

CURRICULUM VITAE

ALAN BARRY REID

Born: 11 January 1944 in Port Elizabeth, South Africa

Nationality: British

Qualifications:

1972 Ph.D., Geophysics, Univ. of Alberta, Canada

1968 M.Phil., Geophysics, London University

1965 B.Sc. (Hons), London University

Employment Record:

May 99- Present. Independent consultant, specializing in potential field methods applied to oil and mineral exploration, trading as Reid Geophysics Ltd.

Nov. 94-Apr. 99. Principal Geophysicist/Manager Geophysical Research, Geophysical Exploration Technology (GETECH), Earth Science Dept, Leeds University, Leeds, UK.

Feb. 87-Nov. 94. Senior Geophysicist, Robertson Research International (RRI)/Simon Petroleum Technology (SPT), North Wales, UK.

Jan. 82-Jan. 87. Chief Geophysicist, Tsumeb Corporation Ltd, Namibia.

Oct. 73-Dec. 81. Lecturer & Senior Lecturer in Physics, University of Zimbabwe.

Oct. 72-Sept. 73. Post-Doctoral Research Fellow in Geophysics, University of Zimbabwe.

Qualifications

Sept. 72 PhD, Geophysics, University of Alberta.

Aug. 68 MPhil, Geophysics, London University (Working at University College of Rhodesia)

Dec. 65 BSc(Hons), Physics & Mathematics, London University (University College of Rhodesia & Nyasaland)

Professional activities:

Society of Exploration Geophysicists (SEG) - Active Member

Convenor, G & M Data Exchange Format Standards sub-committee

Member, Standards Committee

Referee for *Geophysics* & annual meeting abstracts

European Association of Exploration Geophysicists (EAEG) - Active Member

Deputy Chief Editor (Potential Fields), *Geophysical Prospecting*

Member of Awards Committee

Referee for successive annual meeting abstracts

Technical Session chairman at annual meetings 1996, 2000, 2002, 2003, 2004, 2005

Referee for *Journal of African Earth Sciences*, *Journal of Geophysical Research*, *Computers & Geosciences*, *Exploration Geophysics*.

Natural Environment Research Council. Served on their Geophysics MSc course review committee in 1992

External Examiner, Geophysics PhD, University of Wales

Adjoint PhD, MSc supervisor, Edinburgh & Leeds Universities

Honorary Research Fellow, School of Earth Sciences, University of Leeds

Petroleum Exploration Society of Great Britain (PESGB) - Member

South African Geophysical Association (SAGA) - Founder Member

Have run several training courses for SAGA, last in 1999

Irish Association of Economic Geology - Full Member

Prospectors & Developers Association of Canada – Member

Canadian Exploration Geophysical Society (KEGS) – Member

Australian Society of Exploration Geophysicists (ASEG) - Member

Session chairman, ASEG, Sydney, 2004

Specific experience:

Independent consultant in potential fields geophysics

I have been providing consulting services to the petroleum and minerals exploration communities. Projects have included the following activities, some of which are client-confidential:

- Ongoing call-out consulting contract – multiple projects, Shell.
- Ongoing call-out consulting contract - multiple projects, BG Group.
- Airborne magnetic and gravity survey QC, Libya. For Chevron-Texaco.
- Technical Consultant for territory-wide airborne EM, magnetic and radiometric survey, Geol. Survey of Northern Ireland.
- Training course in EM techniques for Ministry of Mines, Republic of Niger (though British Geological Survey),
- Two hands-on training courses in basement depth methods (one in Leeds, the other in Dhahran). For Saudi Aramco.
- Interpretation of heli-borne magnetic & radiometric data, Sierra Leone. For Cluff Gold
- State-wide magnetic basement depth mapping. For Placer Dome.
- Consulting to UK Health & Safety Executive on geophysical aspects of railway tunnel collapse, Channel Tunnel Rail Link, London area.
- Airborne geophysical system installation QC, staff training, creation of full set of survey procedures. National Board for Development, Libya.
- Data processing and interpretation for diamonds and gold, Finland. Junior mining company.
- Bid evaluation and acquisition and processing QC on major EU-funded airborne magnetic, radiometric and EM survey for Govt of Mali
- Gravity and magnetic data processing and interpretation, offshore Spain. For CEPSA.
- Interpretation, gravity and magnetic data, Yemen. For independent oil company.
- Gravity interpretation, Sirte Basin, Libya. For Wintershall.
- QC of airborne magnetic and radiometric survey, UAE. For British Geological Survey.
- Contract negotiation, modelling and acquisition QC, airborne gravity and aeromagnetic surveys. For CEPSA (Colombia).
- Negotiate specifications, quality control, enhancement processing, interpretation and target selection on very high resolution aeromagnetic and gamma ray survey in Mauritania for Rex Diamond Mining.
- Specifications, bid document preparation and bid evaluation, acquisition QC and interpretation - major onshore gravity survey and high resolution aeromagnetic surveys. Four-day staff training course. For Repsol (Murzuq Basin, Libya).
- Regional basin delineation and tectonics interpretation of large offshore area in W Africa (gravity and magnetic data) for Phillips Petroleum Company.
- Regional basin delineation and tectonics interpretation of Helmand Basin, Afghanistan (aeromagnetic data) for major petroleum company.
- Geophysical data processing and enhancement methods R&D for two contractors.
- Advice on exploration program to delineate known major diamond-bearing pipe and locate others in the same area (diamond exploration junior company).
- One-day training course delivered at SAGA meeting Cape Town 1999 (see publications).
- Participated in development of enhanced Euler deconvolution technique.

