

# Air-FTG<sup>®</sup> Gravity Gradiometry Forward Model for Kimberlite Pipe

## Introduction

The kimberlite host rocks are small hypabyssal intrusions which grade upwards into diatreme breccias near surface and pyroclastic rocks in the crater facies at surface. Air-FTG<sup>®</sup> surveys can be useful in detecting kimberlites and in delineating pipes. Deeply weathered kimberlites or those with a thick sequence of crater sediments generally give negative responses and where fresh kimberlite is found at surface, a positive gravity anomaly may be obtained.

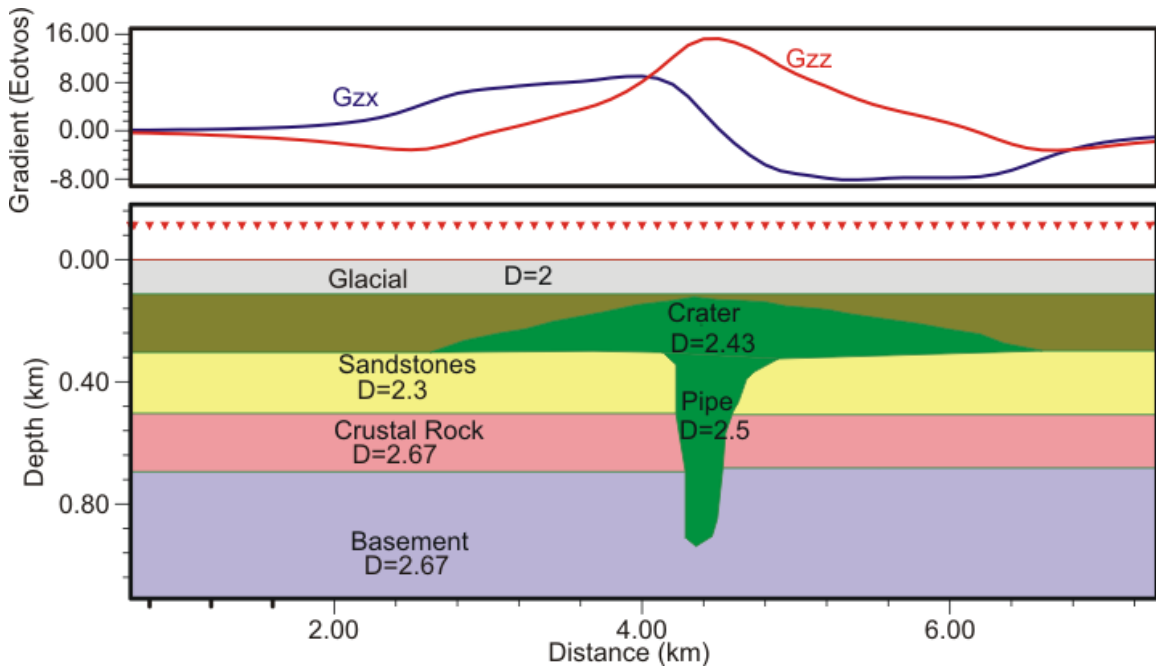


Fig.1. Gradient forward model for a kimberlite showing a positive response of about 16 Eotvos. This is a typical example of North American kimberlites.

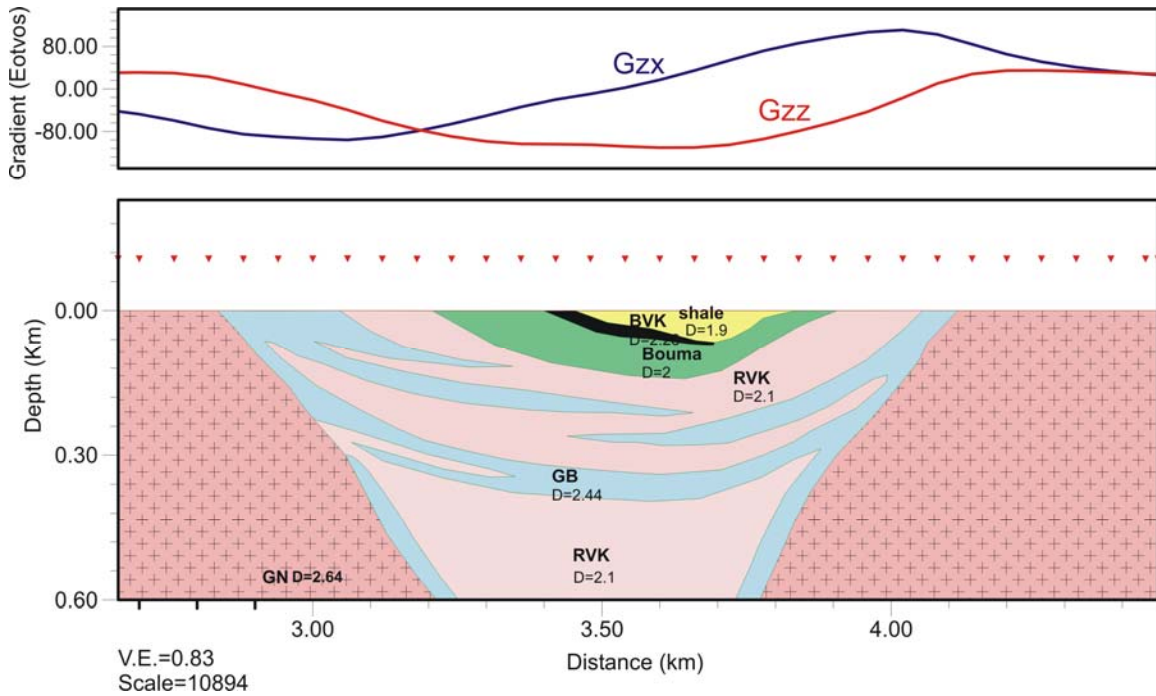


Fig.2. Gradient forward model for a kimberlite showing a negative response of about 80 Eotvos. This is a typical example of Southern Africa kimberlites

## Conclusion

Air-FTG<sup>®</sup> detects and delineates both types of kimberlites. A fresh kimberlite in fig. 1 produces a positive gradient response of 16 Eotvos, while the deeply weathered kimberlite in fig. 2 produces a huge negative response of 100 Eotvos.



<http://www.bellgeo.com>