ACKNOWLEDGEMENTS

I would like to thank the following people:

- Dr. C. Frick, Director of the Council for Geoscience, for permission to use MT data collected along the Sishen – Keimoes line in the case study.
- Dr. E.H Stettler of the Geophysics Business Unit for introducing me to MT and for all the valuable help and advice he has given me in order to gain a better understanding of the technique.
- Mr. Manfred Hauger for developing and continuously improving the equipment used during the MT surveys, and for numerous trips into the field to collect the data.
- P.J. Külper and I.A. van Vuuren for collecting the data.
- My mom, for all the support and encouragement and especially for giving me so many opportunities in life.
- My beloved husband Patrick, for being my inspiration.

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Appendix A

PROVE THAT $\frac{1}{\sqrt{i}} = e^{-\frac{i\pi}{4}}$

$$\frac{1}{\sqrt{i}} = \sqrt{\frac{i}{i \cdot i}} = \sqrt{-i} = \sqrt{\frac{-2i}{2}} = \sqrt{\frac{(1-i)(1-i)}{2}} = \frac{1}{\sqrt{2}} \cdot (1-i) = \frac{1}{\sqrt{2}} - \frac{i}{\sqrt{2}}$$

$$= \cos\frac{\pi}{4} - i\sin\frac{\pi}{4}$$

$$= e^{\frac{-i\pi}{4}}$$