Petroleum and minerals exploration consultancy in potential fields methods

GETECH accumulated the world's most complete commercially available gravity/magnetic database, and had a full processing and interpretation capability. Similarly, Robertson Research operates Britain's (and perhaps the world's) largest and most diverse petroleum exploration consultancy, working for both petroleum exploration companies and natural resource ministries of sovereign states. Projects to which I made a considerable contribution by way of supervision, processing or interpretation of potential field studies include:

UK Onshore and offshore

Dounreay area (gamma ray processing)

West Shetlands and associated basins (grav. & mag., satellite grav.)

Northern & central England (grav. & mag.)
 Rockall Trough (satellite gravity)
 Sellafield area (EM and gamma ray survey consultancy)
 East Irish Sea (ultra-high resolution aeromag.)
 Southern Irish Sea (grav. & mag.)
 Overseas
 Abu Dhabi (offshore & onshore grav & mag.)
 Algeria (onshore airborne gravity & mag survey design and QC)
 Angola (offshore grav. & mag.)
 Canada (NE BC, NW Alta, grav. & mag.)
 Colombia (Cordillera Oriental area –mag)
 Congo (Kayes area - grav.)
 Finland (airborne mag & EM interp for kimberlites)
 France (Massif Central - Mag interp for Nuclear waste repository)
 Gabon (onshore mag.)
 Greece (NW Peloponnesus - grav., mag. & MT)
 Indonesia (Irian Jaya - mag. & grav. consultancy)
 Ireland (offshore high resolution aeromag, satellite gravity)
 Laos (onshore mag.)
 Libya (country-wide onshore grav. compilation)
 Libya (Gulf of Sirte - grav. & mag.)
 Libya (Sirte Basin - onshore grav. & mag.)
 Madagascar (offshore mag.)
 Mozambique (onshore mag.)
 Mongolia (mag.)
 Namibia (country-wide mag. compilation)
 Norway (offshore high resolution aeromag., satellite grav.)
 Pricaspian Basin (mag, grav interp)
 Sudan (grav, mag)
 Thailand (northern border - grav.)
 Tanzania (mag, gamma ray, VLF processing)
 Tunisia (offshore grav. & mag, onshore minerals grav & mag survey.)
 Uganda (grav. & mag. consultancy)
 USA (onshore mag.)
 Yemen (gamma ray processing)

My duties with GETECH were a mix of management, administration, business development in potential fields geophysics, generation of quotations and proposals, supervision of routine and advanced (interpretive) processing, interpretation, geophysical software development, training and consultancy. My duties with Robertson Research were primarily technical.

Marine survey experience

Was for two years responsible for GETECH's marine processing unit, including marketing, logistical and joint venture arrangements and processing for non-exclusive marine gravity surveying offshore Norway, Shetlands and Irish waters. In RRI days, managed a major project to reprocess, merge and interpret all the gravity and magnetic survey data in the Gulf of Sirte, offshore Libya.

Marine gravity and magnetic data processing included all operations starting from raw ship data to final delivery data, mapping and interpretive enhancement products. Operations included extraction of observed gravity from beam position and velocity and spring tension and correction for all ship motion effects including Eotvos and cross-channel. Standard gravity corrections included tidal, free air, Bouguer, isostatic. Further operations included levelling, micro-levelling and merging with other surveys (including satellite). Magnetic data despiking, diurnal removal, IGRF removal, levelling.

