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Hitting the the Right Frequency - Not All Conductors are Created Equal

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Airborne time domain electromagnetic (EM) surveys are indispensable tools for subsurface exploration, particularly in resolving conductors at depth. Their depth of investigation depends in part on transmitter frequency and moment, as well as the noise levels of the receiver.

In this study, we present a comparison of conductor detection and resolution capabilities of the XCite time-domain EM system operating at frequencies of 15 Hz and 30 Hz. Through detailed modelling of data collected over a study area, we investigate the effect of these frequencies on the system's ability to detect and resolve conductors. Methodologically, we describe the parameters and settings used for both frequencies and outline the data analysis techniques used.

Our results reveal significant differences in conductor detection and resolution between the two frequencies. The practical implications of our study extend to improvements in survey design, suggesting that the choice of frequency can significantly impact survey outcomes. Moreover, our findings underscore the importance of further research to enhance understanding and optimization of airborne EM survey methodologies.