitegranite dykes, albite granite and post-albite granite dykes.The grain size analysis of both wadis shows that, the sediments of Wadi El-Nabi are amixture of gravelly sand and sandy gravel while Wadi El-Nuweibi sediments is gravellysand. The statistical sedimentological parameters shows that, the sediments of Wadi El-Nabi are very coarse and coarse sand size, very poorly sorted, coarse skewed andplatykurtic, while the sediments of Wadi El-Nuweibi are very coarse and coarse sandsize, poorly sorted, coarse skewed and mesokurtic. Consequently, the sediments of WadiEl-Nabi and Wadi El-Nuweibi displays river characters that deposits in fluviatileenvironment.Mineralogically, The distribution of total heavy fraction in Wadi El-Nabi shows that,the fine sand size display relatively high content of the total heavy minerals. The totalheavy minerals in Wadi El-Nabi also does not show regular trend along the stream, oncontrast the distribution of total heavy minerals in Wadi El-Nuweibi are slightly enrichedin

upstream than downstream. The obtained data reflected that, the spot surface samplesattain total heavy minerals greater than that in trench samples. The concentration ofmagnetite in Wadi El-Nuweibi and its spot surface samples are greater than that in WadiEl-Nabi and its spot surface samples. the average magnetite content in Wadi El-Nabi isnearly a half of its content in Wadi El-Nuweibi in the three fraction sizes.The heavy minerals were identified and described by microscopic examination. Theheavy minerals recorded in the area are: The opaque minerals represented by magnetite,ilmenite, hematite, goethite, chromite, leucoxene, tantalite-columbite, molybdinite,pyrolusite and the non opaque minerals represented by zircon, rutile, epidote, garnet,cassiterite, monazite, fluorite and sphene beside other minerals such as pyrite, barite,atacamite, apatite, autunite, allanite, REE bearing biotite and Less stable minerals such aspyroxenes and -amphibole minerals group.Geochemically, the studied metagabbros are mainly calc alkaline to slightly tholeiitic,originated in island-arc tectonic environment. The albite granite is mostly calc-alkaline, Itypeand originated in within plate to post orogenic tectonic setting.the studied stream sediment samples plot in the greywacke field, in sodic field withhigh concentration of (Fe2O3 + MgO). According to the two discrimination functionsdiagram, the source of the studied stream sediments are mafic igneous provenance andintermediate igneous provenance.Geophysically, The Nuweibi granite is discriminated by their high radioactivityand the superimposed contour lines have two specific trends (NNE-SSW and NNWSSE).They controlling by E-W regional structural trend. The field radiometric surveyrevealed that; the potassium show the same concentration in both wadis either inside oroutside the -borehole. Uranium slightly highly concentrated in Wadi El-Nabi than that inWadi El Nuweibi, on the other hand thorium show remarked concentration in Wadi ElNuweibithan that in Wadi El-Nabi either inside or outside the borehole. The laboratoryanalysis do not show any remarkable variation between Wadi El-Nabi and Wadi El-Nuweibi either inside or outside the borehole.