Undergraduate and graduate level training of geophysicists

Helped run Geophysical data processing workshops at ASEG 2003, 2004.

Delivered 1 week workshop in airborne geophysical data processing to staff of National Board for Development, Libya.

Provided in-house training to professional staff (Libya, Mali, Saudi Aramco).

Was responsible for GETECH's Potential Fields course. Was responsible for developing and presenting the Potential Fields application course offered by RRI to exploration professionals from the domestic and international petroleum industry. Have delivered various courses to groups of UK-based professionals, and to trainees from India, Congo and Morocco. Have conducted in-country training in France (IFP-ENSPM), Uganda (PEPD), Libya (NOC-PRC) & Colombia (EcoPetrol).

Was industrial supervisor of a PhD student at University of Edinburgh, working on robust estimation methods applied to magnetotelluric data.

Taught a short course on Fourier methods to geophysics students at Leeds University (1990). Am involved in graduate student supervision and higher degree examining at Leeds.

During the period 1981-87, on four occasions, taught the Exploration Geophysics part of the MSc course in Exploration Geology offered by Rhodes University, South Africa. The course attracted students with (required) previous exploration experience from various parts of the world.

Have run training courses for SAGA in Fourier Methods and in Inversion Methods, both involving the preparation of detailed course materials and practical sessions. The courses were attended by practising graduate geophysicists.

Contributed the sections on drillhole methods and the Otjihase mine case history to SAGA's training manual on electromagnetic prospecting.

My time on the staff of UZ was spent teaching undergraduate courses in electromagnetism, circuit analysis, vector calculus and geophysics. In addition I started, ran and taught 50% of the University's MSc course in Exploration Geophysics. This included supervision of all project work, which was normally a geophysical survey for economic minerals under the sponsorship of a mining company. Supervised a total of 8 MSc theses in exploration geophysics. Was associate supervisor for two PhD theses in geophysics at UZ and external examiner for a third PhD thesis submitted to the University of the Witwatersrand. Administrative duties were normal ones associated with a lecturer's job but included complete responsibility for the MSc course including curriculum, admissions, teaching and examinations. Other administrative duties were as the Faculty of Science Representative on the Board of the Faculty of Education, Faculty of Science Representative on the University's Research Board (fulfilled the function of NERC and its equivalents in the UK), and Presidency of the AUT.

Taught the course in Applied Geophysics for the Geology Special Honours degree at UZ.

Was, for one semester during sabbatical leave, Visiting Professor at McGill University, Montreal, and taught the Potential Fields course to their BSc Geophysics class.

Development of geophysical interpretation and inversion methods

Led the development of 3D Euler Deconvolution (GRIDEPTH) and am currently involved in its ongoing development, including gravity and gravity tensor gradient applications, and the Extended Euler method.

Provided geophysical direction to GETECH's development of a fully integrated software suite for potential fields geophysical data processing, enhancement, visualisation and interpretation. This included innovations in satellite gravity processing and development of equivalent layer space domain approaches to replace Fourier processes. Promising spin-offs included efficient continuation and gradient operations free of edge and Fourier ringing effects.

The SAGA course on inversion methods (above) included development of a Moore-Penrose scheme working fast enough for hands-on training purposes on an HP-85 (a slow pre-PC programmed in HP Technical BASIC).

Developed a least squares inversion method of exploiting all the information present in a multichannel gamma ray spectrum to estimate elemental abundances (see publication list).

Developed an in-house system while at TCL based on Marquardt inversion for interpretation of Schlumberger resistivity soundings.

National geophysical compilations and databases

Was consultant to the Petroleum Research Centre, Libya, on a project which is compiling all gravity data for the country. The job has involved recommendation and installation of computer hardware and software, development of compilation, standardisation and databasing procedures, recommendation of map projections and layouts and training and supervision of local staff.

Was involved in RRI's compilation of all existing aeromagnetic data for Namibia, to a final grid at 200m spacing.

Was involved in RRI's compilation of all existing aeromagnetic and radiometric data for Yemen. This required standardisation of data collected using a wide variety of specifications and included both drape-flown and constant altitude-flown data.

