

SAM (Sub-Auto Magnetics) Detection and Delineation of Bitumen Deposits

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Abstract

SAM (Sub-Audio Magnetics) is a proprietary electric/electromagnetic technique, which uses a high-sensitivity Cesium vapor magnetometer to measure the electromagnetic fields due to electric current flow in the ground. The system allows very fast and highly detailed data acquisition from the ground or from a helicopter-towed bird. The system has been in operation for two decades in Australia and has had considerable success mapping resistivity variations beneath highly conductive cover such as salt pans. This forward modeling study has indicated that the SAM system is capable of mapping important geological features in the Athabasca oil sands to SAGD operators including quaternary channels and some types of lithofacies variation within the McMurray formation.

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