

Exploration Overview of the Sayacık and Kışladağ Gold Porphyries, Western Anatolia Volcanic Province, Turkey

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The Sayacık porphyry prospect is located 6 km southwest of the Kışladağ gold porphyry deposit in the Miocene Beydağ volcanic complex. The prospect was recognized as a potential target at the same time as the Kışladağ deposit. While exploration decision-making at Kışladağ did not face much uncertainty, the process at Sayacık was more challenging. The Beydağ volcanic complex was identified as a potential target in 1989 through Landsat-5 imagery that had been processed for clay and iron responses. Reconnaissance geological mapping accompanied the first-pass sampling to outline alteration and guide the extent of rock-chip and stream sediment sample collection. First-pass work returned 50 and 30 ppb gold anomalies from two streams draining the Kışladağ deposit, and one 120 ppb gold rock-chip anomaly outboard of the deposit. Reconnaissance mapping identified the Sayacık area as a potential target, but sampling did not return any gold anomalies. As a routine practice, the exploration group resampled stream anomalies for confirmation. Second-pass results at Kışladağ confirmed the original anomaly and returned a maximum of 160 ppb gold. Two rounds of soil sampling at Kışladağ covered the deposit and outlined a strong gold anomaly with multiple values over 200 ppb gold. A soil grid over Sayacık was added to the second work program, together with four wide-spaced IP-resistivity profiles. Several scattered point anomalies in the 10 to 20 ppb gold range were detected, but they did not form a coherent anomaly. In 2001, four RC holes at Sayacık were added to the end of a round of infill drilling at Kışladağ as a first test of the target. The holes cut argillically altered andesite flows and latite intrusions to a maximum depth of 325 m and returned generally less than 40 ppb gold, with a maximum value of 260 ppb. Exploration on the project was shelved until 2008, when geologists remapped the area with a detailed understanding of potential targets gained from work at Kışladağ, and a second IP-resistivity survey using equipment with deeper transmission capacity was completed. New deep intrusion targets were defined, based mainly on the geology and the IP-resistivity survey. Core drilling finally intersected gold-bearing stockwork quartz veining hosted in a latite porphyry dike at a down-hole depth of 761 m. A follow-up drill hole in the same area cut stockwork-veined porphyry at a similar depth and continued in mineralization to a down-hole depth of 1,000 m, where the hole was stopped. Intersected gold grades were mostly in the range of 0.1 to 0.4 ppm with a maximum value of 1.1 ppm. Re-Os age dates of molybdenum mineralization from the main ore host at Kışladağ and the youngest of two intrusions identified at Sayacık returned dates of 14.49 ± 0.06 and 14.51 ± 0.06 Ma, respectively.