Senior supervisory experience with a mining company

TCL operated the Tsumeb, Kombat and Otjihase Mines and also copper and lead smelters. It prospected throughout Namibia, employing approximately 12 geologists and 3 geophysicists directly on exploration.

Was responsible for the Corporation's geophysical operations, i.e. planning, execution, data reduction, interpretation and drilling recommendations. We derived data reduction and interpretation software from Newmont's Research Group in Tucson, Arizona (now moved to Denver), but also did our own development work when warranted. The geophysics group consisted of three geophysicists, one data entry/processing clerk and three field crews.

I latterly (May 86) accepted additional responsibility for the geophysical operations of Newmont S.A. Ltd, based in Johannesburg.

Ground surface survey methods

Supervision of student field projects, consulting and work as Chief Geophysicist of TCL have covered all commonly used ground survey methods. The student MSc projects included work on the following mine properties for ore reserve extension:

- Dawn Mine (gold) - IP, Turam EM, Magnetic;
- Madziwa, Trojan & Epoch Mines (nickel) - IP, EM, Magnetic;
- Lynx Mine (graphite) - Dip angle & Turam EM;
- DSO Mine (asbestos) - Gravity;
- Ripple Creek Mine & Mwanesi Hills deposit (iron ore) IP, EM, Gravity, Magnetic methods.

Have considerable experience in the use of the Newmont EMP time domain EM system, through to final interpretation. This has involved a variety of geological environments with both resistive and conductive host rocks and includes incremental ore location around the Tsumeb, Otjihase, Matchless & Klein Aub Mines.

Engineering seismic surveys have included P & S wave studies for rock elastic properties and depth to bedrock for a number of public works projects, including foundation studies on behalf of the consulting engineers for the Hwange coal fired power station in Zimbabwe and the Cwm Dyli penstock replacement project on the slopes of Snowdon.

IP, Horizontal Loop & VLF EM, gravity and magnetic survey methods have been applied to TCL's biggest exploration project ever, seeking disseminated stratiform copper deposits under calcrete cover sometimes exceeding 50 m thickness.

Underground geophysics

Two year project using gravity, magnetic, resistivity, self potential and (most effectively) ultra-high resolution reflection seismic surveys to locate chromite pods, done entirely within the underground workings of the Selukwe Peak Mine, Zimbabwe.

Developed a drillhole location technique using electrical excitation and electric potential surveying underground at Tsumeb and Kombat Mines, Namibia.

Developed a self potential surveying technique underground in Mimosa Mine (Zimbabwe) for daily control of mining operations extracting platinoids, nickel and copper from the Great Dyke.

Airborne surveys

Developed and published the industry-standard method of determining optimum flight line spacing for aeromagnetic surveying (see publication list).

Was RRI's lead geophysicist involved in design, promotion, QC and interpretation of high sensitivity, high resolution aeromagnetic surveys of sedimentary basins. The surveys detect weak magnetic effects from the sediments themselves and reveal structural information of immense usefulness in petroleum exploration.

Planned and supervised conversion of TCL's airborne magnetometer to digital recording using a field microcomputer. Wrote the necessary data acquisition software. Subsequently supervised the high resolution surveying and compilation of data from the Tsumeb and Otavi Valley basins.

Have acted as consultant on airborne EM (INPUT) surveys in Zimbabwe, including supervision of subsequent ground follow up work in the vicinity of Muriel Mine.

Gamma ray spectrometry

Developed a least squares inversion method of exploiting all the information present in a multichannel gamma ray spectrum to estimate elemental abundances (see publication list).

Showed that a geostatistical approach could be used to interpolate gamma ray observations for gridding and display by contouring or other imaging methods using airborne data from Ontario, Canada (see list of papers read).

Advised on a survey near Arcturus Mine, Zimbabwe, to locate gold-bearing felsite dykes in an area of deep weathering. Statistical population extraction techniques indicated the dykes and three other lithologies.

Directed an effort by TCL staff to extract lithological information from airborne gamma ray survey data. It proved possible to map several contacts obscured by calcrete after elimination of air absorption and channel mixing, thereby outlining areas of prospecting interest.

Processed the four-channel gamma ray data collected over the Dounreay area as part of the NIREX nuclear waste repository investigations. The work involved optimal filtering and background, cosmic, channel interaction and height variation corrections. Developed a novel radon correction technique to eliminate mislevelling caused by day-to-day variations in atmospheric radon. Developed novel calibration transfer techniques to compensate for lack of direct calibration.

