Ayan-Yuryahsky anticlinorium, situated in the North-East of Russia, is an important gold-bearing region. Its expected reserves of gold are 2000-2500 tons, which is similar to the amount of gold, produced by the whole world in a year. The anticlinorium is comprised of coalified metamorphized terrigenous rocks of the early Permian to the middle Jurassic age. We suppose that most of the goldfields were formed here as a result of plume tectonic activity and metasomatism of the host rocks. One of the promising areas is the Pavlik gold deposit where a large elongated gold-containing stockwork was revealed in 1943. In 2010, audio-frequency magnetotelluric (AMT) method was applied to delineate this ore body and to study its deep structure. AMT soundings were performed along 6 parallel profiles. The position of resistive ore body is rather clearly imaged by apparent resistivity and impedance phase. Inversion of static shift corrected AMT data provided cross-sections along the profiles, and on this basis the resistivity model of the Pavlik gold deposit was constructed. The exploration drill hole was placed approximately in the center of the resistive body. Ore-grade gold was detected, which provoked an interest to further exploration of the Pavlik gold deposit.