

## **THE MUSAYNAH PROSPECT : A NEW CU, MO, AU PORPHYRY STYLE MINERALIZATION REDISCOVERED IN THE ARABIAN SHIELD.**

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Located 20km South of the town of Hulayfah, the Musaynah prospect (one of the most important mineralized occurrences of Saudi Arabia) was reassessed in the frame of the new GIS BRGM-DMMR data base. The prospect encompasses two major sets of ancient copper workings corresponding to extensional veins crosscutting Halaban metavolcanics. These include a porphyritic andesitic dome, a volcanic breccia and several younger rhyolitic dykes. These rocks were slightly folded during Panafrican transpressional tectonics (the Nabitah orogeny). The old workings were previously drilled for massive sulfide exploration (Delfour 1968). The main mineralizing event is connected with a granitic- dioritic syntectonic pluton that crops out 4Km to the South and shows an high late magmatic fluid activity with Cu, magnetite, pegmatite and tourmaline. The main porphyritic andesite is strongly altered with magnetite, K feldspar and biotite. Near the vein system chlorite, sericite, carbonate increase. Two types of veins are recognized K feldspar (adularia pro parte) biotite, hematite locally replacing magnetite with malachite replacing cuprite, tenorite, goethite, limonite with electrum replacing pyrite veins and a second generation of veins with mainly reniform chlorite and carbonate. Locally, siliceous stockworks with coked breccias and ribbon quartz have been observed crosscutting the silicified andesite. Chloritization of biotite is common. The vertical zonality of the geochemical pattern with peripheral Pb, Zn, Ag mineralisation and Cu, Au, Mo mineralisation at depth, coincide with that of the mineral alterations : mainly propylitic outwards and potassic inwards. This is characteristic of a porphyry system. Epithermal breccia and skarn type mineralisations known in the vicinity may be classically associated with this kind of mineralization.