While at GETECH, was supervising the reprocessing of gamma ray survey data covering all of Tanzania. Gave an invited paper on gamma rays in mineral exploration to the IAEG's 1998 Spring weekend school.

Palaeomagnetism

Originally specialized in red sediments. Have worked on rocks from NWT and Alberta, Canada; Zimbabwe; South Africa and Namibia. Used palaeomagnetic techniques to help interpret magnetic survey data showing reversed remanence (Otavi Valley, Namibia). Currently using rock magnetic measurements to understand high sensitivity, high resolution survey measurements over sediments.

Field experience

Have undertaken field work in:

Alberta & Northwest Territories of Canada (summer),
Ontario & Quebec, Canada (mostly summer, some winter),
Arizona, USA (late summer & fall),
Namibia, South Africa and Zimbabwe (all seasons),
Snowdonia National Park, UK (spring),
Mauritania (late summer).
Libya (winter)

Papers read at international conferences

"Hybrid Euler magnetic basement depth estimation: Bishop 3D tests" SEG, Houston, November 2005.
"The meaning of, and limits on, Euler structural index and shape factor. Consequences for gravity and magnetic depth analysis." ASEG, Sydney, 2004
"Recent developments and ongoing research in gravity, magnetic and electromagnetic methods with application to hydrocarbon search", PESGB Geophysical Technology seminar, London 2003
"Euler deconvolution of gravity data", SEG, Dallas, 2003
"Terrain Noise". Poster paper presented at Gravity Noise Workshop, SEG, Salt Lake City, 2002.
"Grid Euler deconvolution with constraints for 2-D structures", SEG, Calgary, 2000 (co-author)
"Magnetic Imaging using Extended Euler Deconvolution", SEG, Houston, 1999 (co-author)
"Euler deconvolution of gravity tensor data". IUGG Birmingham 1999 (presenter and co-author).
"Gamma rays in mineral exploration - some examples." IAEG spring school, Galway, 1998.
"Prospect scale interpretation: Euler depth estimates". CSEG High Resolution Aeromagnetics Forum, Calgary, 1997
"Euler Deconvolution: Past, Present and Future: A review". Poster paper shown at Exploration 97 Fourth Decennial International Conference on Mineral exploration 1997.
"Euler Deconvolution: Past, Present and Future. A Review. SEG, Houston, 1995.
"High sensitivity aeromagnetics from the Voring Basin, offshore Norway - a seismologist's guide to fault linking." EAEG, Vienna, 1994.
"High resolution aeromagnetic data: new tricks for an old dog!" Poster paper at GEO'94, Middle East Geoscience Conference, Bahrain, 1994.
"Extensions to Euler's method for three-dimensional potential field interpretation." EAEG, Florence, 1991 (co-author).
"Quantitative interpretation of magnetic and gravity data in petroleum exploration." PETEX '89, London, 1989.
"Deconvolution and inversion of gravity and magnetic data from the East Irish Sea Basin, UK." CSEG Exploration Update, Calgary, 1989 (co-author).
"Gravity and magnetic studies of the Cheshire Basin - implications for hydrocarbon prospecting." EAEG, The Hague, 1988.
"Magnetic interpretation in 3-D using Euler deconvolution." SEG, Anaheim, 1988.
"The Carboniferous of northern England - a gravity and magnetic study." Poster paper at Exploration '87, Toronto, 1987.
"Gamma ray survey design & data reduction." Spring meeting of American Geophysical Union, Toronto, Canada, 1980.
"Ultra-high resolution reflection seismology in chromite detection." SEG, New Orleans, 1979.

Publications in refereed journals

FitzGerald, D, Reid, A. & McInerny, P., 2004. New discrimination techniques for Euler deconvolution. *Computers & Geosciences*, **30**, p 461-469.

- Mushayandevu, M.F., Lesur, V., Reid, A.B. and Fairhead, J.D. 2004. Grid Euler deconvolution with constraints for 2D structures. *Geophysics*, **69**, p 489-496.
- Reid, A.B., 2003. Short note: Euler magnetic structural index of a thin-bed fault. *Geophysics*, **68**, p 1255-1256.
- Reid, A. B., 2001. GXF is here to stay or Data exchange standards in gravity and magnetic work. *The Leading Edge*, **20**, p 868-869.
- Reid, A. B., Millegan, P., Reford, S., Hensel, J., Prieto, C., Gant, N., Bird, D., Li, X., Campbell, C. & LaFehr, T. 2001. The vision thing. *The Leading Edge*, **20**, p 864-867.
- Mushayandevu, M. F., van Driel, P., Reid, A. B. and Fairhead, J. D., 2001. Magnetic source parameters of two-dimensional structures using extended Euler deconvolution. *Geophysics*, **66**, p 814-823.
- Zhang, C., Mushayandevu, M. F., Reid, A. B., Fairhead, J. D., & Odegard, M. E., 1999. Euler deconvolution of gravity tensor gradient data. *Geophysics-online*, October 1999; *Geophysics*, **65**, p 512-520, March-April 2000.
- Reid, A. B., 1998. Prospect scale interpretation: Euler depth estimates. *Can. Soc. Expl. Geophys. Jour.* **34**, p 23-29.
- Reid, A. B., Allsop, J. M., Granser, H., Millett, A. J. & Somerton, I. W., 1990. Magnetic interpretation in three dimensions using Euler deconvolution. *Geophysics* **55**, p 80-91.
- Crossley, D. J. & Reid, A. B., 1982. Inversion of gamma ray data for element abundances. *Geophysics* **47**, p 117-126.
- Discussion on the above paper by R. L. Grasty & J. M. Carson with reply by authors. *Geophysics* **47**, p 1737-1738.
- McFadden, P. L., & Reid, A. B., 1982. Analysis of palaeomagnetic inclination data. *Geophys. J. Roy. Astr. Soc.* **69**, p 307-319.
- Reid, A. B., McMurry, E. W. & Evans, M. E., 1981. Paleomagnetism of the Great Slave Supergroup, Northwest Territories, Canada: multicomponent magnetization of the Kahochella Group. *Can. J. Earth. Sci.* **18**, p 574-583.
- Reid, A. B., 1980. Aeromagnetic survey design. *Geophysics* **45**, p 973-976.
- Kroner, A., McWilliams, M. O., Germs, G. J. B., Reid, A. B. & Schalk, K. E. L., 1980. Paleomagnetism of late Precambrian to early Palaeozoic mixtite-bearing formations in Namibia (South West Africa): the Nama Group & Blaubeker Formation. *Amer. J. Sci.* **280**, p 942-968.
- Lee, C. A. & Reid, A. B., 1977. A gravity survey of the Shawa Carbonatite Complex, Rhodesia. *Trans. Geol. Soc. S. Afr.* **80**, p 43-45.

Other publications and theses

- Reid, A. B., 2000. Review of *Wavelet theory and harmonic analysis in applied sciences*, eds C E D'Attelis & E M Fernández-Berdaguer, publ Birkhauser, Boston. *Geophys. J. Int.*, **140**, p.476.
- "The potential of potential fields. A review of gravity and magnetic methods in exploration". One-day course delivered at SAGA/SEG/EAGE 6th Biennial Conference & Exhibition, Cape Town, Sept 1999. Course Notes 29 p plus exercise figs. Publ by South African Geophysical Association.
- "Geologic applications of gravity and magnetics: case histories". Eds Gibson, R.I. & Millegan, P. S., 162 pp. Publ Soc. Expl Geophys, Tulsa, 1998. ISBN 1-56080-078-X. Contributed to Preface/Introduction, General Philosophy discussions 3, 4, 6; Annotated Bibliography.
- "Euler Deconvolution: Past, Present and Future: A review; p 861-864, "Proceedings of Exploration 97: Fourth Decennial International Conference on Mineral exploration" ed Gubins, A.G.. 1997, GEO F/X, 1068 p, 1997.
- "Gravity and magnetic field applications in hydrocarbon exploration". Lecture notes for short course S218, offered by SPT Training Centre, 1991.
- "Borehole Methods". p 255-271 and "Otjihase EMP case history". p 271-277 in *The Electromagnetic Method (Field Manual for Technicians No 3)*. Eds van Zijl, J. S. V. & Kostlin, E. O., Johannesburg, 1985, SAGA.
- "Generalized non-linear inversion of geophysical data or How to interpret almost anything". Lecture notes for course delivered in 1984, available from SAGA.
- "Geophysical application of Fourier analysis". Lecture notes for course delivered in 1982, available from SAGA.
- "A palaeomagnetic study at 1800 million years in Canada". PhD thesis, University of Alberta, 1972.
- "A palaeomagnetic study of the Sijarira Group, Rhodesia". MPhil thesis, University of London, 1968.